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Does multilingualism pay off? Reflections on the economics of language

Abstract

Multilingualism is generally treated as a catalyst for the careers of individuals and as an asset for entire societies competing on an economic level. It may be a marker of social prestige and a requirement for a good job. It is also believed to open the eyes of citizens to diversity and to promote tolerance. But is such an image not a simplification? Most of the multilingual and multicultural societies around the world are not as affluent as the inhabitants of Luxembourg or Switzerland. It is also true that multilingual Yugoslavia or Rwanda suffered greatly from their multiculturalism. The largest economy in the world (USA) is practically monolingual while the second largest is linguistically very diverse (China). The languages spoken in metropolises in post-colonial countries are sometimes an asset and a valued skill (English in India) but also undesirable political baggage (Russian in the Baltic States). Actually, multilingualism is a complex phenomenon that can involve different types and levels of competence (e.g. understanding, speaking, writing, communicating) as well as languages that differ in their economic and cultural power.

The first part of the article defines the basic concepts of the analysis (language, multilingualism, information economics). It then formulates the two research hypotheses to be tested, together with a description of the data sources. The first hypothesis concerns the relation between multilingualism (linguistic diversity) and well-being while the second refers to the relation between the level of English spoken in a society and its prosperity. Greenberg's Language Diversity Index and the number of official languages in a country were used as a measure of linguistic diversity and the GDP per capita value as a measure of prosperity. The analysis showed that, on a global scale, there is no correlation between social multilingualism and the welfare of a country while the correlation between the level of English and the GDP per capita value is positive and significant.

1. Introduction

One of the undisputed and widespread "truths" in all developed countries in the world is the conviction that knowledge of foreign languages is a valuable asset, beneficial for professional and private use and, what is even more important, profitable. In principle, everyone can easily point out examples of people whose careers have allegedly been boosted by their knowledge of foreign languages and who, we believe, have improved their professional status and standard of living thanks to their linguistic expertise. The majority of Europeans also share the opinion that knowledge of many languages contributes to the alleviation of inter-

national conflicts and that the elementary communication barrier, i.e. not being able to speak other languages, generates a sense of alienation and hostility, even leading to war. They are supported by various experts who uncritically praise multilingualism.[1]

However, with an insightful, rather than selective, observation of the world, the above theses are difficult to justify. There are many successful monolingual professionals, and in countries such as the USA, Australia, China and Japan, even hundreds of millions. They only speak their own language (or possibly a regional dialect as well), and yet they fulfil themselves at work, earning a good wage, and if they want to, they travel abroad and explore the world. The example of multilingual Yugoslavia, on the other hand, shows that command of the languages of other nations or a shared state language in a federation of regions does not help to maintain peace. It was similar in the USSR, where the multilingualism of the population in the various republics did not increase general prosperity. One common language in a multinational state can even be considered a barrier to development because it often bears a colonial heel and is an obstacle to a full national identity. Poles and Hungarians, on the other hand, although they do not understand each other's languages at all, have been allies for hundreds of years: apart from minor episodes, they have not waged war and have shown solidarity in difficult moments of history.[2]

This work is a modest contribution to the discussion of multilingualism in an economic-political and, to a lesser extent, cultural context. However, modesty does not relate to a weakness in the methodological apparatus used, a limitation of data resources or the scope of potential inferences. Rather, it is about the desire to avoid a discussion with the powerful mainstream of didactics, culture and academia, which has been promoting language learning for decades, if not centuries. There are several reasons for this, from trivial ones, i.e. the limitation in length of a standard article, to the fact that the literature on this issue numbers hundreds of texts, as in addition to strictly academic work, published in many languages of the world, there is a vast amount of official (administrative, governmental) documentation related to language policy, the multilingual European Union being particularly productive in this respect. The fundamental issue is, however, that myths are difficult to

[1] www.weforum.org/agenda/2018/02/speaking-more-languages-boost-economic-growth/, https://theconversation.com/why-multilingualism-is-good-for-economic-growth-71851, www.caslt.org/files/learn-languages/pch-bilingualism-lit-review-final-en.pdf.

[2] In 1920, for example, Hungarian supplies of weapons and ammunition helped the Polish army to stop near Warsaw and reject to the east the Bolsheviks heading for Berlin and Paris. Deliveries from the west and by sea were then blocked because German and French workers went on strike. They believed in the sense of a global communist revolution in which "bourgeois" Poland, which was defended against the Bolshevik invasion by all strata of society (including the working class), was not only a military obstacle but also an argument undermining the Marxist vision of the world.

dispute because they have a specific immune system that guarantees resistance to rational argument (and the unconditionally beneficial influence of multilingualism on humans is a myth).

At the beginning I explain the terms used, such as language, multilingualism (including linguodiversity) and economic prosperity. Next, I put forward a series of hypotheses concerning the economic potential of multilingualism, indicating those which are verifiable in practice and those which are only theoretically verifiable. One such hypothesis is then verified using statistical data from various international institutions. The work ends with conclusions that challenge the myth of multilingualism, which allegedly has an unquestionable and unambiguously positive impact on social reality.

2. Concepts

The basic concept, which is extremely important for further deliberations, is language. One can, of course, wonder why it is necessary to define something that has been defined by researchers and laymen for centuries and about which almost everything has been said. However, the problem is that linguistic or sociolinguistic definitions are not appropriate in this case while there is no satisfactory definition of language considered from an economic perspective. Taking the experience of Europe and other developed countries into account, the following formula can be proposed: "Language is one of the information subsystems, which constitute a system of state administration and management. It enables interpersonal and social communication in the fields of administration, economy and culture; it also builds a community of users, its prestige and economic potential" (cf. Pawłowski 2019). Using this definition, one can identify profitable, economically stable and deficient languages. Profit-making languages give their users an advantage over their environment which can be felt in the form of access to better paid work and faster career advancement. Economically stable languages guarantee a return on investment in education because they ensure cohesion and administrative efficiency (one example of such investments is teaching the "national language" at school that apparently everyone speaks as well as maintaining the "national philology" at an academic level). Finally, deficient languages are only sustained by external funding; without it, they would fall into a state of vegetation and gradually decline.

The nature of this definition and the adopted research method limit our area of interest to the official state languages of individual countries. One might expect that data on this subject is easy to obtain and will not raise doubts like, for example, the status of dialects or various mixed codes. This is not the case, however, because individual countries have their own traditions of language policy and have different approaches to this issue. A language may have an official status, for example, on the whole or only a part of a country's territory or it may not have an official status and yet remain in common use (this is especially true of post or neo-colonial

countries). Finally, it can happen that the official status of the language is mainly symbolic (the example of Irish in Ireland). For the purposes of this work, the category of "principal languages", found in the Ethnologue database, was used in disputed cases.

The definition of multilingualism is much more complex. Seemingly obvious (every language user thinks they understand it), this term actually refers to a whole complex of phenomena and needs to be explained, especially since it occurs in both academic and popular discourse. Multilingualism is defined as "the ability of an individual or of a group to communicate in at least two languages". Multilingualism can therefore have an individual or societal character. In both cases it can be voluntary, imposed or inherited; besides there are different mixed forms. It can also include a different number of languages (not necessarily two), their status does not have to be equal in legal or practical terms (diglossia, bilingualism). Furthermore, there are different levels and types of competence (understanding, speaking, writing, active and passive knowledge) as well as social aspects (differentiation of language knowledge by social background, occupation, status, gender, etc.). In the case of societal multilingualism, one can also mention its structure. There are two possibilities here, namely the melting pot model and the mosaic model (also called the salad model). The first one assumes a deep mix of communities and a common knowledge of two (or more) languages while the second one occurs in highly atomised societies, where within a single political nation there are separate groups with a strong cultural or religious identity which use their own languages. On a nationwide (e.g. federal) level, these groups are expected to communicate using some kind of community code.

Even a cursory arrangement of this very complex global situation is virtually impossible. Therefore, as already mentioned, I propose using three measures as a numerical approximation of multilingualism, allowing us to analyse the correlation of this parameter with economic indicators. The first is the Greenberg Language Diversity Index (LDI), the second is the number of official languages or "principal languages" (according to the Ethnologue website) and the third is the percentage of the population that speaks English (as their L1 or L2, irrespective of the level). Greenberg's index of diversity is the probability that two people selected from the population at random will speak different mother tongues. Its values range from 0 to 1: 0 means that all citizens speak the same tongue and 1 means that every citizen speaks a different tongue.[3] A higher LDI value, therefore, means a higher level of linguistic diversity. It is worth mentioning that LDI is constructed according to the same principle as other measures of population or set diversity, amongst which the most popular are the so-called Good's measures.

[3] LDI values can be found on the website http://chartsbin.com/view/7j7 (cf. Harmon/Loh 2010). In addition, there are many graphics in public resources that illustrate linguodiversity around the globe.

The second group of terms used here refers to economics. The domain linking linguistics with economics is language economics (Gassola et al. 2015). Closely related to language policy, it concerns a wide range of economic aspects of information and language communication management in a country. It differs from language policy, however, because it should be devoid of any reference to ideology. Its specific areas of interest include the financial implications of maintaining and managing an official language or minority languages. In addition it deals with the profit and loss account in the context of developing internal multilingualism and external language promotion.[4]

The basic economic concept used as an independent variable in the research presented below and against which various measures of linguodiversity will be correlated is economic prosperity. Prosperity (welfare, well-being) is a complex phenomenon involving many factors (cf. Grin/Arcand 2013). However, it can be approached using some quantitative measures, such as:

– Gross Domestic Product (GDP, when necessary adjusted for population size),
– GDP per capita,
– Purchasing Parity Power (PPP),
– salary (average and/or median).

Sometimes complementary measures of prosperity are applied which indirectly reveal what is commonly referred to as quality of life, including:

– life expectancy,
– infant mortality,
– level of literacy,
– substitute measures (clean air, 1m^2 of an apartment, or even a Big Mac).

Here a strictly economic perspective will be applied, which means that only basic economic parameters, namely GDP per capita and not complementary indicators will be used as a measure of prosperity.

3. Data

As mentioned earlier, calculating the above parameters for all states and dependent territories in the world would exceed the framework of this publication. However, there are specialised international institutions which publish their statistics in open resources. The available sources have different profiles, which are generally derived from the type of institution that manages the database concerned. Exploration of information space allowed me to distinguish four types of resources here:

[4] 'Language economics' and 'language economy' (or the 'economy of language') are quite different issues. The former relates to the economic aspects of language management while the latter belongs to cognitive science and is related to the internal organisation of the language system based on the principle of the least effort.

economic, linguistic, general and based on social networking. The most complex group of sources is, of course, the one described as 'general'. Without going into details (generally available on the database websites), only the sources used at the different stages of the study are listed, namely the World Bank (economic), the Organisation for Economic Co-operation and Development (OECD, economic), the Central Intelligence Agency (general), the NationMaster database (economic), the Eurobarometer and Eurostat (general), Ethnologue (linguistic), the Summer Institute of Linguistics (linguistic), Quora (question-and-answer website, general) and Wikipedia (general). In addition, various social media and selected national statistical institutions were consulted.

The research covered all countries of the world and dependent territories insofar as data were available. In addition, analyses were carried out for subgroups, such as OECD countries or Europe. For the "principal language" vs GPD per capita correlation studies, 185 countries and territories were analysed; for the English vs GDP per capita correlation, 109 countries and territories were analysed; for the LDI vs GDP per capita correlation studies, 177 countries and territories were included. The correlations for the OECD, Europe and EU countries included 36, 35 and 28 countries respectively.

4. Hypotheses

The potential research hypotheses can be divided into those that relate to the situation of individuals and those that relate to entire societies. In the first group, the most convincing investigation would be a correlation test between foreign language skills and salary levels or positions in the hierarchy to indicate whether 1) the career paths of multilingual people are more attractive than those of monolingual people; 2) multilingual people in similar positions, with similar seniority and age, actually have different incomes. This would confirm or refute the hypothesis that knowledge of foreign languages is a career catalyst.

In the second group, the hypothesis of a correlation between societies' multilingualism and their level of prosperity (H2) can be proposed as the most important. The third hypothesis (H3) concerns an indirect measure of multilingualism: a correlation between the level of English in a society (as the L1 or L2) and welfare is explored.

The first hypothesis (H1) sounds very attractive but its verification is impossible. No company or institution would make earnings data available, and even if it did, a comparison with historical data would be necessary, additionally taking some foreign language standards into account. There is also the issue of the cultural environment (an external factor) and corporate governance of the company (an internal factor). It is thus probable that the same absolute numbers would mean something different in different contexts. However, it is possible to test the

second (H2) and third (H3) hypotheses based on the previously presented aggregate data for countries of the world. The indicator of multilingualism may be LDI (assuming that it was calculated using the same method for all countries of the world) and/or the number of official languages (except for minority languages). The commonly accepted measure of prosperity is GBP per capita.

5. Results

The analysis of the statistical correlation between the level of prosperity and the number of "principal languages" in a country, carried out on a global scale, yields a result which allows us to reject the H2 hypothesis (the allegedly beneficial impact of social multilingualism on the economy). The study conducted on data from 185 countries revealed that the Pearson correlation coefficient of both variables is close to zero: 0.061 (the average number of "principal languages" per country was 1.611).

The same hypothesis (H2) was subjected to another test: instead of the number of "principal languages", Greenberg's language diversity index (LDI) was used. The result obtained from a sample of 177 countries, with an average LDI level of 0.452 per country, resulted in a negative Pearson correlation coefficient of -0.174. Not only does this not confirm the hypothesis of the beneficial impact of multilingualism on welfare, it even suggests that excessive linguistic diversity is a characteristic of less prosperous countries; it might be therefore a constraint on their economic development.

The third test (H3) referred to the possible correlation between the level of prosperity and the percentage of people who speak English in society. English as an L1 and an L2 was treated in the same way so for some countries the ratio was 1 (100%). The analysis carried out on a set of 109 countries (no more data were available in information resources) gave a positive and significant value: 0.601. This result indicates that there is a positive correlation between knowledge of English in a society and its level of prosperity. However, it should be borne in mind that multilingualism is not the only factor considered here as countries such as the USA, Australia, New Zealand or the United Kingdom are monolingual in the light of the adopted criteria.

The data on the correlation between the two variables made it possible to calculate the percentage of GDP per capita (independent variable) that is theoretically explained by knowledge of English in the society (dependent variable). This interesting coefficient, usually marked as R^2, is defined on the basis and model of linear regression. In simple terms, it can be said that R^2 is the percentage of information contained in the data that is explained by the model. Here the value of R^2 is 0.36, which, with a purely technical interpretation, might indicate that command of English contributes to the creation of as much as 36% of GDP per capita (on

average). However, a more reasonable interpretation must consider the fact that GDP is actually affected by a myriad of various factors and only taking most of them into account as variables could show the real impact of language on the welfare of the country.

An interesting result was obtained by carrying out these tests on smaller sets of countries, namely in Europe, among OECD countries and in the European Union. Everywhere, knowledge of English correlated significantly with a high GPD per capita while LDI and the number of "principal languages" did not show such correlations (Table 1).

	Greenberg's LDI vs GDP per capita	Number of languages vs GDP per capita	English vs GDP per capita
World	-0.174	0.061	0.601
Europe	0.232	0.0	0.682
OECD	0.312	0.214	0.655
European Union	0.243	0.089	0.603

Tab. 1: Multilingualism and English correlated with GDP per capita

6. Conclusions

As already mentioned in the introduction, multilingualism is a complex and difficult category to define. Nevertheless, there is a widespread belief in most societies that knowledge of foreign languages is beneficial from a professional and financial point of view. However, an empirical study of the correlation between multilingualism and the level of state prosperity (welfare) does not confirm this view. Multilingualism as measured by the number of official languages does not correlate at all with the level of prosperity as measured by GDP per capita. Moreover, the correlation of linguistic diversity, as measured by Greenberg's LDI index, with GDP per capita, even indicates a weak negative value. This would imply that an overabundance of languages reduces the average level of prosperity in a country and its chances for dynamic development. Interestingly enough, this state of affairs seems to have been persistent so far, as similar conclusions were drawn by a study conducted almost 30 years ago by Florian Coulmans (1992). In contrast, positive and significant correlations were found when comparing GDP per capita and the level of English. This suggests that the key to economic success is not multilingualism but English (or, implicitly, any global lingua franca).

Does this mean that studying foreign languages is not worthwhile? Of course not, because the world average does not adequately describe the situation in various regions. In particular, the issue of post-colonial countries is important here, where

there is pressure to emigrate economically to the former states of the metropolitan area, combined with imports of capital and innovation. This means that in Central and Eastern Europe, for example, German and, to a lesser extent, Russian would be sought after in the labour market (economic emigration to Germany, Austria and Switzerland, working in satellite branches of companies from these countries, working in the largest urban centres in Russia). In North Africa, in turn, French remains a useful language for professional purposes, despite decades of Arabisation policy. The average result does not explain the situation of countries with a small population either, whose languages are not used internationally (numerous European countries, Scandinavia, for example). There, the requirement for multilingualism is obviously also extremely important.

However, on a global scale, it seems that societal multilingualism reduces the chances of development because it is very costly and undermines the cohesion of the country. It is not surprising that only rich countries allow themselves the luxury of maintaining it (and some of them even benefit from it, witness Switzerland, Malta, Luxembourg, Singapore and, until recently, Hong Kong). In these countries, various cultures, religions and languages have not divided and blown up the states from within, and their authorities have so far succeeded in constructing a political rather than an ethnic nation. However, these successes have been bought at great expense and effort on an educational and administrative level. Therefore they do not counterbalance the success of large monolingual countries (toute proportion gardée USA, China, Japan, Australia, some countries in South America, Germany or France). Even in rich, democratic and highly developed Canada, the French of Quebec is not considered to be an absolutely positive factor as it might cause the whole country to disintegrate.[5] Multilingualism, as perceived by Europeans, therefore appears to be a specific and unique feature of their continent which has been shaped by centuries-old, often small nation states committed to their tradition and identity that have always resisted colonisation pressure from their bigger neighbours.

So if we are talking about the beneficial effects of multilingualism, they should be sought using the criterion of the profession. Virtually everyone who decides to work in multinational companies, to emigrate, to work as a journalist, politician or scientist has to comply with this requirement. And that is not a problem because these professions attract people who value intellectual challenges, are open-minded and interested in diversity. However, for hundreds of millions of employees doing their work on a permanent basis, especially in large and populous countries, maintaining multilingualism is only an expensive hatchback.

[5] There is a wealth of political and linguistic literature on this subject. But for the author of this text, there is one entirely subjective argument for maintaining the bilingualism of Canada at any price: the perfect French and English versions of Celine Dion's songs.

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