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1 Introduction

In little more than half a century, the EU (including its predecessors) has undergone deep and wide-ranging transformations. It has grown from being a rather loose grouping of six Western European nations to include most European countries, spanning from the Baltic to the Black Sea and from the Iberian to the Balkan peninsula. In the process, the European Union has become increasingly heterogeneous. It now counts 27 member countries with diverse historical legacies (from the Roman Empire in the West to the Russian and Ottoman Empires in the East), dramatically different levels of economic development (ranging from rich Luxembourg to poor Bulgaria), various cultural and religious traditions, and a multitude of languages. On the last criterion, the diversity of Europe is perhaps at its most evident: the EU counts 23 official languages at present, compared with just four at the time of its founding.

The list of official EU languages includes some that are spoken by large numbers of people in Europe: German is spoken by approximately 85 million Europeans while English, French and Italian are each spoken by around 60 million. Some of the official EU languages are also spoken widely outside of Europe: besides English, Spanish and Portuguese are notable examples. On the other hand, several of the official languages are spoken by relatively few: Estonian and Slovene are spoken by approximately 1-2 million while Maltese and Irish are spoken by around half million each (moreover, the majority of speakers of Maltese and Irish are also fluent in English, another official EU language). This linguistic diversity reflects an overwhelming desire for equality: when joining, each member nation was allowed to put forward its national language as an official language of the EU and all its institutions. The only nation that has not done so has been Luxembourg (Luxembourgish is used by the EU as a treaty language only).

Despite this apparent desire for equality, several languages stand out because of their omission. Russian, Turkish and Arabic are spoken by large numbers of Europeans (4.2, 2.2 and 1.6 million EU citizens, respectively), yet they do not enjoy the official status. Regional languages are similarly not included, even though some enjoy official or semi-official status in their own country. Catalan, spoken by 4.1 million European, is the most prominent example, followed by Galician and Basque.¹

In the near future, the list of official EU languages can grow further by adding Croatian, Icelandic and Turkish. The last language can get an official status either in the wake of Turkey's accession to the EU or because of the reunification of Cyprus. Moreover, Spain's regions are increasingly vocal in their quest for recognition of their languages. It is therefore conceivable that the EU might have as many as 30 official languages in a few years from now.

Multilingualism in the EU stands in sharp contrast with the practice in most nation-states. The vast majority of countries in Europe are multi-lingual, with several regional and/or ethnic-minority languages spoken within their territories. However, most of them espouse

¹ All of the above figures refer to the number of native speakers of the various languages as estimated by extrapolating from the 2005 Eurobarometer survey (discussed below) mapping the landscape of languages in Europe. As such, these figures count all native speakers of a given language, not only those in the original country of that language. Only EU citizens are included in the count, thus counting in intra-EU migrants but excluding non-European immigrants. Russian native speakers can be found especially in the Baltic countries as well as in Germany. Turkish is spoken mainly in Germany and Bulgaria. The highest numbers of Arabic speakers are in France, Germany, Italy, UK and Belgium. The bulk of Catalan and Basque speakers live in Spain, with smaller numbers (much smaller in case of Catalan) found in France.

strictly monolingual regimes when it comes to official languages, with only a few granting official or semi-official status to regional languages.

The practical and economic implications of multilingualism in the EU are wide-ranging. Official documents must be translated into all official languages. National representatives and members of the European Parliament (MEPs) are free (and often expressly expected) to use their own language when conducting official EU business. EU citizens similarly are entitled to use their language when communicating with European institutions. Implementing such extensive multilingualism is expensive: running translation and interpretation services for the EU of 27 member countries costs over € 1 billion annually. It also takes time: translation of official documents into all official languages can take many months. As a result, legal decisions adopted by the EU are often implemented with several months' delay (legal decisions only become valid once they were published in all official languages). The process is prone to errors too, in part because of the growing use of 'relay translations' whereby a document or spoken word is translated from one language to another via a 'core' language such as English, German or French.

In this article, I discuss multilingualism in the EU and its economic implications as well as analyze some of the alternative arrangements that could be implemented. In the following section, I start by presenting the basic facts about multilingualism and language use in Europe. In that section, I outline the benefits of multilingualism, mainly embodied in avoiding linguistic disenfranchisement, and discuss the prominence of the various European languages in the linguistic landscape of Europe. The analysis documents a clear disconnect between the firm commitment of the EU to maintaining multilingualism in its institutions and the revealed preferences of Europeans: concerning the latter, the people of Europe increasingly coordinate on choosing English as their lingua franca. The following section then complements the discussion of benefits by analyzing the costs of multilingualism. Furthermore, by combining the discussion of benefits and costs of multilingualism, I outline the analytical foundations for identifying an optimal linguistic regime. Finally, the last section summarizes the main findings and argues that extensive multilingualism is neither economically optimal at present nor sustainable in the long term. If political constraints prevent the EU from streamlining its linguistic regime, then the most likely outcome is linguistic reform coming in through the back door: full range of linguistic services will be maintained for a small subset of official languages while the quality and range of services provided in the remaining languages will gradually deteriorate.

2 Languages in the EU: Stylized Facts and Economic Background

At the beginning of 2004, the EU had 11 official languages. After the enlargement in May of that year, which brought in ten new member countries, the number of official languages has almost doubled, to 20 (Cyprus was the only new member country that did not bring with itself a new official language). In 2005, Ireland requested a (somewhat limited) official status for Irish.² By 2007, with the EU accession of Bulgaria and Romania, the number of official languages has grown thus to 23.

The right of each member state to nominate its national language as an official language of the EU has been enshrined in the Treaty of Rome and in Regulation 1/1958. The six founding countries shared four official languages between them: French, German, Italian and

² The implementation of this decision was postponed until 2007 because of the lack of qualified translators and interpreters.

Dutch (Luxembourg has never requested the same privilege for Luxembourgish, which is one of its three official languages). Subsequently, following the principle of equality, full recognition of national languages was extended to all new members. This has increased the workload of the EU DGs Translation and Interpretation dramatically. The vast majority (72%) of EU documents is currently prepared initially in English³. With 23 official languages, each document must be therefore translated 22 times. Moreover, the number of possible combinations requiring translation or interpretation is increasing more than proportionately to the number of languages: with 23 official languages, there are 506 such combinations, compared to 110 when the EU counted 11 official languages and 12 combinations when the EU was founded in 1957.⁴ The linguistic services now cost the EU more than € 1 billion annually: approximately one-fifth of its administrative budget and one-seventh of the amount spent on average annually on R&D within the FP7 Program.

Linguistic policy is one of the areas where any amendment of the existing practice requires unanimity. Therefore, even if it were in the interest of the majority of EU citizens to demote certain languages, for instance those spoken by relatively few, to a status lower than that of an official EU language, proposing such a change would be futile as at least the country whose language would be affected would be certain to oppose it. It is for this reason that the linguistic regime put in place in 1957 has been maintained until present. Multilingualism was easy to implement – and may have been optimal – when the EU had six members and four languages, none of which had a clear claim to superiority. It is far from obvious that it is optimal – or even sustainable – at present with 27 members and 23 languages.

Multilingualism delivers two kinds of benefits to the member countries and their citizens. First, being recognized as an official EU language promotes the international standing and prestige of the language and, indirectly, of its people. This *intangible* benefit is likely to be important especially to small countries. For example, anecdotal evidence suggests that Maltese government institutions now make more use of Maltese at the expense of English (both languages have official status in Malta) now that the EU institutions use Maltese for official business with their country. Estonian and Irish may be enjoying similar boosts, following decades of domination by Russian and English, respectively.⁵ The EU also helps boost the status of such small languages by hiring translators and interpreters and often actually directly financing their training⁶: this serves to increase the expected return on investing in acquiring proficiency in these languages and thus encourages their teaching and use (especially since not all of those who learn a language because of the prospect of a career in EU institutions will eventually land in such jobs). These benefits help explain why regions such as Catalonia strive to achieve similar recognition for their languages. Large countries benefit as well, especially if their languages get to be used as working languages by EU bureaucrats: French and German are thus elevated to the status of EU *linguae francae*, at par (at least in theory) with English. While such intangible benefits are clearly important, it is very difficult to quantify or measure them, in part because of the missing counterfactual: one cannot evaluate properly the impact of EU multilingualism on the status of languages such as

³ See “EU translation policy here to stay”, EurActiv report <http://www.euractiv.com/en/culture/eu-translation-policy-stay/article-170516>.

⁴ This calculation treats translation from, say, French to English as being different from that from English to French.

⁵ The fact that Irish MEPs were not able to use Irish in the European Parliament until 2007 was a source of considerable irritation to some Irish representatives in that body.

⁶ For example, see “EU still chasing Maltese translators,” Malta Today, 17 February 2008, <http://archive.maltatoday.com.mt/2008/02/17/n4.html>.

Irish or Maltese because we do not know how those languages would have developed without being official languages of the EU.

Second, multilingualism also bestows important practical, *tangible*, benefits to EU citizens by ensuring that they have access to EU legal documents without requiring translation, that they can communicate with EU institutions in their own language and that their elected representatives can use their language when participating in EU decision making. Ginsburgh and Weber (2005) denote this second effect as *linguistic disenfranchisement*, reflecting the fact that those whose languages are not used by the EU would see their linguistic rights curtailed and would be unable to participate fully in the EU political process and decision making.

While the intangible benefits of multilingualism cannot be quantified, preventing disenfranchisement can be assessed formally by estimating how many people would be disenfranchised under a given linguistic regime. It is important to realize in this context that a person will not be linguistically disenfranchised as long as the EU uses a language that they can speak, whether or not it is their native language. Again, this goes back to the distinction between tangible and intangible benefits of multilingualism discussed above: a Maltese native speaker who also speaks English and Italian is not linguistically disenfranchised as long as the EU uses English or Italian as official languages but fails to enjoy the intangible benefit unless Maltese is adopted as an official language as well. However, the same applies to, for example, ethnic Turk with German nationality or Spaniard who is an ethnic Catalan. Therefore, in my discussion of the costs and benefits of multilingualism, I will consider only the tangible benefits and will disregard the intangible effects.

At the time the EU institutions were being shaped, multilingualism made good sense for two reasons: the EEC started off with only small number of countries and languages (six and four, respectively), and relatively few people spoke the languages of other countries. At present, neither condition continues to hold: the EU has expanded repeatedly and many Europeans are proficient in foreign languages. A recent survey documented the languages spoken by the nationals of all 27 member countries of the EU. This survey contains extensive information on the use of all official EU languages as well as some additional languages (Arabic, Chinese, Russian, Turkish as well as some European regional languages and languages spoken by selected ethnic minorities).⁷ Two percent of Europeans have two (or more) mother's tongues (the share of multilinguals is at its highest in Ireland and Spain, at 8% in both countries). 39% speak at least one foreign language (ranging between 17% in Hungary and 97% in Luxembourg) and 14% speak two or more foreign languages (from 4% in Ireland to 84% in Luxembourg). However, not all languages are equally popular. In fact, with the exception of English, French, German, Spanish and Russian, few European languages are spoken outside of their home country.⁸ This is illustrated by Figures 1-3 (adopted from Fidrmuc and Fidrmuc, 2010) which show the fraction of each country's population speaking the three most popular languages, English, French and German; the figures combine native speakers with those who speak each language as a foreign language but with good or very good (self-assessed) proficiency. Table 1 contains the detailed figures, along with similar numbers for additional languages. In the vast majority of European countries, at least 10% of the population speak English (Hungary is the only exception with 8% English speakers). There are several countries with more than half of the population proficient in English:

⁷ Special Eurobarometer 243: Europeans and their Languages, November-December 2005. Note that in order to be included in the survey, the respondents had to be EU citizens, though not necessarily nationals of the country in which they were interviewed.

⁸ The figures quoted above count all those who speak the language as a foreign language, including foreigners in that language's home country.

besides the English-speaking countries, these are Cyprus, Denmark, Malta, the Netherlands and Sweden. The shares of French and German speakers, in contrast, are considerably lower (the Netherlands is the only country where more than half can speak German without the language being an official language there). This pattern is mirrored also in survey responses that reflect attitudes to learning foreign languages (Table 2): 67% think English is a useful language for one's personal development and career whereas only 22-25% think the same about German and French. Attitudes on which languages children should learn are very similar (reassuringly, only 10% think no language is useful and only 2% believe children should learn no foreign language).

Insert Figures 1-3 and Tables 1-2 about here.

Proficiency in languages can change dynamically over time. In the absence of historical survey data on language skills going back a few decades, we can get useful insight on the dynamics of linguistic skills by considering age cohorts: as people usually learn languages during their school years, proficiency of different age groups approximates the changes in attitudes to languages. Table 3⁹ reveals a striking pattern: the proficiency in most languages is remarkably stable over time: the share of young people (aged 15-29) speaking, for example, German and French, is nearly the same as the corresponding figure for the oldest group (60+ years of age). The only exception is English: more than half of young Europeans speak it, compared with barely a quarter of the oldest cohort. Moreover, while the share of those speaking English among the oldest differs little from the corresponding figures for German and French, English has taken a big lead among the younger cohorts.

The rising prominence of English should not come as a surprise. It reflects the increasing globalization as well as accelerating openness of European countries to trade, investment flows as well as movement of people (whether tourists, labor migrants or students). English has effectively played the role of a modern *lingua franca* in this process. Language helps facilitate transactions between people in a way similar to the role of money: it serves both as medium of (communicative) exchange and store of (informational) value. The role of language in producing *communicative benefits* has been highlighted by, among others, Selten and Pool (1991), Gabszewicz, Ginsburgh and Weber (2005), Ginsburgh, Ortuno-Ortin and Weber (2007), and Ortega and Tangeras (2007). They model the benefits of speaking a particular language as embodied in the opportunities for communicating with other people speaking the same language: the term *communicating* should be understood broadly enough to include also engaging in productive activities and/or trade. The communicative benefits may differ across languages: learning Chinese, for instance, yields greater benefits now than 30 years ago when China was poor and largely closed to the outside world. Similarly, the costs of learning a particular language are not uniformly distributed: some are better at learning languages than others, and some languages are easier to learn while others are more complicated. Importantly, the benefits of learning a language increase with the number of other speakers of that language. Hence, holding everything else constant, people would tend to choose to learn languages of large countries. Moreover, the attractiveness of a language rises further if a large number of other people decide to acquire it as well: given that learning languages is costly, people have a strong motivation to coordinate on a single language that

⁹ Again, the figures include both native speakers as well as those who speak the language with good or very good proficiency.

comes to play the role of a lingua franca instead of learning a broad range of different languages.¹⁰

Insert Table 3 about here.

The individual-level survey discussed above can be used to study the determinants of proficiency in foreign languages as well. The results are summarized in Table 4. Given that most languages are spoken almost exclusively by native speakers, the analysis can be carried out only for a few languages. English, French, German, Italian, Spanish, Russian and Dutch are the seven most popular European languages and all have sufficient numbers of non-native speakers to permit the analysis.

The results are illuminating. Younger people are more likely to speak English and German (the effect of age is in fact u-shaped for German, with the minimum attained at the age of 48). The opposite holds for Russian: middle-aged respondents more likely to speak it (the effect peaks at 55 years of age); this presumably reflects the fact that until 1990s, Russian was widely taught throughout the former Soviet Block. Having higher education, being self-employed, having a managerial or white-collar occupation and living in an urban area increase the propensity to learn languages. It appears thus that those with higher education and more skills find it more beneficial (and probably also find it easier) to learn foreign languages. Somewhat less intuitively, being tall has a similar effect on the probability of speaking English and French. This can be explained by the positive relationship between one's height and economic wellbeing during childbirth (see Belot and Fidrmuc, 2010, and the references cited therein): growing in a more affluent household is likely to improve the acquisition of human capital, including foreign-language skills. More surprisingly, political orientation (self-declared) of respondents is also related to the probability of speaking English and French. The respondents were asked to position themselves on a scale between 0 and 10, with 1 representing extreme left and 10 standing for extreme right. Right-wing respondents are more likely to speak English while left-wing individuals are more likely to speak French; political orientation is not significant for any of the other languages (it is especially noteworthy that those who speak Russian are not any more leftist than those who do not). It is not obvious, however, what is the direction of causality here: whether left-wing political orientation makes one more likely to learn French while those with right-wing attitudes choose English, or whether the language that one learns in turn influences one's political opinion, perhaps through exposure to information and news from particular countries (note that the individuals included in this analysis are only those who speak the language in question as a foreign language and therefore this result does not simply reflect the fact that the average Frenchman may be more left-wing than the average Briton).

The analysis accounts for the respondents' country of residence and the differences in the popularity of different languages in different countries are large. They are also not random. Dyen, Kruskal, and Black (1992) compiled indicators of linguistic proximity between languages: in essence, these measure the fraction of key words that have the same root. The correlation between the coefficient estimated for country-specific intercepts and linguistic proximity is 0.43 for English, 0.54 for French and 0.33 for German. Hence, more people learn a language if that language is relatively similar to their own.

¹⁰ For the same reason, as Selten and Pool argue in their article, artificial languages such as Esperanto are destined to fail as few people speak them and they have virtually no native speakers.

Insert Table 4 about here.

Besides serving as a medium of communicative exchange and store of informational value, language also plays a third role: it is a tool of discrimination. Language not only facilitates communication between those who can speak it, at the same time it excludes from that communication all those who do not speak it sufficiently well. A good example is the Cockney rhyming slang which was devised by prison inmates in London who wanted to ensure that the prison guards could not understand them. Akerlof and Kranton (2000) discuss how language or accent specific to a particular region or ethnicity become a hallmark of one's identity. Deviating or not being able to speak the right language or with the right accent can be met with social sanctions: educated blacks in the US, for example, are disparaged for 'speaking white'. Those speaking the *wrong* language, similarly, may be subject to discrimination in the labor market (Lang, 1986) and in economic relations generally.

The preceding analysis therefore suggests that individual socio-economic characteristics such as age, education or skill level are associated with the ability to speak foreign languages. Inability to speak a particular language, similarly, may lead to economic discrimination. Is the ability to speak a foreign language, therefore, associated with economic benefits such as higher wages? Most studies that consider this question look at the linguistic skills of immigrants and tend to find that speaking the destination-country language is indeed associated with a wage premium of up to 20% (Chiswick and Miller, 2002, 2010). The labor-market position of immigrants, however, is rather specific and therefore the wage premium that accrues to them as a result of speaking another language is not directly comparable with the likely benefits accruing to Europeans speaking foreign languages. A unique study by Ginsburgh and Prieto-Rodriguez (2006) has sought to address exactly this question. They utilize data collected within the 2001 wave of the European Community Household Panel survey. Crucially, that survey asked the respondents in nine European countries (Austria, Denmark, Finland, France, Germany, Greece, Italy, Portugal and Spain) about languages that they speak AND use at their workplace, allowing them to list up to two such languages. They find that the return to speaking a particular language depends on the relative scarcity of that language. The return to speaking English, for example, ranges from meager 5% in Denmark (where it is widely spoken) to 40% in Spain. Given that French and German are less common, the returns to speaking them are correspondingly higher, starting just under 20% for both (in Denmark for both languages) and as high as 50% for French and 60% for German (in both cases, the country with the highest return is again Spain). Toomet (2010) who consider ethnic Russians in Estonia and Latvia finds comparable results: those speaking English earn a wage premium of 15% in Estonia and as much as 40-60% (depending on data set used) in Latvia. Speaking the local language, in contrast, is not associated with any wage gain, despite the fact that not all ethnic Russians (who account for considerable share of the populations of these two countries) can speak both Russian and the local language.

In summary, Europeans are at present increasingly proficient in foreign languages and especially in English. The share of those speaking English, furthermore, grows over time, as evidenced by the substantially higher proficiency rate for among the young. Most Europeans agree that learning and speaking foreign languages is important; again English takes a privileged place. Those who speak English and other languages, moreover, tend to enjoy higher wages, although these gains may gradually dissipate as more people acquire linguistic skills. Hence, one could argue that the extensive multilingualism as espoused by the EU since its inception is now less required than in the past. In the next section, I therefore address this

question explicitly, looking at the costs of multilingualism and at the possible scenarios for linguistic reform.

3 Multilingualism in the EU: Assessment and Alternatives

The EU is a leading consumer of linguistic services: translation and interpretation. Every year, it translates 1.8 million pages of written documents and provides interpretation for 11 thousand meetings (depending on the linguistic complexity of the meeting, between 1 and 60 interpreters may be required per meeting). This is costly: providing linguistic services is estimated to cost the EU over €1 billion per year (Fidrmuc and Ginsburgh, 2007). There are also non-monetary costs: the need for translation leads to delays in implementation of decisions and may result in legal ambiguity¹¹.

Fidrmuc and Ginsburgh (2007) consider the costs of multilingualism in the EU in the wake of the 2004 enlargement. Providing linguistic services was estimated to cost €1,045 million at the time.¹² With 20 official languages, this implies that each document has to be translated 19 times (regardless of in which language it was originally drafted). The average cost per language thus is €55 million per year (assuming all languages are equally difficult to translate to and from). The average cost per person would appear to be modest at €2.30 per person per year. This calculation, however, is greatly misleading as translation to each language does not benefit the same number of Europeans. Fidrmuc and Ginsburgh therefore compute the average cost per language and person, considering all speakers of a particular language and then considering only those who would be disenfranchised if their language did not enjoy the official status in the EU. The latter calculation is perhaps the best measure of the true cost of multilingualism because it only considers those who actually benefit from having their language included among the official languages of the EU.

Table 5 reproduces the average costs per person and language for the 20 languages that had the official status in the EU following the 2004 enlargement (Irish, Bulgarian and Romanian were added in 2007 but these languages were not included in the analysis). These calculations consider all persons speaking a particular language (taking account of the fact that some languages are spoken in multiple countries), regardless of what other languages they may be able to speak. The approximate cost per language is thus divided by the population of the country or countries that speak it (note that the calculation only considers the relevant EU countries and thus do not take into account the fact that English, French, Spanish and Portuguese are widely spoken also outside Europe). Not surprisingly, English, French, Italian and especially German, spoken by large numbers of people, are the cheapest. In contrast, Latvian, Slovene and Estonian cost in excess of €20 per person per year and Maltese costs well over €100.

Insert Table 5 about here.

¹¹ The EU maintains that each official translation of a legal document has the same legal validity, regardless of whether the document was originally drawn up in that language or not.

¹² Portuese (2010, footnote 8) cites the EU Commissioner for Multilingualism, Leonard Orban, who estimated the cost of linguistic services as being €1.1 billion in 2008. This presumably includes also the effect of the 2007 enlargement, suggesting that the addition of Irish, Romanian and Bulgarian had only a modest economic effect.

Table 6 takes the analysis of costs one step further by considering only those individuals who would be disenfranchised had their language lost the official status in the EU. Clearly, for assessing the benefit of accepting a given language as an official language of the EU, it is crucial to consider not only how many people live in the affected country but also how many of them do not speak other official languages. The cost per person, therefore, depends on the number of people speaking the language in question and the fraction of them who do not speak the other languages that would remain official languages of the EU. The choice of languages that would remain official is thus also critical. Four scenarios are considered in this respect: only English, English along with French or German, and all three languages together. The first column lists the population speaking each language and the next four columns report the numbers that would be disenfranchised in each linguistic scenario. In general, allowing for more official languages leads to lower disenfranchisement. Since the cost of providing linguistic services remains the same, the cost per disenfranchised person is therefore generally higher in the scenario with three or two official languages than in the English-only one (except, of course, when one of the official languages is irrelevant, in which case the cost remains the same). With English serving as the sole official language of the EU, large numbers of French, German, Italian, Polish and Spanish speakers would be adversely affected: between 25 and 42 million for each of these five languages. The costs of providing linguistic services for these languages are then correspondingly low: around or below €2 per disenfranchised person. Thereafter, the costs per disenfranchised person start to increase quite dramatically and can be as high as €800 for Maltese. Adding French or German or both to the list of official languages mainly affects the populations speaking these two languages; the costs for the others do not change too dramatically as a result. The main exceptions to this are Dutch (where adding French and to a lesser extent German makes a substantial difference, presumably because many Flemish Dutch speakers are proficient in French) and Czech, Slovak and Slovene, among whom German appears rather popular.

The differences across languages reflect in part the different size of populations speaking them but this is only a part of the story. Another important factor is the number of people who can speak other languages. For example, the costs for avoiding disenfranchising a Dutch person is between those for Slovak and Lithuanian, two languages spoken by much smaller numbers of people. This is because the majority of Dutch speakers can also speak English, French or German.

The last scenario, with English, French and German as official languages is probably the most realistic one: these three languages serve as working languages of the EU bureaucracy and therefore it is unlikely that any of them would ever be abandoned. Adopting this scenario would result in costs per language ranging from around €2 to 830. One may wonder whether spending €800 or even €100 is optimal and whether the countries in question would be prepared to spend a similar amount if the costs of providing linguistic services were to be borne entirely by them. The present policy of extensive multilingualism financed by the EU implies that the provision of linguistic services for small countries (languages) is cross-subsidized by large countries. Similarly, large countries might in fact prefer to choose a more generous translation/interpretation regime if they were to pay for it by themselves (Fidrmuc and Ginsburgh develop a theoretical model that shows that the extent of linguistic services is increasing in the number of people speaking the language).

Insert Table 6 about here.

The preceding analysis suggests that substantial savings could be made by reducing the extent of linguistic services provided by the EU. This is in fact already happening to some extent. The EU, for instance, increasingly relies on the so-called relay translation/interpreting. This practice means that written text or spoken word that is originally in, say, Estonian, will not be translated to all of the remaining official languages directly. Instead, it will be translated directly only to English, French and German (and possibly into a few other languages if such direct translations are possible). The remaining languages would then receive a translation from one of these *core* languages. These measures, while cutting the cost of multilingualism, fall well short of a fundamental linguistic-policy reform (and, furthermore, they lower the quality of linguistic services for all non-core languages, not only the marginal ones. The reasons for shying away from a true reform are clear: linguistic policy is one of the areas of EU policy that is subject to unanimity support. Therefore, it is highly likely that at least one country will oppose a move to downgrade a particular language. The degree of implementation of multilingualism, on the other hand, is determined by the European Commission. Therefore, we can expect the EU to introduce further cost-cutting measures without undertaking a fundamental reform of linguistic regime also in the future.

Let us consider now what would be the optimal approach if the EU were able to garner sufficient support for a linguistic-policy reform aimed at reducing the number of official languages. How many official languages should the EU optimally maintain and which ones? Fidrmuc, Ginsburgh and Weber (2009) address this question and point out that the decision on the optimal number of official languages is ultimately a political one. Instead, they seek to identify the optimal sequence of languages: ordering the 23 languages currently used by the EU according to their contribution to reducing linguistic disenfranchisement. In other words, they identify the optimal sets of official languages for between 1 and 23 languages such that each optimal set of languages results in lower overall disenfranchisement than any other alternative set of languages of the same size.

Table 7, reproduced from Fidrmuc, Ginsburgh and Weber (2009), presents the result. It reports the optimal ordering in which languages should be given the official status, should the EU decide on the choice of official languages anew. Alternatively, for any number m of official languages chosen by the EU decision makers, it reports what should be the m th language and also which languages should be given the official status before it. For each step in the sequence, the table also reports the resulting linguistic disenfranchisement.

The first three languages are, not surprisingly, English, German and French. It is interesting to note that German does slightly better than French in reducing linguistic disenfranchisement as the second language in the sequence (see also Fidrmuc, Ginsburgh and Weber, 2004). With these three languages only, just over one third of Europeans remain disenfranchised. Italian, Spanish and Polish are the next three languages. Choosing these six languages would result in a disenfranchisement corresponding to approximately one sixth of the EU population. Once these six large languages are introduced into the sequence, adding additional languages leads only to modest reductions in disenfranchisement (and these gains are typically limited to a single country). The position of each language depends again not only on the number of speakers of each language but also on their ability to speak languages that have already been introduced into the sequence. In this way, for example, Hungarian appears in the eighth position, well ahead of languages such as Dutch and Swedish, which are spoken by larger or similar numbers of people. Note that several languages deliver approximately the same reduction in disenfranchisement: this is indicated by listing several

alternatives for the same position in the sequence.¹³ Finally, the analysis is ended when the remaining disenfranchisement falls to 1%; this target is attained with 19 languages. With merely 1% of the EU population still linguistically disenfranchised, the gains from adding the additional four languages are very limited.

Insert Table 7 about here.

Fidrmuc, Ginsburgh and Weber (2009) also construct similar sequences considering only young people (thus adopting a forward-looking approach and estimating disenfranchisement that would result in the future, assuming the coming generations will have the same linguistic proficiency as those currently young) and a sequence that considers linguistic proximity between languages (thus in effect assuming that one is not fully disenfranchised if a close enough a language is given the official status). The resulting sequences are broadly similar to that in Table 7 (except Polish and Hungarian are placed at higher positions in the sequence accounting for linguistic proximity as they share little similarity with the languages preceding them).

Of course, the preceding analysis does not say which of these sets should be chosen. It only specifies which languages should be included in a set of official languages of size m , should the EU decision-making bodies choose to restrict the set of official languages to m . However, Fidrmuc, Ginsburgh and Weber point out that the marginal gain from adding additional languages falls sharply after the first six languages: English, German, French, Italian, Spanish and Polish. Therefore, choosing these six languages as the official languages of the EU might be a reasonable compromise solution, one that would result in relatively modest residual disenfranchisement rate.

As I emphasized above, the probability of reaching a consensus in favor of linguistic reform in the EU is rather low, given that the reform would need to be approved with unanimity support. Nevertheless, if such a reform is implemented, then its benefits are likely to go beyond cost savings. Fidrmuc and Fidrmuc (2010) consider the impact of proficiency in foreign languages on international trade. It is well established in the trade literature that countries that share the same official language tend to trade more with each other. Fidrmuc and Fidrmuc, however, go one step further by considering also languages that are widely spoken as foreign ones. Specifically, they compute probabilities that two random individuals from two countries will be able to communicate together in English, French or German (regardless of whether the individuals are native speakers of any of these languages or whether they have learned them as foreign languages). They find that linguistic skills, and especially English, exert a significant and positive effect on trade flows in Europe. For example, their results suggest that raising proficiency in English in all EU countries to the level prevailing in the Netherlands would be expected to increase trade in Europe, *ceteris paribus*, by approximately three quarters.

The gains from improving linguistic skills of Europeans are thus comparable to those that were envisaged from introducing the common currency in Europe. Crucially, while adopting a common currency is costly because a country must give up its national currency and autonomy over monetary policy, improving linguistic skills in foreign languages does not require abandoning national languages. Reducing the number of official languages in the EU

¹³ Note also that Russian, which is currently not an official language of the EU, would qualify for the ninth place in the sequence, the same position as Czech and Greek.

will increase the incentive for Europeans to invest into acquiring and improving proficiency in the core languages (importantly, changes in the linguistic regime at the EU level do not imply that the same linguistic-regime change would have to be implemented at the national level too). Once more Europeans speak English and other languages, trade between their countries is likely to grow and this will have a positive impact on economic growth and overall wellbeing.

Another crucial implication of multilingualism is its effect on innovation. At present, EU countries maintain their separate patent systems: an innovator seeking to protect their invention in all 27 EU countries must apply for patent protection in each country separately. This is costly: not only it necessitates multiple fees but the relevant technical documentation needs to be translated into each country's official language. According to Van Pottelsberghe and Francois (2006), the cost of filing and protecting a patent for 20 years amounts to approximately €130,000 in the EU, compared with €17,000 in both the US and Japan.¹⁴ As a consequence, the number of claims per year (a patent application is composed of on average 7 claims in Japan, 18 in Europe and 23 in the US) is 1 million in Europe, 3 millions in Japan and 8 million in the US.

Hence, increasing the use of English and/or formal linguistic reform in the EU has the potential to translate into important economic gains in terms of increased trade and greater innovative activity alike. Again, this does not necessitate that the status of the national languages is diminished in any way, only that English receives greater (formal or informal) recognition in parallel to them. Substantial gains thus may be available at little cost.

4 Conclusions

The linguistic regime that continues to be in effect in the EU, extensive multilingualism allowing each country to nominate its national language as an official language of the EU, may have been optimal when the process of EU integration began but it is neither optimal nor practical at present. In 1957, when the EEC was founded, it included six countries that had four official languages among themselves. The scope for European policy making and the impact of EEC policies and decisions on national legal environments were limited. Importantly, the linguistic skills of Europeans were limited as well and there was no clear candidate for a *lingua franca* among the four EEC languages.

At present, the EU has 27 member countries and 23 official languages. EU rules and decisions have wide-ranging impact on, and in fact supremacy over, policies and legal framework in the member countries. As the scope of EU activities and their legal and practical relevance increase, maintaining the same extent of multilingualism with 23 languages as with four languages in the past is increasingly difficult and costly. It is also increasingly less needed: present-day Europeans increasingly speak foreign languages and the future generations are likely to continue this trend. English clearly plays the dominant role in Europe at present: it replaced French as the main language used by the EU bureaucracy and it is the most common foreign language that Europeans choose to learn or that they consider important. While the EU institutions continue to pay lip service to multilingualism, the Europeans themselves increasingly gravitate towards English playing the role of the European *lingua franca*.

¹⁴ It is possible to file the application with the European Patent Office initially only in English, French or German. However, the application needs to be subsequently validated (and the documentation translated) separately for each country for each patent protection is sought. See Van Pottelsberghe and Francois (2006) for more details.

Introducing unilingualism in the EU formally, however, would be premature and politically unacceptable at present. The share of Europeans who speak English well enough, while increasing, is far from being adequate for that. Unilingualism would thus result in excessive linguistic disenfranchisement. Moreover, the costs of maintaining a linguistic regime with multiple languages (while being lower than the costs of 23 official tongues) is modest compared to the benefits that it would entail. A policy of multilingualism with six or perhaps as few as three official languages would serve the EU well: it would ensure that the vast majority of Europeans is not excluded from EU affairs while keeping the costs manageable and helping avoid some of the ills of the current regime such as translation delays and backlogs, errors, and excessive use relay translations. It would also be similar to the linguistic regime applied by other international organization such as the UN. Importantly, implementing linguistic reform now would preempt the further rise in costs and complexity of linguistic relations in the EU in the wake of future enlargements. Last but not least, adopting a more restrictive linguistic regime would increase the incentive for Europeans to learn foreign languages. This, in turn, would have positive spillover effects in terms of higher wages and better opportunities to travel, study or work abroad as well as for their countries by boosting trade within Europe as well as with the rest of the world.

Garnering political consensus for the reform, however, will be difficult as long as the present practice of applying unanimity to this policy area is maintained. Failure to implement the reform would lead to funds being spent on linguistic services that are increasingly of substandard quality and at the same time less and less required by the Europeans themselves.

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Table 1 Distribution of Main European Languages (native speakers and those with good or very good proficiency)

All Speakers	English	German	French	Italian	Spanish	Polish	Dutch	Russian	Turkish
Austria	45	99	6	5	2	0	0	1	1
Belgium	41	13	71	3	3	1	68	0	1
Bulgaria	16	6	4	1	1	0	0	25	10
Cyprus	51	2	5	1	1	0	0	1	0
Czech Rep.	16	19	2	0	0	2	0	15	0
Denmark	66	27	3	1	2	0	0	0	0
Estonia	25	8	0	0	0	0	0	68	0
Finland	31	5	1	0	0	0	0	1	0
France	20	5	99	5	7	0	0	0	0
Germany	38	99	8	1	2	2	0	8	2
Greece	32	6	5	2	0	0	0	2	1
Hungary	8	9	0	1	0	0	0	1	0
Ireland	99	2	9	0	1	1	0	0	0
Italy	25	4	10	97	3	0	0	0	0
Latvia	15	3	0	0	0	1	0	85	0
Lithuania	14	4	1	0	0	13	0	74	0
Luxemburg	39	88	89	5	1	0	1	0	0
Malta	68	1	5	35	1	0	0	0	0
Netherlands	77	57	19	0	3	0	99	0	0
Poland	18	10	1	1	0	98	0	12	0

Portugal	15	2	9	1	4	0	0	0	0
Romania	14	3	10	2	1	0	0	2	0
Slovak Rep.	17	18	1	0	0	2	0	20	0
Slovenia	41	21	2	9	1	0	0	0	0
Spain	16	2	6	1	98	0	0	0	0
Sweden	67	12	3	1	1	0	0	0	0
UK	99	2	9	1	2	0	0	0	0
EU27	37.4	24.9	19.9	13.3	11.1	8.4	4.9	4.6	0.5

Source:
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Table 2 Attitudes on Usefulness of Main European Languages

	Useful Language				Children Should Learn			
	English	German	French	Spanish	English	German	French	Spanish
Austria	73	2	15	8	85	2	29	10
Belgium	83	9	54	6	88	7	52	10
Bulgaria	65	34	11	5	87	49	13	6
Cyprus	93	17	34	3	98	18	50	2
Czech Rep.	68	56	5	2	90	68	8	4
Denmark	92	56	7	10	94	64	12	13
Estonia	71	14	2	1	93	23	7	1
Finland	86	18	8	4	84	24	11	3
France	81	19	2	36	90	25	2	45
Germany	81	5	27	13	89	3	44	17
Greece	74	30	21	4	96	50	34	3
Hungary	57	52	3	1	83	73	4	2
Ireland	4	37	58	34	3	42	65	34
Italy	82	15	25	15	85	17	34	18
Latvia	70	17	3	1	94	28	6	1
Lithuania	85	27	4	1	91	34	6	2
Luxemburg	37	60	82	2	61	41	81	3
Malta	88	5	12	2	89	12	23	2
Netherlands	93	48	19	16	90	40	22	22

Poland	70	45	5	2	89	69	7	1
Portugal	51	5	31	6	87	8	58	7
Romania	63	18	33	7	63	18	33	7
Slovak Rep.	70	60	4	1	87	74	7	3
Slovenia	79	61	4	2	97	69	7	3
Spain	72	11	32	5	85	14	44	3
Sweden	96	39	12	21	99	37	17	30
UK	4	29	63	33	4	36	72	38
EU27	67	22	25	15	76	28	33	19

Source: Special Eurobarometer 243: Europeans and their Languages, November-December 2005.

Table 3 EU27 Proficiency in Main European Languages by Age Cohorts (native speakers and those with good or very good proficiency)

	<i>All</i>	15-29	30-44	45-60	> 60
English	37	55	41	32	24
German	25	26	25	24	25
French	20	22	19	20	19
Italian	13	13	13	13	13
Spanish	11	13	11	10	11
Polish	8	8	8	8	8
Dutch	5	5	5	5	5
Turkish	0	1	1	0	0
Russian	5	4	5	5	4

Source: Special Eurobarometer 243: Europeans and their Languages, November-December 2005.

Table 4 Determinants of Proficiency in Main European Languages

	English		French		German		Italian	
Female	0.236 ^{***}	(0.059)	0.457 ^{***}	(0.084)	-0.045	(0.073)	0.368 ^{***}	(0.162)
Age	-0.065 ^{***}	(0.009)	0.005	(0.013)	-0.048 ^{***}	(0.010)	0.007	(0.023)
Age sqrd	0.0003 ^{***}	(0.0001)	0.0001	(0.0001)	0.0005 ^{***}	(0.0001)	-0.0001	(0.0002)
Married	-0.065 ^{***}	(0.047)	-0.048	(0.072)	-0.039	(0.057)	-0.361 ^{***}	(0.131)
Left-Right	0.031 ^{***}	(0.010)	-0.033 ^{**}	(0.015)	0.017	(0.012)	-0.031	(0.025)
Sec. education	1.272 ^{***}	(0.085)	1.014 ^{***}	(0.118)	0.874	(0.104)	0.888 ^{***}	(0.224)
Tert. Education	2.321 ^{***}	(0.088)	1.831 ^{***}	(0.126)	1.492 ^{***}	(0.108)	1.377 ^{***}	(0.248)
Still student	2.758 ^{***}	(0.123)	2.437 ^{***}	(0.187)	1.493 ^{***}	(0.163)	1.394 ^{***}	(0.343)
Self-employed	0.460 ^{***}	(0.086)	0.507 ^{***}	(0.130)	0.300 ^{***}	(0.119)	0.347	(0.243)
Manager	1.118 ^{***}	(0.073)	0.578 ^{***}	(0.115)	0.725 ^{***}	(0.094)	0.607 ^{***}	(0.207)
White collar	0.520 ^{***}	(0.071)	0.210 [*]	(0.116)	0.402 ^{***}	(0.096)	0.108	(0.224)
House person	0.059	(0.096)	-0.117	(0.149)	0.259 ^{**}	(0.130)	-0.512 [*]	(0.294)
Unemployed	0.128	(0.103)	0.089	(0.180)	0.032	(0.144)	0.024	(0.307)
Retired	0.177 ^{**}	(0.090)	0.190	(0.135)	0.235 ^{**}	(0.107)	0.184	(0.256)
Height	0.022 ^{***}	(0.003)	0.013 ^{***}	(0.005)	0.003	(0.004)	0.008	(0.009)
BMI	-0.091 ^{***}	(0.026)	0.014	(0.057)	-0.032 ^{**}	(0.015)	-0.052 [*]	(0.031)
BMI sqrd	0.001 ^{***}	(0.000)	-0.001	(0.001)	0.0003	(0.0002)	0.0005	(0.0004)
Small/medium town	0.305 ^{***}	(0.050)	0.296 ^{***}	(0.077)	0.101 [*]	(0.062)	0.172	(0.140)
Large town	0.730 ^{***}	(0.055)	0.376 ^{***}	(0.084)	0.184 ^{***}	(0.068)	0.183	(0.141)

Source: Special Eurobarometer 243: Europeans and their Languages, November-December 2005; own calculations.

Table 4 Determinants of Proficiency in Main European Languages (continued)

	Spanish		Russian		Dutch	
Female	0.202	(0.151)	0.102	(0.095)	-0.365	(0.268)
Age	0.011	(0.022)	0.153 ^{***}	(0.016)	0.022	(0.037)
Age sqrd	-0.0002	(0.0002)	-0.0014 ^{***}	(0.0002)	-0.0003	(0.0004)
Married	-0.293 ^{***}	(0.122)	0.096	(0.076)	-0.264	(0.216)
Left-Right	0.007	(0.028)	0.023	(0.015)	0.067	(0.052)
Sec. education	0.313 [*]	(0.180)	0.788 ^{***}	(0.137)	0.459	(0.350)
Tert. Education	0.692 ^{***}	(0.196)	1.430 ^{***}	(0.145)	0.988 ^{***}	(0.364)
Still student	1.363 ^{***}	(0.289)	1.205 ^{***}	(0.240)	1.281 ^{**}	(0.541)
Self-employed	0.947 ^{***}	(0.215)	-0.130	(0.144)	0.231	(0.414)
Manager	0.575 ^{***}	(0.211)	0.355 ^{***}	(0.121)	0.072	(0.373)
White collar	0.086	(0.221)	-0.052	(0.117)	0.253	(0.323)
House person	0.386	(0.242)	-0.190	(0.194)	0.608	(0.414)
Unemployed	0.234	(0.301)	-0.042	(0.161)	0.651	(0.401)
Retired	0.581 ^{***}	(0.233)	-0.246 [*]	(0.130)	0.228	(0.430)
Height	0.003	(0.008)	0.006	(0.005)	-0.023	(0.015)
BMI	-0.071 [*]	(0.040)	-0.044 ^{**}	(0.018)	0.016	(0.048)
BMI sqrd	0.0004	(0.0007)	0.0007 ^{***}	(0.0002)	-0.0003	(0.0005)
Small/medium town	0.104	(0.135)	0.135 [*]	(0.081)	0.148	(0.220)
Large town	0.381 ^{***}	(0.137)	0.190 ^{**}	(0.088)	0.515 ^{**}	(0.248)

Source: Special Eurobarometer 243: Europeans and their Languages, November-December 2005; own calculations.

Table 5 Costs per Person by Language, EU25

	Pop	Cost		Pop	Cost
German	90.1	0.6	Hungarian	10.1	5.4
French	64.5	0.9	Swedish	8.9	6.2
English	62.3	0.9	Slovak	5.4	10.2
Italian	57.6	1.0	Danish	5.3	10.4
Spanish	39.4	1.4	Finish	5.1	10.8
Polish	38.6	1.4	Lithuanian	3.6	15.3
Dutch	21.9	2.5	Latvian	2.4	22.9
Greek	11.3	4.9	Slovene	2.0	27.5
Portuguese	10.8	5.1	Estonian	1.4	39.3
Czech	10.3	5.3	Maltese	0.4	137.5

Source: Fidrmuc and Ginsburgh (2007)

Table 6 Costs per Disenfranchised Person by Language, EU25

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

Source: Fidrmuc and Ginsburgh (2007)

Table 7 Sequence of Optimal Sets of Official Languages, EU27

1	2	3	4	5	6	7	8	9	10a	10b	10c
EN	1 + GE	2 + FR	3 + IT	4 + SP	5 + PL	6 + RO	7 + HU	8 + PT	9 + CZ	9 + GR	9 + RU
62.6	49.3	37.8	29.5	22.4	16.4	12.9	10.9	9.2	7.7	7.7	7.7
11	12	13	14a	14b	15	16a	16b	17	18a	18b	19
10a+ GR	11 + BG	12 + NL	13 + FI	13 + SW	14a+ SW	15 + LT	15 + SK	15a+ SK	17 + LV	17 + DK	18a+ DK
6.2	5.0	4.0	3.3	3.3	2.7	2.2	2.2	1.7	1.3	1.3	1

Source: Fidrmuc, Ginsburgh and Weber (2009)

Figure 1: Proficiency in English (native, very good or good proficiency)

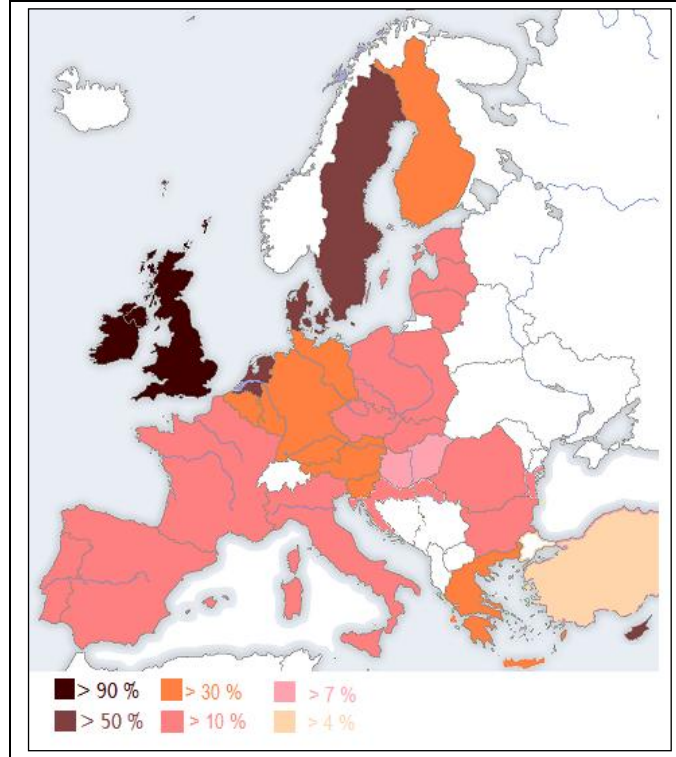


Figure 2: Proficiency in French (native, very good or good proficiency)

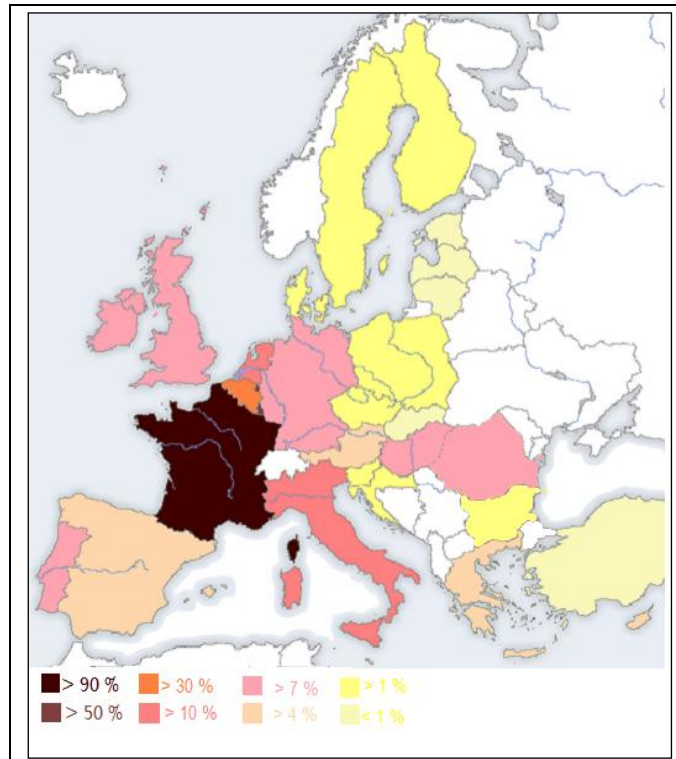


Figure 3: Proficiency in German (native, very good or good proficiency)

