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Languages in the European Union: The Quest for Equality and its Cost[∇]

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Abstract

The European Union has recently expanded from 15 to 25 countries, bringing the number of *official* languages to 20. Currently, the EU extends equal treatment to all member countries' official languages. This, however, is costly, especially since many Europeans speak one of the *procedural* languages, English, French or German, either as a native or a foreign language. We develop a simple theoretical model of linguistic-regime choice in a multilingual society and apply the model's insights to the case of the EU: we compute disenfranchisement rates that would result from using only the three *procedural* languages for all EU business and then proceed to quantify the average cost per person and cost per disenfranchised person associated with providing translations and interpreting into the remaining languages. Both the disenfranchisement rates and costs are shown to vary substantially across the different languages, raising important questions about the economic efficiency of equal treatment for all languages. We argue that an efficient solution would be to decentralize the provision of translations.

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1 Introduction

In any multilingual entity (whether it is a country, union of countries, international organization, or a firm), some sort of linguistic standardization is necessary to ensure effective communication. This can take two forms: linguistic centralization, whereby a single language is chosen as a vehicle of communication, or multilingualism, with two or more languages used in parallel[1]. The latter case typically requires that certain provisions are made to provide translations and/or interpreting services when necessary. Examples of multilingual societies coming to grips with linguistic differences abound both in history (e.g. Ptolemaic Egypt, the Roman Empire or the British Empire) and at present (most modern countries are multilingual, incorporating indigenous linguistic minorities and/or sizeable and often regionally concentrated immigrant communities).

In the European Union, with numerous national, regional and minority languages, achieving effective and efficient linguistic standardization is of particular importance. Since its inception, the EU has put a great emphasis on multilingualism, and, in line with this policy, it currently recognizes 21 official languages.[2] While formally all official languages enjoy the same privileges, they do not have the same prominence within the EU administration.[3] According to the European Commission, 62 percent of its documents were initially prepared in English, 26 percent in French, and 3.1 percent in German in 2004. The remaining languages accounted for less than 9 percent of inputs into EU

[1] Even with multilingualism, some languages may enjoy a more prominent status than others, or their status may be restricted to a specific region.

[2] This policy was implemented by Council Regulation No. 1 of 1958, which gave the official-language status to Dutch, French, German and Italian. The regulation was subsequently amended after each enlargement to introduce further languages. The latest enlargement in May 2004 increased the number of official languages from 11 to 20. Irish was officially recognized as an official language in June 2005, bringing the number of languages to 21 (the official-language status for Irish was agreed to take effect as of 1st January 2007).

[3] The EU recognizes *procedural*, *official* and *treaty* languages. *Procedural languages*, English, French and German, are used for day-to-day communication within the EU bureaucracy and for preparing drafts of official documents. *Official languages* (Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Italian, Latvian, Lithuanian, Maltese, Polish, Portuguese, Slovak, Slovene, Spanish, and Swedish and, as of recently, Irish) are used at the sessions of the European Parliament and EU summit meetings. Furthermore, all official documents, resolutions and directives prepared and adopted by the EU are translated into all official languages. *Treaty languages* (Luxembourgish, and until recently Irish) are only used for EU treaties but not for other documents (legal or otherwise) and oral communications. EU citizens and firms, nonetheless, are entitled to communicate with the EU in any official or treaty language. This privilege, however, does not extend to minority languages such as Welsh, Catalan, or Basque, even when they have an official or semi-official status in their own country.

bureaucracy.[4] The situation is strikingly different on the output side: most documents are translated into all official languages of the EU and the structure of output is thus highly egalitarian. With the recent enlargement and the resulting growth in the number of official languages, the disparity between the input and output sides is likely to become even more glaring.

Equal linguistic treatment, while laudable, comes at a considerable cost to the EU. Upon reaching full capacity in the wake of the latest enlargement, the cost of translation and interpreting for the various EU institutions is envisaged to reach 1,045 million euros per year, including 807 million for translation of written documents and 238 million for interpretation of oral statements (see European Commission, 2005 a,b). This cost is said to include "salaries, social security, overheads for infrastructure etc., cost of external translation and operating costs, but not the costs to the Member States of, among other things, the education and training of translators or the translation of the *acquis*" (ibid.).[5]

Providing linguistic services for the EU is a formidable operation. The Commission allocated two Directorate Generals to this task, DG Translation and DG Interpretation, which provide linguistic services for most of EU institutions. At full capacity, these two Directorates require 90 translators and 80 interpreters (including free lancers) for each official language; in addition, the European Parliament and the European Court of Justice have their own translation and interpreting services. According to Vanden Abeele (2004), the total number of translators, interpreters and support staff employed by the various EU institutions before the May 2004 enlargement was approximately 6000.[6]

There are also non-monetary costs of multilingualism. Documents are often translated with considerable delay.[7] In some cases, important directives could not take

[4] See DG Translations (2005a). Historically, the EU has increasingly moved away from using French and towards English: in 1992, English and French accounted for 35 and 47% of inputs, respectively, by 2003, the last year before the latest enlargement, the shares were already 58.9 and 28.1, respectively.

[5] This accounts for 0.8% of the overall EU budget (nearly 80% of EU spending is devoted to the common agricultural policy and structural operations) and 16% of the administrative budget in 2006 (see European Commission, 2006). For comparison, the pre-accession aid to Bulgaria, Croatia, Romania, Turkey and the Turkish Cypriot community is only two and half times higher than the translation and interpretation budget (ibid.). Earlier estimates (which we used in the previous versions of this paper) put the post-enlargement cost somewhat higher, at 1.2 billion euros per year.

[6] Until 2003, Vanden Abeele (2004), was the Commission's director general in charge of re-organizing translation and interpreting services.

[7] As a rather fitting, if somewhat ironical, example of such delays are the Commission's press releases informing on the state of translation and interpretation in the wake of the enlargement. Although issued in

effect because they were not translated in time.[8] This has led to some drastic (and borderline absurd) measures such as requiring that reports and communications do not exceed some maximum length (e.g. 15 pages for communications and explanatory texts as of May 2004).[9] Similarly, to make interpretation easier, the Members of the European Parliament to use simple sentences and to avoid jokes.

Without a reform, the list of official languages is likely to grow even further. In a few years, Bulgarian, Romanian and possibly Croatian will be added. Turkish can be next, either because of Turkey's accession to the EU or because of re-unification of Cyprus. Furthermore, as has happened for Irish, languages that currently enjoy national or regional official status in their own countries without being used at the EU level can eventually also become official EU languages. A number of other languages such as Luxembourgish, Catalan, Galician, Basque, Welsh or Russian, may thus follow suit.

Such a generous and comprehensive approach is largely unique to the EU. Most linguistically diverse countries only grant the official status to one or two core languages: English in the UK, the US and most of the former British colonies, Spanish in Spain and most of Latin America, Russian in Russia, Mandarin in China or English and Hindi in India, despite the presence of large and often regionally concentrated linguistic minorities.

In view of the rising costs and practical difficulties associated with extensive multilingualism, there must be a limit at which it is no longer optimal to add further languages. As the number of official languages increases, the number of language combinations requiring translation rises exponentially and so do the costs of translation services, the need for physical infrastructure to house the ever increasing scores of translators and interpreters, and the probability of delays or erroneous translations. An extensive multilingualism may have been an optimal arrangement in a Union of six or

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January 2005, as of May 2006 the release on the state of translation remains available only in English and German while that on interpretation is still available only in English. See European Commission (2005a,b).

[8] In May 2004, the implementation of new directives on financial regulation and transparency of securities information had to be delayed because they were not translated in time (see WSJE, 2004). As the EU has expanded in the meantime, the directives now have to be translated into nine additional languages, necessitating a delay of six months. In 2003, the EU along with other rich countries agreed to allow developing countries to import cheap generic medication to treat diseases such as HIV, malaria and tuberculosis. The implementation of this decision was delayed by more than a year because of the need to translate it into all 20 official languages (see *The Guardian*, 2004).

[9] See European Commission (2004). This measure is credited with reducing the overall output of DG Translation from 1.4 million translated pages in 2003 to 1.2 million pages in 2004.

twelve nations. With the EU membership at 25 and soon to increase even further, a different arrangement may be required.

Which languages should optimally be given the official status depends on the criteria applied. On the one hand, it is important to ensure that EU citizens have reasonably easy access to the information about EU decisions and actions and can communicate with the various EU bodies in a language that they understand. On the other hand, the resources spent on translating documents and speeches could be allocated to alternative, perhaps more productive and more welfare-enhancing uses. While we refrain from making specific proposals as to how many languages the EU should recognize and which languages should be given official status, our analysis highlights and attempts to quantify some of the trade-offs involved in deciding on the optimal choice of a linguistic regime for a multilingual society such as the EU.

Our analysis builds on the work of Ginsburgh and Weber (2005) who introduce the notion of linguistic disenfranchisement rate (the share of a specific population that does not understand nor speak a specific language) and compute these rates for each of the EU15 countries in case the EU would use only the six main languages (English, French, German, Italian, Spanish and Dutch, either each being the single official language or their various combinations). They show that the "English only" alternative would leave several countries with very large disenfranchised populations. They also show that if English, French and German were chosen as official languages, disenfranchisement would decrease, both in the EU 15 as a whole and also in most individual countries. Adding any of the three other languages (Italian, Spanish or Dutch) would only alleviate the problem locally, that is in Italy, Spain or Belgium and the Netherlands, respectively. Ginsburgh, Ortuno-Ortin and Weber (2005) suggest taking distances between languages into account to compute disenfranchisement rates. Ginsburgh, Ortuno-Ortin and Weber compute disenfranchisement rates in the EU 15 using the distances computed by Dyen, Kruskal and Balck (1992). They also compute optimal sets of languages that result as solutions from the minimization of a weighted sum of disenfranchisement and translation costs.

In contrast to the earlier work, our paper is the first to take account of the enlargement of 2004 and its implications for linguistic policies in the EU. Furthermore, the earlier work focuses on the benefits of multilingualism in terms of the linguistic disenfranchisement that would otherwise ensue. While this paper continues the

discussion of benefits in the context of the enlarged European Union, the main contribution is our analysis of the costs of multilingualism.

The remained of the paper is structured as follows: In the following section, we develop a simple theoretical framework that illustrates the basic trade-offs involved in linguistic standardization. In section 3, we discuss alternatives to equal treatment, namely, adopting a single language or a few languages as official languages to be used for all EU business and for communication with EU citizens. We compare the disenfranchisement rates that would result under alternative scenarios, in light of the recent enlargement. In section 4, we use the insights obtained from our theoretical analysis to assess the financial costs of alternative linguistic scenarios in the EU. In particular, we introduce the concept of costs per disenfranchised person, and compare such costs for the various EU languages. Section 5 considers the political feasibility of a linguistic reform and argues that one possible solution is that the EU should decentralize decision making on translations. The last section summarizes our findings.

2 A Simple Model of Linguistic-Policy Choice

The following simple model sheds light on some of the factors that determine the provision of linguistic services in multi-lingual countries or unions. Consider a Union comprising n distinct linguistic groups. Denote N_j the population of linguistic group j and N the overall population of the Union: $N = \sum_{j=1}^{n} N_j$. The Union provides its citizens with a public good Ω that requires language for its delivery: laws and regulations, information about Union's business, and the possibility to communicate with Union authorities. Therefore, if Ω is to be delivered in more than one language, it requires translation which is costly. The translation can be full or partial so that the public good received by country j, denoted henceforth Ω_j, ranges between 0 and $\overline{\Omega}$, the latter being the maximum possible extent of Ω (i.e. the full translation regime). The translation cost per language depends on the extent of translation: $C_j = C(\Omega_j)$; to keep the analysis tractable, the cost function, C(.), is assumed to be identical for all j.

We assume, for simplicity, that Ω is initially provided in a single language, which we refer to as the *core* language. This language could be that of the dominant linguistic

group, political elite or could be determined by way of an initial agreement between the various linguistic groups.[10] The utility that a member of linguistic group *j* derives from receiving the public good through translation is $U(\Omega_j)$, where $U'(\Omega_j) > 0$ and $U''(\Omega_j) < 0$. When Ω is not translated, the corresponding utility for individual *i* is $\lambda_i U(\overline{\Omega})$, where λ_i takes values between 0 and 1 and is a measure of the individual's proficiency in the core language. If the translation were costless, a perfectly bilingual individual would be indifferent between receiving Ω in the core language or in translation while all other individuals would strictly prefer the full-translation regime. Therefore, the choice of the linguistic policy applied to the group's language will depend on the translation cost, the degree to which the group members are proficient in the core language, and the decision-making mechanism.

We assume that the translation cost per language is linear in the extent of translation:

$$C_j = c\Omega_j, \; c>0. \tag{1}$$

The cost per person depends on the financing arrangement. We consider two mechanisms: (a) self-financing, whereby each group bears its own translation cost (and chooses the extent of translation), and (b) full sharing, whereby all union citizens equally share the total cost for all participating languages (we assume all languages are subject to the same translation regime in this case).[11]

Under self-financing, the representative individual from group *j* derives the following utility (with superscript *s* used to denote the extent of translation under self-financing):

$$U(\Omega_j^s) - \frac{c\Omega_j^s}{N_j}. \tag{2}$$

Note that this formulation assumes that all members of the linguistic group bear an equal share of the translation cost, including those individuals for whom receiving $\lambda_i U(\overline{\Omega})$ dominates the utility from translation. In other words, individuals proficient in the core language cannot opt out from contributing to finance the translation regime. The

[10] The analysis could be extended in a very straightforward way to include multiple core languages used interchangeably or in parallel.

[11] Full sharing is effectively the regime that is currently used within the EU.

representative voter would therefore choose such an extent of translation so as to equalize the marginal utility and marginal cost:

$$U'(\Omega_j^s) = \frac{c}{N_j} \tag{3}$$

assuming of course that the utility from translation as given by (2) is greater than $\lambda_i U(\overline{\Omega})$; if not, the representative voter would choose no translation.

Under full-sharing (denoted by superscript *f*), the utility from translation is

$$U(\Omega_j^f) - \frac{(n-1)c\Omega_j^f}{N}. \tag{4}$$

Recall that *n* is the number of languages, including the core language. Therefore, translation must be provided into (*n*-1) languages. Given that the same translation regime is applied to all languages under full sharing, we can drop the subscript *j* when discussing the optimal extent of translation, Ω^f. As before, the translation regime is determined so as to equalize marginal utility and marginal cost:

$$U'(\Omega^f) = \frac{(n-1)c}{N} \tag{5}$$

Again, in case $\lambda_i U(\overline{\Omega})$ is greater than the utility from translation as given by (4), the no-translation regime will be chosen.

This simple model yields a number of interesting insights. First, if all groups are of equal size, $\frac{N}{n}$, full sharing results in lower cost per person and therefore facilitates a greater extent of translation than self-financing (this holds for all groups except the core group). To see this, consider the optimization condition under the self-financing scenario with equally sized groups:

$$U'(\Omega_j^s) = \frac{nc}{N} \tag{3'}$$

which is strictly greater than the marginal cost under full sharing as given by (5) and thus results in lower Ω. Intuitively, under full sharing all groups share the translation costs, including the group whose language is the core language, which prevents free riding by this group (for the same reason, the core group would strictly prefer self-financing). Note, however, that this result holds only if the core language is spoken by one of the

participating linguistic group. This potential benefit does not accrue if the union chooses a third language, such as English in India or Latin in the Catholic Church, or an artificial language such as Esperanto.

Second, by extension of the previous argument, linguistic groups that are of below-average size always strictly prefer full sharing. Conversely, there is a threshold size above which groups strictly prefer self-financing. This is because under full sharing large groups effectively cross-subsidize the translation costs of small groups.

Third, the optimal choice of the translation regime under self-financing reflects the size of the group: large group choose a higher Ω_j than small groups. This is so because the marginal cost as given by (3) is greater for a small group than for a large group, so that the optimal translation regime differs accordingly. This implies that the translation regime chosen under full sharing is generally different from the regime that individual groups would choose under self-financing: small groups benefit from over-provision of Ω while large groups suffer from under-provision.

Fourth, for the reasons discussed in the preceding paragraph, the groups that are already members of the union would support extension of full sharing to new groups if the newcomers are larger than the average group in the union. Admission of above-average sized groups results in lower translation cost per person for the incumbent groups and therefore greater extent of translation and greater utility. Similarly, the incumbent groups would oppose the accession of below-average groups because it leads to higher costs per person and lower extent of translation.

Finally, the nature of the decision-making mechanism is crucial. So far, we have discussed the optimization problem of the *representative* voter, without specifying further what determines which voter is representative. Consider first the case when the decision for each group is to be reached by unanimity. Then, unless all members of the group are proficient in the core language, the group would choose to provide translation (under either self-financing or full sharing). If the decision is made by a popular vote and the status quo is self-financing, groups with more than 50% of members proficient in the core language may well choose a no-translation regime so as to avoid the translation cost. A government concerned about the average voter, however, might find a disenfranchisement rate close to 50% unacceptable. Yet another outcome would obtain if the cost were not borne by all group members equally but were allocated reflecting the

need for translation. This would be the case if only those with λ_i below a certain minimum threshold, and thus unable to understand and communicate in the core language, would bear the cost of translations. In this last case, it is possible that the cost per disenfranchised person is high enough so that even those without a good command of the core language would prefer the no-translation regime.

3 Language Choices and Disenfranchisement

The various official languages are not equally represented among the EU population: not only because some nations are larger than others but also because some languages are more popular among Europeans when it comes to learning a foreign language. In fact, the importance of the three procedural languages approximately mirrors their relative shares among the EU15 population (if not in magnitude then at least in ordering): 55 percent speak English, 34 percent French, and 31 percent German.[12] It is more instructive, however, to consider combinations of languages.[13] Thus, 70 percent of the EU15 population is proficient either in English or in French. This means that if these two languages were used as official languages of the EU15, 70 percent of the population would be able to follow EU actions and decisions without need for any further translation of EU documents or speeches in the Parliament. The English-German combination fares very similarly: 68 percent of the EU15 population knows either English or German. Finally, 81 percent of EU15 population knows at least one of these three languages. This is shown in the first part of Table 1, though the numbers are expressed, more dramatically, as the percentage of the population of each country (and of the EU15) that would be linguistically disenfranchised (excluded) if only one language or a group of

[12] Most of the numbers referring to the EU15 are taken from Ginsburgh and Weber (2005) and are based on a Eurobarometer survey on languages that was run in 2000. The questions asked in the survey were concerned with all the languages used by citizens in the 15 countries of the EU. Ginsburgh and Weber (2005) consider that a person "knows" a language if she declares it as her mother tongue, or as a second or third language. Clearly, there are individuals who declare that they know a language, though their knowledge is basic while others may refrain from doing so. Therefore all the numbers must be taken with a pinch of salt, though they are much better than nothing, which is the basis for most of what is written about languages. The survey alluded to is the most complete and recent dataset that exists, and unless one has 15,000 people taking proficiency tests in several languages, it will be difficult to do any better.

[13] The calculation is not straightforward since one has to eliminate double counting. If one wants to analyze who speaks English *or* French, one has to add those who speak English to those who speak French and subtract those who speak both. See Ginsburgh and Weber (2005).

languages (English-French, English-German, and English-French-German) were to be used as official languages.

Note that these EU15 averages (weighted by the populations in each country) do not do full justice to what happens in individual countries. The results shown in Table 1 make it clear that there are very large differences across countries, and that irrespective of the choice, countries such as Greece, Italy, Portugal, and Spain would suffer large (near or exceeding 50 percent) disenfranchisement rates, since none of the three languages discussed is widely spoken in these countries.

Naturally, the relative importance of these three languages is different in today's EU of 25 countries. The distribution of English, French and German among the newcomers is shown in the second part of Table 1.[14] Two observations can be made. First, the figures for the new members indicate greater disenfranchisement than in the EU15. This is not surprising, given that none of these countries has English, French or German as their native language (with the exception of Malta, where English is an official language *in parallel* to Maltese). Second, the relative position of German is much stronger whereas French is marginalized: 21 percent are proficient in English, 19 percent in German and only 3 percent in French. Again, there are differences across nations: Cyprus, Malta and Slovenia are reasonably proficient in English, French is almost unknown everywhere, and the only country where German is widely diffused is Slovenia – though even there it lags behind English (the dominant position of English is shared by all newcomers except the Czech Republic and Slovakia where German is more popular).

The result that German does better than French, though not unexpected, has an interesting implication. As Table 2 shows, the position of German is strengthened so that French and German find themselves on equal footing, each spoken by 29 percent of EU25 citizens. Similarly, the English-French and English-German alternatives fare very similarly, with the latter being just slightly ahead of the former (with 63 percent speaking either English or German compared with 62 speaking English or French). Given their similar position, there is hardly any reason to prefer one combination over the other. With

[14] This is based on a Candidate Countries' Eurobarometer survey carried out in 2001 in all countries that were candidates for EU membership at the time (see DG Press and Communication, 2003). Although the wording of the relevant questions in the two surveys is not identical, we believe they are sufficiently similar to allow us to use both data sets in a single comparative analysis.

all three languages, however, over one quarter of the EU25 would remain disenfranchised.

At the time of the writing, Bulgaria and Romania are scheduled to become members in January 2007 and the odds that Turkey will enter the EU in the foreseeable future are not negligible. Therefore, we also look at what would happen if these three countries were included. The last part of Table 1 shows that Romania is slightly better in language proficiency than Bulgaria and Turkey.[15] Romania is also the only country where French is more widely used than German, but this is far from being sufficient to give a push to French to make the English-French alternative look better than the English-German one. As Table 2 shows, both two-language scenarios give similar results: disenfranchisement rates in the EU28 would rise to 45 percent in either case, while the three-language alternative would result in 35 percent of the population being disenfranchised.

The discussion above is not meant to imply that English, French and German should enjoy a privileged status within the EU or that they constitute the sole optimal set of languages in case the EU were to undertake a linguistic reform aimed at restricting the number of official languages. They would certainly be included in such a set, but one can easily extend the analysis by adding other languages – although the benefits of doing so would be mainly restricted to the native countries of those languages (see Fidrmuc, Ginsburgh and Weber, 2006). The scenarios based on these three languages are merely illustrative of implications of potential linguistic reform scenarios. In the following section, we turn to the costs of maintaining the current practice of extensive multilingualism.

4 The Costs of Multilingualism

The annual cost of translating and interpreting in the EU with 20 official languages is estimated to reach 1,045 million euros (European Commission, 2005a,b). Assuming that all languages are treated equally (i.e. each document or oral statement is translated into all languages) and that all 20 languages are equally costly to translate to and from, the

[15] These numbers are based on the same Candidate Countries Eurobarometer survey. Croatia recently also became a candidate for EU membership. Unfortunately, it was not included in the survey and therefore we are unable to include it in our analysis.

average cost per language per year is 55 million.[16] Although the total costs may seem high, it only amounts to approximately 2.30 euro per person. Spending 2 to 3 euros per year to ensure that no EU citizen is disenfranchised seems indeed good value for money. However, the average cost across the EU is not necessarily the right figure to consider. It is instructive to look instead at the average cost per member of a linguistic group (another, arguably even more relevant, figure is the cost per person who would be disenfranchised had EU documents not been provided in his/her native language, which we compute below).

Such calculation reveals considerable differences across languages. Table 3 reports the average costs per language. The first column lists the population speaking each language, taking account of the fact that English, German, French, Dutch and Greek are each spoken in more than one country in the EU25.[17] The average costs are reported in the second column. In making the calculations, we assume that, in line with EU pronouncements, all languages are treated equally so that the annual cost per language is 55 million euros for old and new EU members' languages alike (we cannot include Bulgarian, Romanian and Turkish in our analysis as no cost estimates are available with respect to the future enlargements). The costs are computed per language rather than per country, by dividing the average cost per language, 55 million, by the population speaking each language. In the case of English, French and German, for the sake of consistency, we therefore disregard the fact that all three languages are used by the EU administration to prepare the initial documents. Therefore, the figure reported for each language, including English, French and German, is the one that would obtain if some other language were used to prepare the initial documents.[18]

The average costs can be directly related to the theoretical analysis in the preceding section: the calculation corresponds to the marginal cost of translation under self-financing as given by the right hand side of equation (3). The marginal cost under full sharing as given by equation (5), on the other hand, is 2.30 euros (this is the total cost of

[16] This is the total cost, divided by 19, as a document prepared in any of the 20 official languages has to be translated into the remaining 19 languages.

[17] These countries are the U.K. and Ireland in the case of English, France and Belgium (40 percent of population) for French, Germany and Austria for German, the Netherlands and Belgium (60 percent) for Dutch, and Greece and Cyprus for Greek.

providing translation and interpreting services divided by the population of EU25). Comparing the latter figure with the average costs per language, one can readily discern that the linguistic groups of English, French, German, Italian, Spanish and Polish would be better of under self-financing, while the Dutch linguistic group should be essentially indifferent between the two regimes. All other linguistic groups are better off receiving translations of EU documents under full sharing than under self-financing. Effectively, this means that, as pointed out in section 2, the smaller linguistic groups enjoy a translation regime that is more generous than the one they would optimally choose under self-financing, with the difference being quite dramatic for some linguistic groups (e.g. Slovene, Estonian and Maltese). Conversely, the current EU-wide translation regime is sub-optimally modest for the larger linguistic groups.

The third column of Table 3 summarizes the likely position of each linguistic group concerning the financing regime: the first six groups would be better off under self-financing while the rest is better off under the current regime of full sharing. The last three rows report (a) the percentage of EU25 population that would benefit from a reform introducing self-financing, (b) the percentage of linguistic groups that would benefit from such a reform and, finally, (c) the percentage of EU member countries likely to be favorable to the reform. Comparing the figures in the last three rows of the third column, one can readily infer that although a clear majority of EU citizens would be better of under self-financing (the speakers of English, French, German, Italian, Spanish and Polish total more than 350 million or 78 percent of EU25 population), it is also obvious that a majority of EU linguistic groups and member countries would oppose any move away from the status quo.

The last four columns of Table 3 assess the feasibility of different scenarios of linguistic reform aimed at restricting the number of official languages. While many alternatives could be considered, we again restrict our attention to four basic ones whereby the set of official languages includes only English (E), English and French (EF), English and German (EG) and English, French and German (EFG). We make the admittedly simplistic assumption that a country would not oppose the reform if more than half of its nationals speak one of the official languages. Given that only English, French

[18] Correcting the average cost figures for this fact using the current shares of 62, 26 and 3.1 percent for English, French and German, respectively, yields correspondingly lower figures for English and French

and German are readily spoken outside their native countries, considering more scenarios would yield trivial results: adding Italian or Spanish would result in important gains to Italy and Spain, respectively, but limited or no gains for other countries.

The last three rows report the percentages of the EU25 population as well as linguistic groups and countries that would likely be in favor of the reform (or, more precisely, would not be adversely affected by the reform, that is, its disenfranchisement rate would not exceed 50 percent after the reform). Keeping English as the only official language of the EU would receive the support of 50 percent of EU25 population at the most. The move would be opposed, however, by a clear majority of both linguistic groups and member countries. Nearly two-thirds of the EU25 population are likely to accept restricting the number of official languages to two: English and French or English and German. Finally, the three-language scenario would enjoy the acquiescence of nearly three-quarters of EU25 citizens. Yet, no reform can count on the support of a majority of linguistic groups and only the three-language scenario can expect to enjoy support of more than half of all member countries.

It is clear therefore that as long as a reform requires unanimity (as currently stipulated by EU rules), the current linguistic regime or the financing are very unlikely to be ever reformed. Even if the required majority of countries were reduced to two-thirds, none of the above-discussed reform scenarios would be likely to be accepted – despite the fact that both the reform of the financing regime and restricting official languages to English, French and German would potentially enjoy the support of more than two thirds of EU25 citizens.

An even more interesting concept is the cost per disenfranchised person which takes account of countries' different propensities to learn foreign languages. Looking again at English, French and German and their combinations, columns three to six of Table 4 show the numbers of citizens who would become disenfranchised in the four alternative scenarios of linguistic reform. The last four columns then report the costs per disenfranchised person (in euros) that would arise from adding the various languages to the list of official languages, under the same four scenarios.

The cost per disenfranchised person is computed by dividing the average annual cost per language, 55 million euros, by the number of the speakers of each language for whom

(0.3 and 0.6 euro, respectively), while the figure for German remains essentially unchanged.

EU documents would be inaccessible if they were only available in one (E), two (EF or EG) or three (EFG) official languages. Several assumptions underlie the analysis. Our calculation disregards the *inconvenience* aspect of receiving information in a language other than one's mother's tongue. This inconvenience may be due to a host of reasons: even people with an excellent command of a foreign language may have a preference for speaking their own language and people generally experience displeasure from seeing their language being ignored.[19] We ignore also issues such as the feeling of national pride, patriotism and international recognition that are strengthened by having one's language elevated to the status of an official language of the EU. Finally, linguistic minorities whose languages currently do not have an official status at the EU level, such as Welsh, Catalan, Basque, and Russian, are not considered in our calculation either.

The results are illuminating. First, the costs of providing translation into French and German are very low: 1.5 and 1.3 euro, respectively, in the English-only scenario. The costs are almost the same when considering two-language scenarios: providing translations into German costs again 1.4 euro in the EF case, while the cost of French translations is 1.5 euro in the EG scenario.

Second, there are huge differences across the remaining countries. The cost of providing translations to a language reflects the combined effect of the number of people who speak the language and the number of speakers of that language who are proficient in foreign languages. Hence, the more people speak a language, *ceteris paribus*, the lower the cost, but the more speakers of that language speak English, French or German, the lower the need to provide translations and, correspondingly, the higher the cost per disenfranchised person. Because of these two effects, languages spoken by large populations are relatively inexpensive: Italian, Spanish and Polish cost less than 3 euros per disenfranchised person in the three-language scenario. The second tier is formed by linguistic groups that are medium sized or that are relatively large but highly proficient in other languages: Dutch, Portuguese, Greek, Czech, Hungarian, Lithuanian and Slovak are in the range of approximately 10 to 20 euros per person. In contrast, languages spoken by relatively few people come out as relatively expensive, especially if those people tend to

[19] For example, Italian and Spanish officials and journalists recently protested against the decision to exclude their languages from automatic translation at the European Commission's press conferences, which was seen as equivalent to demoting Italian and Spanish to a second-class status, especially in comparison with German.

be proficient also in other languages: Finnish (30 euros), Swedish, Latvian (34 euros each), Estonian (64 euros), Danish (65 euros), Slovene (102 euros) and Maltese (831 euros).

While these costs are by no means excessive, one might want to consider the tradeoffs entailed in spending 30 to 100 euros per person per year on translating and interpreting instead of devoting them to other worthy causes. Finally, the case of Maltese is truly spectacular: with only 66 thousand Maltese disenfranchised if English, French and German were adopted as the sole official languages of the EU, the costs of providing translating and interpreting services, expressed per person per year, is more than eight hundred euros! One may wonder whether the persons concerned, or the Maltese government, would optimally choose to spend these amounts on translations if the 55 million euros were completely at their discretion.

The additional annual costs incurred by the EU due to the addition of Irish have been estimated as 3.5 million euros (see Directorate-General for Translation, 2005b). This figure does not include costs for recruiting and training of the estimated 29 new translators and interpreters which the Irish government offered to bear alone, or any provision for the cost of the physical infrastructure and overhead of the translation and interpreting operations. The figure may also increase further over time since the introduction of Irish is to be phased in over a period of five years after 1st January 2007 (ibid.) – but no further estimates of the long-term impact of this change are available. Adding the 3.5 million to the total cost bill and assuming 21 official languages instead of 20 results in the average annual cost per language falling to 52.4 million euros. Correspondingly, the costs per disenfranchised person for the various languages fall slightly (e.g. the cost for Italian falls from 2.0 to 1.9, the cost for Maltese falls from 831 to 792). According to the survey on linguistic skills, 3.1 percent of the Irish population (corresponding to approximately 115 thousand persons) speak Irish while having no knowledge of English, French or German).[20] Therefore, assuming the average annual cost figure of 52.4 million applies also to Irish, the annual cost per disenfranchised Irish speaker becomes 457 euros.[21]

[20] The number of Irish speakers without sufficient linguistic skills in English in Great Britain and Northern Ireland is negligible.

[21] This figure probably overestimates the actual cost, given that Irish will apparently receive only limited extend of linguistic services. For example, DG Translation (2005b) reports that only 29 translators and

Introducing French and/or German alongside English makes a difference only for some languages. The basic regularity is that the more languages are already being used by the EU, the more expensive it is to add other languages. This is because when moving, for example, from two languages to three, the number of disenfranchised persons falls in most countries and thus the cost per person rises. Hence, the average cost per disenfranchised person across the entire EU (see last row of Table 4) is 5.5 euro in the English-only scenario, 7 euros in either the EF or EG scenario and 10 euros for the EFG alternative. The difference in costs across scenarios is most pronounced in the case of the Dutch language: the cost per disenfranchised person doubles when French is added to English and almost triples when moving from English only to the three-language case. Slovene, Danish, Czech and Slovak also show large variations across the four scenarios. For most other languages, the difference in costs is not very large. For Greek and Maltese, finally, English is essentially the only language that matters.

The figures discussed above are merely simple back-of-the-envelope calculations. Nonetheless, they give a good indication of the order of magnitude of the per-person costs of eliminating disenfranchisement with respect to the various European languages. An important limitation of our analysis is that it ignores sequencing and linguistic externalities. Sequencing can play an important role because a translation may be easier (and cheaper) if it involves two closely related languages. Thus, translating a document from Spanish to Portuguese, from Swedish to Danish or from Czech to Slovak will entail lower costs than translating the same document from English or French., While they reduce the cost of multilingualism, however, such relay translation increases the probability of errors. Linguistic externalities, on the other hand, arise because adding, for example, Spanish to the list of official languages will reduce disenfranchisement not only of Spaniards but also of nationals of other countries who are proficient in Spanish. Therefore, the costs per disenfranchised person may change depending on which other languages already have the status of an official EU language.[22] One could therefore compute *residual* disenfranchisement rates – and the corresponding costs per

interpreters are to be hired, which is substantially less than the number required for other languages (90 translators and 80 interpreters per language, see European Commission, 2005 a,b).

[22] To take this into account, one may weight translation costs by the level of difficulty, which can be measured by the distances between languages, computed for instance by Dyen, Kruskal and Black (1992), and used in Ginsburgh, Ortuno-Ortin and Weber (2005) to compute disenfranchisement rates.

disenfranchised person – for every possible sequence of languages. Finally, our analysis also disregards the fact that some languages have large and important linguistic constituencies outside the EU, such as the Spanish and Portuguese speaking countries in Latin America. While interesting, such extensions remain topics for further research.

5 Can a Linguistic Reform Be Politically Acceptable?

Extensive multilingualism was adopted by the EU at a time when it had six member countries and four official languages. As the EU continued to expand, strict adherence to the principle of equal treatment of members necessitated extension of multilingualism to the new entrants. Yet, a linguistic regime that was optimal with four languages is not necessarily so when the number of languages is as high as 20 or even higher, since Irish, Romanian and Bulgarian will by added in January 2007. Translating tens of thousands of documents per year and providing interpreting services for EU meetings and sessions of the European Parliament becomes increasingly costly as the number of official languages increases. Moreover, increasing complexity of the linguistic regime aggravates the inefficiencies inherent to multi-lingual organizations: errors and misunderstandings that often result from relying on relay translations, delays in producing official versions of legal documents and even such a mundane issue as finding enough translators and interpreters for some languages. Therefore, if the EU were to choose its linguistic regime anew, it might well select a more restrictive one.

Our model of linguistic regime choice suggests that the optimal extent of linguistic services depends on the size of the linguistic group. Consequently, small countries (or languages) enjoy over-provision of linguistic services under the present linguistic regime while large countries suffer from under-provision. However, as we argue in the preceding section, any attempt aimed at changing the status quo in favor of a more restrictive regime is likely to fail: the majority of member countries would oppose such a move, even though the reform would benefit the majority of EU citizens. Small countries effectively receive a rent in the form of linguistic services funded by the EU that are more extensive than those that they would choose under self-financing. Since changes to the linguistic regime require unanimity, small countries would need to be sufficiently compensated to accept giving up this rent.

What is needed therefore is a solution that is economically efficient as well as likely to receive sufficient political support. Decentralization of the decision on providing linguistic services would be such a solution. In particular, individual countries should be given the discretion over the funds earmarked for linguistic services: in effect, countries would receive a lump-sum transfer (55 million euros per year or some other amount corresponding to the actual cost of providing linguistic services) and be free to decide how they prefer to spend it.[23] An important property of this reform proposal is that it allows for the current regime to be fully maintained – if that is what all member countries prefer. On the other hand, some countries may prefer to devote all or at least part of the funds to alternative uses and effectively accept that their language loses some of the privileges attached to the official status or that its prominence diminishes. At the same time, other countries might go the opposite way and increase the extent of linguistic services by adding their own funds to the transfer they would receive.

Therefore, the reform that we propose would effectively produce no losers: either no country chooses to opt out and hence all are equally well off as before or some countries opt out because this will increase their welfare. While the reform would not imply any savings for the EU budget, it would have the potential to increase overall welfare. Intermediate solutions can also be considered, whereby some important documents would be centrally translated into all languages while others would be left at the discretion of each country. Note that even if decentralization is implemented, it may be necessary to continue simultaneous interpreting in the European Parliament: it is difficult to imagine that the EU could bar someone from exercising an elected office because of lacking linguistic skills.[24]

Finally, it is reasonable to expect that the disenfranchisement resulting from undertaking a linguistic reform will fall in the future: both Eurobarometer surveys used in

[23] Note that since some languages (Dutch, French, German and Greek) are spoken in more than one country, the decision concerning concerning these languages would require agreements between countries..

[24] Having said that, even at present, the MEP cannot address the Parliament in Catalan, Basque or, until January 2007, in Irish (or if they do, their address will not be translated), even though these languages enjoy official status in their home countries. Furthermore, the approach applied by the UN could be used by the European Parliament as well: the UN allows delegates to address the Assembly in a language other than one of the five official languages, provided they arrange for interpretation into one of the official languages at their country's expense.

this paper suggest that the younger population is more proficient in foreign languages.[25] Moreover, the disenfranchisement caused by the linguistic reform will be only transitory, as the reform will induce people to invest into learning the languages used by the EU.

6 Conclusions

The EU maintains a linguistic regime that it originally adopted as a relatively loose grouping of six countries whose people spoke four different languages. Since its inception, however, the EU has grown to include 25 countries and 20 official languages (soon to be 23) as well as numerous minority and regional languages. Moreover, compared with its relatively modest origins, the present-day EU makes (or influences) an ever growing share of policy decisions in Europe. The result is a bureaucratic machinery that increasingly takes on Babel-like proportions. Translations and interpretations for the various EU institutions now provide employment for thousands of staff and cost over one billion euros per year. The need to translate legal documents and resolutions often causes long delays and occasionally results in confusion or misunderstanding because of erroneous translations.

In the present paper, we question the rationale for the extensive multilingualism championed by the EU. First, we construct a stylized model of optimal linguistic-regime choice and show that most EU member countries may prefer a different linguistic regime if they were to bear the costs themselves: small countries (or linguistic groups) would implement a more modest extent of translation whereas large countries would prefer a more extensive regime. Under centralization, large countries are effectively cross-subsidizing over-provision of linguistic services for small countries while they suffer from under-provision.

Second, we show that the impact of a linguistic reform would vary across countries substantially. Taking the example of a reform that would establish English, French and German as the official languages of the EU, the resulting linguistic disenfranchisement, at approximately one-quarter of the EU population, would be relatively modest.

[25] A recent report by the French Ministry of Education (2004), comparing the proficiency foreign languages among French high school students is rather pessimistic in this respect. Fidrmuc, Ginsburgh and Weber (2006), in contrast, present a more optimistic outlook.

However, several countries would see more than one-half of their population disenfranchised.

Third, we argue that the actual costs of multilingualism also vary considerably across countries – or, more precisely, across languages. This is true not only in the case of the average costs per citizen but – even more dramatically – for the average cost per disenfranchised person. While it would be relatively inexpensive (under 3 euros per person per year) to add languages such as Italian, Spanish and Polish to the base-line scenario of three languages, adding further languages is associated with increasing costs: up to over 800 euros in the case of Maltese!

It is obviously important to ensure that citizens of Europe have access to relevant information in a language that they can understand. Yet, as the EU continues to expand and the number of official languages correspondingly grows, the costs of multilingualism – both the direct financial costs of providing translation and interpreting services and the costs and inconvenience due to delays and errors that arise during translation – may outweigh the benefits.

The decision on the optimal number of official languages in the EU will inevitably be a political one. Economic considerations, however, should play an important role as well and we attempt to lay the analytical foundations for such a decision. However, as long as the decision on linguistic regime requires unanimity, a linguistic reform is unlikely to pass. Restricting the number of official languages or introducing self-financing would generate winners and losers – and losers would need to be compensated. We therefore propose an alternative reform scenario – decentralization of the decision on translations. Under this proposal, countries could decide themselves whether they wished to continue the current regime or use their share of the funds allocated for linguistic services elsewhere. This scenario would allow each country to maintain the status quo – so that a reform would in fact occur only if the country in question benefits from it. Such a move would make no country worse off and therefore should be politically acceptable even under unanimity.

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Table 1 Country Disenfranchisement Rates
(in % of total population)

	Population [millions]	E	F	G	EF	EG	EFG
			EU15				
Austria	8.1	54	89	1	52	0	0
Belgium	10.2	60	25	90	18	53	17
Denmark	5.3	25	95	63	24	16	16
Finland	5.1	39	99	93	39	37	36
France	60.4	58	0	92	0	57	0
Germany	82	46	84	3	44	0	0
Greece	10.5	53	88	88	53	52	51
Italy	57.6	61	71	96	48	59	47
Ireland	3.7	4	77	94	4	4	3
Luxembourg	0.4	81	9	26	4	15	1
Netherlands	15.8	30	81	41	20	15	14
Portugal	10.8	65	72	98	59	64	58
Spain	39.4	64	81	98	57	63	56
Sweden	8.9	21	93	69	20	19	18
United Kingdom	58.6	1	78	91	1	1	1
Together	*376.9*	*45*	*66*	*69*	*30*	*32*	*19*
			Countries that joined on May 1, 2004				
Cyprus	0.8	39	93	98	38	39	38
Czech Republic	10.3	76	97	70	75	54	53
Estonia	1.4	69	99	86	69	62	62
Hungary	10.1	85	98	86	84	75	75
Latvia	2.4	77	99	86	76	68	67
Lithuania	3.6	80	98	88	79	72	70
Malta	0.4	17	91	99	17	17	17
Poland	38.6	80	97	83	78	67	66
Slovakia	5.4	87	98	79	86	72	71
Slovenia	2	47	96	57	46	28	27
Together	*75*	*79*	*97*	*81*	*77*	*65*	*64*
			Candidate Countries				
Bulgaria	7.9	87	95	94	83	83	80
Rumania	21.8	80	83	95	71	77	68
Turkey	65.6	85	98	96	84	82	81
Together	*95.3*	*84*	*94*	*96*	*81*	*81*	*74*

Notes. E: English, F: French; G: German; EF: English and French; EG: English and German; EFG: English, French and German. Disenfranchisement rates are based on Eurobarometer data on language proficiency rates in the EU member and candidate countries. See text for additional details.

Table 2 Average Disenfranchisement rates
(in % of total population)

	Population (millions)	**E**	**F**	**G**	**EF**	**EG**	**EFG**
EU 15	376.9	45	66	69	30	32	19
EU 25	451.9	50	71	71	38	37	26
EU 28	547.2	56	75	75	45	45	35

Notes. E: English, F: French; G: German; EF: English and French; EG: English and German; EFG: English, French and German. Disenfranchisement rates are based on Eurobarometer data on language proficiency rates in the EU member and candidate countries. See text for additional details.

Table 3 Feasibility of Linguistic Reform

	Population (millions)	Average Cost (EUR)	Better off under self-financing	Fraction of population proficient in the procedural languages (in %)[1]			
				E	EF	EG	EFG
German	90.1	0.6	**Yes**	**53**	**55**	**100**	**100**
English	62.3	0.9	**Yes**	**100**	**100**	**100**	**100**
French	64.5	0.9	**Yes**	42	**100**	43	**100**
Italian	57.6	1.0	**Yes**	39	**52**	41	**53**
Polish	38.6	1.4	**Yes**	20	22	33	34
Spanish	39.4	1.4	**Yes**	36	43	37	44
Dutch	21.9	2.5	No	**62**	**80**	**74**	**85**
Greek	11.3	4.9	No	48	48	49	50
Portuguese	10.8	5.1	No	35	41	36	42
Czech	10.3	5.3	No	24	24	46	47
Hungarian	10.1	5.4	No	15	16	25	26
Swedish	8.9	6.2	No	**79**	**80**	**81**	**82**
Slovak	5.4	10.2	No	13	15	28	30
Danish	5.3	10.4	No	**75**	**75**	**83**	**83**
Finnish	5.1	10.8	No	**61**	**61**	**63**	**65**
Lithuanian	3.6	15.3	No	19	22	28	31
Latvian	2.4	22.9	No	25	25	33	33
Slovene	2.0	27.5	No	**55**	**55**	**70**	**75**
Estonian	1.4	39.3	No	29	29	36	36
Maltese	0.4	137.5	No	**83**	**83**	**83**	**83**
Population support[2]			*78%*	*50*	*62*	*63*	*74*
Group support[3]			*30%*	*40*	*50*	*40*	*50*
Country support[3]			*40%*	*40*	*46*	*48*	*60*

Notes: See text for details. Entries in bold indicate likely support for the reform stipulated by the column heading.

[1] The procedural languages are English, French and German. The analysis also considers their various combinations.

[2] Population support is the percentage of EU25 population that would gain from a reform introducing self-financing instead of full sharing (column denoted 'better off under self-financing), and the percentage of population that would be able to follow EU business in case the number of official languages is reduced (columns denoted E, EF, EG, and EFG). A country is assumed to be better off under self-financing compared to full sharing if the average cost is below 2.75 euro (the latter being the average cost under full sharing).

[3] Group support and country support are defined analogously to population support but instead of population they consider the number of language groups and countries, respectively. A country is assumed to be in favor of linguistic reform if its disenfranchisement rate (as reported in Table 1) is less than 50%.

Table 4 Costs per Disenfranchised Person
(population in millions, costs in EUR)

	Total Population	Disenfranchised Population (millions)				Cost per disenfranchised person (EUR)			
		E	EF	EG	EFG	E	EF	EG	EFG
English[1]	62.3	0	0	0	0	0	0	0	0
French[1]	64.5	37.5	0	36.6	0	1.5	0	1.5	0
German[1]	90.1	42.1	40.3	0	0	1.3	1.4	0	0
Italian	57.6	35.1	27.7	34.0	27.1	1.6	2.0	1.6	1.9
Polish	38.6	30.9	30.1	25.9	25.5	1.8	1.8	2.1	2.2
Spanish	39.4	25.2	22.5	24.8	22.1	2.2	2.4	2.2	2.5
Hungarian	10.1	8.6	8.5	7.6	7.5	6.4	6.5	7.3	7.3
Portuguese	10.8	7.0	6.4	6.9	6.3	7.8	8.6	8.0	8.8
Greek	11.3	5.9	5.9	5.8	5.7	9.4	9.4	9.5	9.7
Czech	10.3	7.8	7.8	5.6	5.5	7.0	7.1	9.9	10.0
Slovak	5.4	4.7	4.6	3.9	3.8	11.7	11.8	14.1	14.3
Dutch	21.9	8.4	4.3	5.6	3.3	6.5	12.9	9.8	16.9
Lithuanian	3.6	2.9	2.8	2.6	2.5	19.1	19.3	21.2	21.7
Finnish	5.1	2.0	2.0	1.9	1.8	27.7	27.7	29.1	30.0
Latvian	2.4	1.8	1.8	1.6	1.6	29.8	30.2	33.7	34.2
Swedish	8.9	1.9	1.8	1.7	1.6	29.4	30.9	32.5	34.3
Estonian	1.4	1.0	1.0	0.9	0.9	56.9	56.9	63.4	63.7
Danish	5.3	1.3	1.3	0.9	0.9	41.5	43.2	64.9	64.9
Slovene	2.0	0.9	0.9	0.6	0.5	58.5	59.8	98.2	102.2
Maltese	0.4	0.07	0.07	0.07	0.07	808.8	808.8	808.8	831.3

Notes: See text for details of how average costs and costs per disenfranchised person were computed.
[1] Average and marginal costs for English, French and German are computed under the assumption that another language is used to prepare the original documents and therefore all official documents need to be translated. Assuming that these three languages maintain their current shares in preparation of the original documents (62% English, 26% French and 3.1% German) results in somewhat lower figures: 0.4 for English and 0.7 for both French and German.