

# Empire, War, and Hollywood

## The Economics of the English Language

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## Abstract

English is a pervasive language in today's world, and empire, war, and Hollywood are socio-cultural ways in which English has asserted its influence. No matter what country you live in you are bound to be exposed to it in some way, most likely on a daily basis. The genesis of English as the world's *lingua franca* has been a long and complicated process, but the language's continuing importance cannot be denied. The role that economics has played in English's ascent as a world language is little discussed, but significant. Likewise, little has been written of the effects of English proficiency, namely English as a second language, on economic growth. Establishing causation for this relationship is a delicate matter and will be investigated through the course of this paper. The outline of this paper is as follows. After a brief history of the ascent of English, an inquiry into the economic basis for English as a *lingua franca* ensues. The result of this indicates that in addition to socio-cultural forces English possesses an unparalleled economic might. Next, the effects of English proficiency on national prosperity are observed through various mechanisms. The results suggest positive effects of English proficiency on GDP per capita with varying degrees of significance depending on the dataset. A study of sub-Saharan Africa then makes the case that English has little effect there. Finally, a discussion section attempts to tie the data together positing that English proficiency has greater economic effect in developed nations than in developing ones.

## Abstrakt

Engelsk er i dag et verdensomspennende språk, og imperium, krig, og Hollywood er sosio-kulturell arenaer hvor engelsk har hevdet sin innflytelse. Uansett hvilket land man bor i er man bundet til å bli utsatt for det i en eller annen form, sannsynlig på en daglig basis. Tilblivelsen av engelsk som verdens *lingua franca* har vært en lang og komplisert prosess, men språkets fortsatt betydning kan ikke nektes. Rollen som økonomi har spilt for engelsks oppstigning som et verdensspråk har blitt lite diskutert, men er likevel betydelig. Videre har det vært skrevet lite om effektene av engelskkunnskaper, nemlig engelsk som andrespråk, på økonomisk vekst. Etablering av kausalitet for dette forholdet er en delikat sak og vil undersøkes gjennom denne artikkel. Omrisset av denne artikkel er som følger. Etter en kort historie om fremveksten av engelsk, følger en diskusjon rundt den økonomisk basisen for engelsk som et *lingua franca*. Resultatet av denne indikerer at i tillegg til de sosio-kulturell kreftene engelsk, så besitter engelsk en uovertruffen økonomisk makt. I tillegg så er effektene

av engelsk kompetanse på nasjonal velstand observert gjennom en rekke mekanismer. Resultatene foreslår positive effekter av engelsk kompetanse på BNP per innbygger med varierende grader av signifikans avhengig av datasettet. En studie av Afrika sør for Sahara sier derimot at engelsk har liten effekt der. Til slutt følger en liten diskusjon seksjon som forsøker å knytte sammen data og postulere at engelsk kompetanse har større økonomisk effekt i utviklede land enn i utviklingsland.

## Résumé

L'anglais est une langue omniprésente dans le monde d'aujourd'hui, et l'empire, la guerre, et Hollywood sont des moyens socio-culturels via lesquels l'anglais a affirmé son influence. Peu importe le pays dans lequel vous vivez, vous êtes forcément exposé à l'anglais au quotidien. La genèse de l'anglais comme *lingua franca* dans le monde a été un processus long et compliqué, mais l'importance continue de la langue ne peut pas être niée. Le rôle de l'économie dans cette ascension, bien que rarement évoqué, est majeur. De même, peu sont ceux qui ont étudié les conséquences de la maîtrise de l'anglais, en tant que deuxième langue, sur la croissance économique d'un pays. Etablir la causation de cette relation est la question délicate qui va être étudiée au cours de cet article. Le plan de l'article est le suivant. Après une brève histoire sur l'ascension de l'anglais, la dimension économique de l'anglais en tant que *lingua franca* est étudiée. Les résultats de cette enquête indiquent qu'en plus de forces socio-culturelles l'anglais possède une puissance économique sans pareil. Ensuite, les effets de la maîtrise de l'anglais sur la prospérité national seront observés via divers mécanismes. Les résultats suggèrent un effet positif sur le PIB par habitant avec des degrés d'importance variables en fonction de l'ensemble des données. Une étude de l'Afrique sub-Saharienne montrera cependant que la pratique de l'anglais n'a pas toujours de répercussions positives. Enfin, une section de discussion tentera de lier l'ensemble des données prouvant que la compétence en anglais a un plus grand impact économique dans les pays développées que dans les pays en développement.

## Resumen

El inglés es un idioma penetrante en el mundo hoy, y el imperio, la guerra, y Hollywood son maneras socio-culturales en que el inglés ha afirmado su influencia. No importa en cual país vive, la exposición al mismo es inevitable y probablemente todos los días. El génesis del inglés como *lingua franca* en el mundo ha sido un proceso largo y complicado, pero la

importancia continuada del idioma no puede ser negada. El rol de la economía en esta ascensión, mientras raramente evocado, es significativo. Del mismo modo, pocos son los que han estudiado las consecuencias del dominio del inglés como segunda lengua en el crecimiento económico de un país. Establecer causación para esta relación es un asunto delicado y va estar investigado a través del curso de este artículo. El plan de este artículo es el siguiente. Después de una breve historia del ascenso del inglés, la dimensión económica del inglés como *lingua franca* es estudiada. Los resultados de este estudio indican que además de las fuerzas socio-culturales el inglés posee un poder económico sin paralelo. Próximo, los efectos del dominio del inglés en prosperidad nacional están observados por diversos mecanismos. Los resultados sugieren un efecto positivo sobre el PIB per cápita con grados de importancia variables en función del conjunto de datos. Un estudio de África subsahariana muestra sin embargo que la práctica del inglés no tiene siempre repercusiones positivas. Por último, una sección de discusión intenta atar los datos juntos postulando que competencia en inglés tiene un mayor impacto económico en los países desarrollados que en los que están en desarrollo.

*“Dass die Nordamerikaner englisch sprechen.”*

“That the North Americans speak English.”

-Otto von Bismarck, German Chancellor, c. 1890, when asked what the greatest political fact of modern times was.

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## Introduction

Many variables have been used to explain economic growth. Among them are technical prowess, human capital, economic freedom, economic competitiveness, economic complexity, religion, distance from the equator, and the list continues. Missing from this list is language. Rarely do we hear people extolling the virtues of the German language on economic growth, or Japanese, or Urdu for that matter. And why not? Surely if religion can be used to explicate economic growth<sup>1</sup>, language could as well. Is it not logical that language could have an effect on a populace<sup>2</sup>, or more prudently that the ability to speak a specific language can have identifiable consequences in economic terms? The ability to converse and understand a multitude of languages enhances one's ability to share and also absorb knowledge. But is there one language that is necessarily more important than others, at least in terms of taking part in a global marketplace and the exchange of knowledge? In today's world the obvious answer to this question for most people is clear: English.

English has emerged as the world's lingua franca, a language of convenience for the world's 7 billion people who speak in the neighborhood of 7,000 different languages. The number of people speaking English has increased exponentially in the last 70 years. Surely this has had repercussions over a vast amount of aspects, not least of all economic. More specifically, has this increased use of the English language had salient economic results that can be observed? Studies such as the English Proficiency Index have suggested that correlations do exist between English proficiency and the relative wealth of nations, but what is more ambiguous is the direction of causality between wealth and English proficiency. In layman's terms, the question can be asked as such, "Are countries rich because they speak English, or do they speak English because they are rich?" Or, likewise, is there some other variable that is simultaneously affecting economic growth and English proficiency, augmenting both? Additionally, how necessary is the ability to speak English for an economy? Can an economy thrive without adequate English abilities? If these questions can be sufficiently answered, important governmental policy implications can be addressed in regards to educational objectives.

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<sup>1</sup> the Protestant work ethic for example

<sup>2</sup> It has been shown that the mechanics of languages can have effects on savings rates, among many other facets. See work done by Keith Chen and Lera Boroditsky.

As the world has become increasingly globalized, the desire of people to do business across new frontiers in a global marketplace has grown dramatically. An enormous, but often overlooked barrier to these exchanges is language. The ability to speak a common language is an important determinant in being able to execute market interactions, and in many instances this means the ability to speak English. In addition, as companies expand their product lines globally, the ability of today's multinational corporations to access new markets is of paramount interest in achieving economies of scale. This means deployment across a number of nations and in multiple languages. Certainly, becoming conversant in Lao will help to sell products in Laos, but the marginal returns to learning Lao are small compared to the costs and effort. As such, firms would be wise to focus on languages where the returns are the highest. English, being the world's lingua franca, is sure to have amongst the highest returns on investment in this sense. Furthermore, the pervasiveness of English is also playing a role. Technical manuals, academic writing and research, etc. are often solely available in English, making knowledge of the language a necessity amongst educated knowledge workers across a variety of professions.

According to the endogenous growth theory economic growth is achieved by continued investment in a number of factors, among which is education, innovation, and human capital. Investment in these commodities leads to positive externalities and spillovers. Investment in the knowledge of any language, let alone English, creates positive spillover effects. For example, the English speaking abilities of a firm's employees not only benefit the firm through an increased ability to trade and do business with multiple partners, but also benefit those partners. As a further example, research results published in English are more likely to inspire further research than results published in Norwegian. Since language abilities are a form of human capital this serves to further perpetuate the idea that they are an important factor in economic growth. Based on these characteristics, theory would suggest that English proficiency has gained increased prominence as a component of economic growth.

In order to be able to observe any tangible effects of English proficiency on economic growth the first thing to do is isolate a variable that will affect the ability to speak English, but not economic growth directly. Looking solely at proficiency rates ignores the possibility of "reverse causation," or the idea that countries provide English education after they are rich. I.e. it is not sufficient to just analyze the trends in English proficiency and compare them with trends in economic growth. So what kind of natural phenomena can help with this analysis?



A simple idea is to look at exposure to English language television programming by non-native English speakers. More specifically, the use of subtitled English language television programming as opposed to television programming where dubbing is preferred can be investigated. First of all, watching TV is not really educational, per se. Unless a viewer has a profound interest in the History Channel, he is generally not learning much when he is watching TV, so the accruals to human capital can be considered slim. Subtitling a program retains the original language dialogue of the program while inserting text at the bottom of the screen in the viewer's language. This is opposed to dubbing where the program's original dialogue is replaced by one re-recorded into the viewer's language. There is no text, and there are rarely any remnants of the original broadcast language extant when dubbing.

In order to accomplish this, Test of English as a Foreign Language (TOEFL) scores, English Proficiency Index (EPI) rankings, and Business English Index (BEI) rankings are used to compare territories' English proficiencies according to their preferred translation method. Studies on television translation methods are utilized to determine the dominant practice across different territories. An important source involves a study by Media Consulting Group on translation practices across the European Union (EU) and European Free Trade Association (EFTA). Another source by Fong and Au entitled *Dubbing and Subtitling in a World Context* proved valuable. Wikipedia also provided broad-based data as a jumping off point. In certain instances, corroboration was sought from online forums and personal experiences.

Statistical regressions involve controls for education, linguistic distance, language size, and English as an official language. The data for education is from the Education Index published by the United Nations. Data for linguistic distance comes from Chiswick and Miller's *Linguistic Distance: A Quantitative Measure of the Distance Between English and Other Languages*. Information on language sizes comes from Ethnologue.

Another idea that can be used to isolate the effects of English on economic growth is to investigate the effects of any changes in English as a second language education funding in non-native English countries using a difference-in-differences model. Similar research can be made into countries that have made drastic changes in foreign language usage through policy. For instance, the country of Rwanda changed its official language of instruction in schools from French to English in 2008. Likewise, Gabon did the same in 2012. As such, any

discernible effects from this change could be used as further explication. This is accomplished by comparing the TOEFL test scores of selected African nations against Rwandan test scores.

The results of these efforts have indicated that English is indeed important in an economic growth context, but with a caveat. English language proficiency appears to be more necessary for those economies that are more highly developed and less so for those that still lack traction in the economic growth department. Metaphorically, English language proficiency is in more dire need in a country like France, a highly-developed Organization for Economic Cooperation and Development (OECD) member with relatively poor English skills, than a country like Tajikistan, one of the poorest nations in central Asia. For the countries near the bottom of the income scale getting the basic conditions for growth and stability in place are the most pertinent concern. Here English can be considered of secondary importance.

Above all, it should not be construed that English is the only determinant that propels economic growth. English cannot be a substitute for the other important mechanisms that ensure a well-functioning economy, such as effective governing, rule of law, reliable infrastructure, an educated workforce, etc., but should be considered instead as a compliment to these factors and institutions. Nor should this be considered support for linguistic imperialism. Having a variety of languages is something to celebrate, not denigrate. Not all transactions can occur in English, nor should they. The multitude of languages extant today will continue to be important in market contexts well into the future.

## **Background**

Here it may be necessary to give a little background on the evolution of English as a world language. This can provide some perspective that can help to explicate why it is that English is considered so important and the historical developments that took place allowing the language to proliferate beyond its initial geographical confines. The goal here is not to delve too much into the linguistic aspects of the history of English, but more the political factors that have propelled English into its current status.



This figure is the author's work.

At the outset of the British Empire a bit more than four hundred years ago the potential for English to become the global language was basically nonexistent. Fast forward to a post-World War II world in which American military, economic, and political dominance were made evident. In merely 350 years the probability of English as a global language went from practically 0 to practically 1. Subsequent developments like the collapse of the Soviet Union have only served to further bolster English's position.

The political history of English begins in earnest with the British Empire. Without giving too much history that is not relevant to the purposes of this paper and while rounding off a few numbers, it can be stated that this occurred a bit before 1600. In the face of successful colonization by rivals such as the Spain, Portugal, and the Netherlands, Britain quickly made up lost ground, literally. Over the course of the next 300 years British territories would span one quarter of the Earth's surface and one fifth of its population. The British brought with them and left behind many things during the course of their colonizing efforts, among them their language. However one may feel about colonization, there is no disputing its role in expanding the horizons of not only the British Empire but also the English language.

Nearly 200 years later the Industrial Revolution takes hold in Britain, the world's first economy to industrialize on a significant scale. As Britain began to supply the world with its industrial output and its economy grew so did its influence. Continental Europe and the United States lagged only slightly behind Britain in industrializing, but this head start proved pivotal in asserting Britain's dominance over the next century as well as playing a substantial role in cementing the role of English in the burgeoning global economy. As the US too began to industrialize and grow in economic power, the role of English became even more instrumental in international transactions.

As industrialization ran its course, it is another 100 years we must wait until a significant event occurs affecting the English language. This time, the event is not so much economic

success, but military success<sup>3</sup>. With the conclusion of World War I, and later World War II, the successes of both the United States and the Commonwealth in each conflict further propelled English to the main stage of international politics. Especially with the culmination of World War II there was no doubt about the future role of the United States in world affairs and as such the role of the English language.

Later developments furthered the position of English. In 1973 the UK and Ireland acceded to the European Union (EU) in its first expansion which saw English become an official language of the organization. The fall of the Soviet Union in 1991 left the United States as the world's lone superpower. Even the development of computing and the internet has been pioneered primarily by organizations within the US<sup>4</sup> and depends heavily on English, so much so that the internet today is disproportionately English-based with an estimate that 55% of its content is delivered in the language (W3Techs, 2014). While these events were significant for the English language, its position of dominance had largely already been established before their occurrence and merely served to reaffirm its preeminence.

These events provide a background which helps to explain the political basis for the current position of English in the world, a position which was far from guaranteed at the outset of the British Empire. No one agreed that English would be spoken as a lingua franca. There were no meetings, or councils, or votes<sup>5</sup>. The process by which English has emerged as a world language used beyond its home countries has been an organic one. English is not a world language due to any inherent superiority of the language, but rather due a number factors and events that have put the language in the right place at the right time.

### **The Case for English – The Economic Power of English**

English's position has emerged largely due to certain political events and luck. The political history given above describes the ascent of English, but why English and not some other language? Certainly cases can be made for other contenders as a lingua franca. English does not have the largest number of native speakers, nor is it necessarily the easiest language to learn. Surely the world's other major languages have enjoyed their own successes and are worthy of consideration as a lingua franca. So why English?

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<sup>3</sup> Though economics is intertwined. US industrial might surely facilitated an Allied victory in both world wars.

<sup>4</sup> ARPANET

<sup>5</sup> Muhlenberg Legend

A look at the world's largest languages by number of native speakers reveals the following.

**Table 1 – The World's 5 Largest Languages**



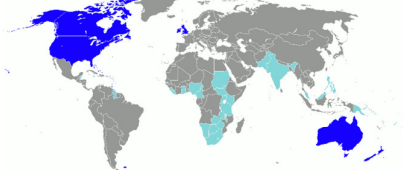
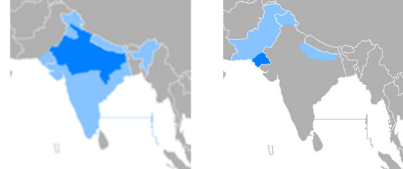
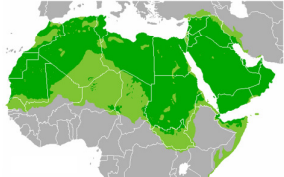
Rank	Language	L1 Speakers	Geography
1	Chinese	1,197,294,060	
2	Spanish	414,170,030	
3	English	335,148,868	
4	Hindustani	324,282,420	
5	Arabic	236,748,330	

Table 1 data comes from Ethnologue. The images come from Wikimedia Commons.

According to these estimates by Ethnologue the world's largest languages are Chinese, Spanish, English, Hindustani, and Arabic. English is for sure one of the larger languages, coming in third for number of native speakers, but larger by far is Chinese with more than twice the number of native speakers as Spanish, the second largest language which itself has about 80 million more speakers than English. Based on that information alone, with over 1 billion speakers and far outpacing the competition it would seem that Mandarin would be an obvious choice as an international language – the fewest people would have to learn it as a second language. But there is another perspective: economics.

Analysis of the economics of each language is necessary in order to really answer the question “Why English?” What does the economics of a language mean in this sense? Simply stated the idea is to compute the Gross Domestic Product (GDP) per language instead of computing GDP by political entities in order to determine the economic weight of the language. This simple idea yields a complex process. Languages are rarely so convenient as to follow political boundaries. Some languages are spread across multiple continents, countries, and parts of countries. Some of the world’s largest languages are language exclaves within but not contiguous with any political borders including several on the Indian subcontinent. The basic matter of what exactly constitutes a language is also at issue. For instance, are Hindi and Urdu distinct languages or dialects of the same Hindustani language? The estimates for the numbers of speakers are sometimes problematic in themselves. The data provided by Ethnologue, while comprehensive, is often compiled from sources dated as old as the 1980s. The complexities are numerous.

In this analysis weight is given on a country basis for those jurisdictions that predominantly speak a given language. Predominance is key here due to a number of factors. For one, simply considering countries where a language has official status can both grossly overstate the number of speakers as well as understate them. Consider India where both Hindi and English are official languages. Inclusion of India’s population would augment the figures for the number of speakers for both languages by 1.2 billion people (World Bank, 2014). This would be a gross overstatement in both cases for sure. Additionally, the US, UK, and Australia all lack an official language. Not including these countries in figures for the English language would be a gross understatement (Lewis, Simons, & Fennig, 2014). As stated previously, languages rarely conveniently follow national borders. Obviously with India’s population of more than 1.2 billion people but a Hindi-speaking population of 264 million some adjustments must be made. This example applies to nearly every language on the list as not all inhabitants of a given country speak the language of the majority. Countries like India and Russia display a considerable amount of linguistic variation within their borders while immigration has had a pronounced effect on the languages spoken within the United States and other countries. Within all countries there will be individuals who do not speak the language of the majority. Conversely, all of these languages contain vast diasporas outside their commonly associated geographies, but taking these populations into account would be prohibitively difficult and unnecessarily detailed to make the necessary conclusions.

As such, in order to be considered for inclusion in this analysis the language must be of special relevance in the country, usually by containing a majority of L1, or native, speakers. Once that prerequisite is met, L2 speakers, or second-language speakers, of the given language are taken into consideration to determine the country's language characteristics. The population must also not be largely bilingual. Consideration is given to jurisdictions with a population in excess of 250,000.

## Chinese

The largest issue with the computation of the GDP for Chinese concerns whether or not the Chinese languages with a common writing system but a lack of mutual spoken intelligibility<sup>6</sup> should be considered as a macrolanguage instead of the largest spoken variety, Mandarin. See Appendix 1 for more details on Chinese.

**Table 2 – Chinese**

Country	Population	GDP (\$)	GDP/capita
China	1,357,000,000	9,240,000,000,000	\$ 6,809
Hong Kong	7,188,000	274,000,000,000	\$ 38,119
Macau	566,400	51,750,000,000	\$ 91,366
Taiwan (ROC)	23,373,517	484,672,000,000	\$ 20,735
<b>Total</b>	<b>1,388,127,917</b>	<b>10,050,422,000,000</b>	<b>\$ 7,240</b>

Table 2 data is sourced from the World Bank with the exception of data for Taiwan, which comes from the International Monetary Fund (IMF), and the Government of Taiwan

## Spanish

Unlike many of the languages and despite the large geographical reach of Spanish, the language follows national boundaries fairly well. For more information on Spanish see Appendix 2.

**Table 3 – Spanish**

Country	Population	GDP (\$)	GDP/capita
Argentina	41,450,000	611,800,000,000	\$ 14,759
Bolivia	10,670,000	30,600,000,000	\$ 2,867
Chile	17,620,000	277,200,000,000	\$ 15,732
Colombia	48,320,000	378,100,000,000	\$ 7,824
Costa Rica	4,872,000	49,620,000,000	\$ 10,184
Cuba	11,270,000	68,230,000,000	\$ 6,054

<sup>6</sup> Gan, Hakka, Huizhou, Jinyu, Mandarin, Min Bei, Min Dong, Min Nan, Min Zhong, Pu-Xian, Wu, Xiang, and Yue (Lewis, Simons, & Fennig, 2014)

Dominican Republic	10,400,000	60,610,000,000	\$ 5,827
Ecuador	15,740,000	90,020,000,000	\$ 5,719
El Salvador	6,340,000	24,260,000,000	\$ 3,826
Guatemala	15,470,000	53,800,000,000	\$ 3,477
Honduras	8,098,000	18,550,000,000	\$ 2,290
Mexico	122,300,000	1,261,000,000,000	\$ 10,310
Nicaragua	6,080,000	11,260,000,000	\$ 1,851
Panama	3,864,000	42,650,000,000	\$ 11,037
Paraguay	6,802,000	29,650,000,000	\$ 4,359
Peru	30,380,000	202,300,000,000	\$ 6,658
Spain	46,650,000	1,358,000,000,000	\$ 29,110
Uruguay	3,407,000	55,710,000,000	\$ 16,351
Venezuela	30,410,000	438,300,000,000	\$ 14,413
<b>Total</b>	<b>440,143,000</b>	<b>5,061,660,000,000</b>	<b>\$ 11,500</b>

Table 3 data comes from the World Bank.

## English

The definition of an English-speaking nation is considerably more difficult than one would think. The difficulty with English lies in which nations to classify as English-speaking nations. According to Crystal, “There are some seventy-five territories in which English has held or continues to hold a special place” (Crystal, 2003). For more information pertaining to the figures for English see Appendix 3.

**Table 4 – English**

Country	Population	GDP (\$)	GDP/capita
Australia	23,130,000	1,561,000,000,000	\$ 67,488
Bahamas	377,400	8,149,000,000	\$ 21,592
Barbados	1,341,000	24,640,000,000	\$ 18,374
Canada	35,160,000	1,825,000,000,000	\$ 51,905
Guyana	799,600	3,076,000,000	\$ 3,846
Ireland	4,595,000	217,800,000,000	\$ 47,399
Jamaica	2,715,000	14,360,000,000	\$ 5,289
New Zealand	4,471,000	182,600,000,000	\$ 40,840
Trinidad and Tobago	284,600	4,225,000,000	\$ 14,845
United Kingdom	61,612,300	2,522,000,000,000	\$ 40,933
United States	316,100,000	16,800,000,000,000	\$ 53,147
<b>Total</b>	<b>450,585,900</b>	<b>23,162,850,000,000</b>	<b>\$ 51,406</b>

Table 4 data comes from the World Bank



## Hindustani

Hindustani is possibly the most difficult language for calculation. For one, the incorporation of Hindi and Urdu into the supra-language Hindustani is somewhat controversial. Yet despite some differences between the two languages they are largely mutually intelligible when spoken. For more information see Appendix 4.

**Table 5 – Hindustani**

Country	Population	GDP (\$)	GDP/capita
India	1,252,000,000	1,877,000,000,000	\$ 1,499
Pakistan	182,100,000	236,600,000,000	\$ 1,299
<b>Total</b>	<b>1,434,100,000</b>	<b>2,113,600,000,000</b>	<b>\$ 1,473</b>

Table 5 data comes from the World Bank

Taking into account that 57.7% of India's GDP and 78.6% of Pakistan's GDP are generated by their respective Hindustani-speaking population further reduces the amount of GDP attributable to a figure of about 1.3 billion US dollars.

## Arabic

The difficulty in calculating valuable data for Arabic lies in the vast number of dialects of Arabic. The non-contiguous nature also presents issues as, for example, not all speakers of Egyptian Arabic are located in Egypt. According to Ethnologue there are some 35 varieties of the language (Lewis, Simons, & Fennig, 2014). The easiest method for accounting the number of Arabic speakers is by aggregating the populations of each dialect and comparing this to the populations of countries that are generally conceived of as being Arabic-speaking. This proved to be a lengthy and complex process. For details on the calculations refer to Appendix 5.

**Table 6 – Arabic**

Country	Population	GDP (\$)	GDP/capita
Algeria	39,210,000	210,200,000,000	\$ 5,360
Bahrain	1,332,000	32,790,000,000	\$ 24,617
Egypt	82,060,000	272,000,000,000	\$ 3,314
Iraq	33,420,000	222,900,000,000	\$ 6,669
Jordan	6,459,000	33,680,000,000	\$ 5,214
Kuwait	3,369,000	183,200,000,000	\$ 54,378
Lebanon	4,467,000	44,350,000,000	\$ 9,928
Libya	6,202,000	75,460,000,000	\$ 12,167

Morocco	33,010,000	104,400,000,000	\$ 3,162
Oman	3,632,000	80,570,000,000	\$ 22,183
Palestine	4,170,000	10,240,000,000	\$ 2,455
Qatar	2,169,000	202,500,000,000	\$ 93,361
Saudi Arabia	28,830,000	745,300,000,000	\$ 25,851
Sudan	37,960,000	66,550,000,000	\$ 1,753
Syria	22,850,000	40,410,000,000	\$ 1,768
Tunisia	10,890,000	47,130,000,000	\$ 4,327
United Arab Emirates	9,346,000	383,800,000,000	\$ 41,065
Yemen	24,410,000	35,950,000,000	\$ 1,472
<b>Total</b>	<b>353,786,000</b>	<b>2,791,430,000,000</b>	<b>\$ 7,890</b>

Table 6 data comes from the World Bank

### English - By Numbers

The table below illustrates a comparison between the five major languages and the GDPs they generate. In reality, the figures are an approximation as they really represent the aggregated GDPs of various countries where each language bears significance. While the figures serve as a fairly reliable estimate, the most significant disproportionalities lie with Chinese and Hindustani. Hindustani is especially overstated with figures that are inflated by about 2/3. Regardless, this over-generous figure does not detract from the point.

**Table 7 – Languages by GDP**

Country	Population	GDP (\$)	GDP/capita
English	450,585,900	23,162,850,000,000	\$ 51,406
Chinese	1,388,127,917	10,050,422,000,000	\$ 7,240
Spanish	440,143,000	5,061,660,000,000	\$ 11,500
Arabic	357,676,000	2,795,593,000,000	\$ 7,890
Hindustani	1,434,100,000	2,113,600,000,000	\$ 1,473

For English, 450 million people generate a GDP in excess of 23 billion US dollars as of 2013. This amounts to 31.2% of the \$74.31 trillion of Gross World Product in 2013 (Central Intelligence Agency, 2014). The next closest language is Chinese, which generates a GDP in excess of 10 billion US dollars, less than half the figure for English. The other languages are comparably dismal. Spanish, with a very similar population to English generates a GDP that is less than a quarter that of English. Arabic and Hindustani fair even worse, generating GDPs are that 12.1% and 9.1% that of English respectively.

Looking at these figures, the continued dominance of English seems likely. The most salient threat comes from Chinese. With an extraordinary population and China's fast-growing GDP the most likely candidate to displace English as a world language is Chinese. Though in an economic sense, it will take many years for the GDP of the Chinese-speaking countries to rival that of the English-speaking ones. Other factors may stymie a switch to Chinese including its inherent difficulty to non-speakers. Additionally, English may become so entrenched as a world language in this timeframe that transitioning to a different language would be moot. Nonetheless, these numbers illustrate the Chinese language's indisputable and increasing importance.

Spanish, with its similar population size to English, has the second highest GDP per capita, yet is still considerably outpaced by English. Spanish-generated GDP seems unlikely to grow fast enough to be able to dethrone English from its position. Arabic, despite a number of stellar performers among its ranks, which mostly amount to the oil-rich Gulf States, also seems unlikely to supplant English from its top position. The population base, while considerable, is not significant enough to rival the GDP generated by English. Implausible gains would have to be made amongst some of the world's poorest nations in order for Arabic GDP to contend with that of English. Hindustanis, especially with their proclivity for English as a second language, are very unlikely to displace the English language with their native one. In fact, there are several much smaller languages that have larger GDPs than Arabic and Hindustani including Japanese and German.

Despite a considerable margin of error and obvious but unavoidable methodological shortcomings, the data nonetheless illustrates the point. The numbers above are loose estimates at best, but the differences are much bigger than the weakness of the data. English by far outdoes the competition. Even with the considerable margins of error necessary in this exercise there is no contest which language is the most economically powerful: English.

## **Economic Returns to English**

### **Individuals**

So, the world speaks English because it is a politically, culturally, and economically dominating language. But what is the point? Why are so many people motivated to learn English, or really any second language? Simply stated, speaking an additional language gives

an individual human capital. It makes that individual more valuable, for example, in the labor market. Speaking an additional language makes an individual more desirable as an employee. In order to maximize profitability an individual would be expected to prioritize by choosing the most prudent second language (or languages) so as to augment lifetime earnings the most.

A report by Euromonitor International studied the effects of English proficiency on individuals in Cameroon, Nigeria, Rwanda, Bangladesh, and Pakistan. The study found that average salary premiums for English speakers in these countries range from 5 to 30 percent over individuals that do not speak English (Euromonitor International, 2010). A study in Turkey by Di Paolo and Tansel also identified positive returns to language skills for English and Russian. The authors also identified a sliding scale in compensation commensurate with proficiency with fluent English skills garnering a 45 percent wage increase (Di Paolo & Tansel, 2013). Azam, Chin, and Prakash found similar results in India with English fluency yielding a 34 percent increase in wages for men and a 22 percent increase in wages for women. For India, the return is commensurate with English proficiency. The authors also found a complementarity between English abilities and education and experience, meaning more highly skilled fluent workers realize higher returns to English than less skilled fluent workers (Azam, Chin, & Prakash, 2010). Grin has found similar in results in Switzerland with English fluency garnering a 24 percent wage increase for men and a 25 percent wage increase for women (Grin, 2002).

From a human capital perspective, these results are unsurprising. In labor economics terms, investing in a skillset makes an employee more valuable. These results can provide an enlightening microeconomic foundation for macroeconomic phenomena. Surely this can be applied on a country basis. If individuals observe gains from English proficiency at the individual level, would it not be logical that a country (a group of individuals) would also experience gains from English proficiency?

### **Territories**

As stated in the introduction, one method for examining the effect of English on economic growth is to observe the effects from subtitled versus dubbed television programming on English proficiency across countries and compare these to economic variables. Again, subtitling would preserve the original broadcast language of programming and include text in the viewer's native language. Dubbing would replace the original language recording with

the viewer's own leaving few if any vestiges of the original language recording. Another method of translation called voiceover is classified as dubbing. This is due to the fact that with voiceover the primary audible language is the viewer's native one which is broadcast simultaneously with the original broadcast language but at a louder volume. Television watching in general would not usually be perceived as augmenting human capital or contributing to economic growth in any way. Hence, any gains in English proficiency from watching subtitled programming in its original language as opposed to dubbed programming can be considered exogenous to economic growth.

### **Data**

Available data for English proficiency comes from the Test of English as a Foreign Language, or TOEFL, which is administered by the New Jersey-based Educational Testing Service (ETS). Another source is the English Proficiency Index, or EPI, which is a product of the Swiss-based EF Education First. Yet another source is the Business English Index, or BEI, produced by Pearson PLC in the United Kingdom. Information published from the International English Language Testing System, or IELTS, was insufficient for inclusion in this analysis as data is only published for the 40 countries with the largest number of test takers.

TOEFL is a test administered throughout the world which assesses the English proficiency of non-native English speakers. It is available to anyone for a fee, though it is commonly taken by students looking to enter English-based higher education. Data from TOEFL is the most robust with published figures for 163 countries and territories in 2013. These include scores for comprehension in reading, listening, speaking, and writing, along with a composite total score. Scores are given on a territorial basis with the mean scores computed for any jurisdiction with thirty or more test takers, though the total number of test takers per territory is not divulged. The scores used below reflect the results from the TOEFL internet Based Test, or iBT. Scores for each of the four sections are out of a total of 30, with a total composite score maximum of 120 (Educational Testing Service, 2014).

The EPI was created in an effort to reliably measure the proficiency of adult English speakers. The 2013 edition of the EPI is the third release from EF Education First and contains data from 60 countries and territories. Test scores are compiled from 750,000 adult test takers, and territories with at least 400 test takers are included in the rankings. Testing

data for EPI comes from two different cohorts. One cohort is examinees who elect to take the test online of their own volition free of charge. The other cohort is obliged to take the test as a placement mechanism for an English course. Test scores are converted to a percentile and averaged together (EF English First, 2013).

The BEI was created as a benchmarking tool for corporate leaders both for their own staffs and as a gauge for competency in other potential markets. The 2013 release of Pearson's Business English Index is the third edition of the publication with data for 77 countries and territories. Data for this study was compiled from 137,000 of Pearson's subscribers. Territories with data from at least 50 test takers are included in the data. The data is presented on a scale of proficiency from 0 to 10 (Pearson English, 2013).

Unfortunately all three datasets suffer from selection bias. That is, only individuals with some self-professed knowledge of English who are interested in quantifying their proficiency partake. In the case of TOEFL takers this is often, but not always, for individuals looking to enter higher education, a subset that is likely to be more highly educated as well as more adept at English. For EPI, some test takers have an expressed interest in ameliorating their English capabilities. For BEI, English-speaking staffs are subjected to testing at the behest of their managers. Thus, these are not random samplings of their populations.

A number of studies have supported the idea that subtitled television programming can enhance foreign language acquisition, including works by Bianchi and Ciabattini, d'Ydewalle, Neuman and Koskinen, Rokni and Atae, European Union Eurobarometer Reports, and many others. A groundbreaking study by Micola, Bris, and Banal-Estañol titled *TV or not TV? The Economic Impact of Subtitling and English Skills* is possibly the first to broach the subject in economic terms. The authors used data from TOEFL test scores and an EU survey on English proficiency to study the economic impacts of subtitling on European Union/European Free Trade Association (EU/EFTA) and OECD countries.

Some of the studies from Micola et al. are reproduced here with the most recent datasets available. One study utilized by the authors was self-reported English proficiency as reported by individuals living in EU/EFTA countries. In the following analyses, this metric is dropped in favor of the EPI and BEI indices. In Micola's et al. study the year of the TOEFL data is not immediately clear. The following data for TOEFL, EPI, and BEI is from 2013 with the

exception of TOEFL data for the Netherlands for which 2013 data was unavailable. Data from 2012 is substituted in its place. Data for Malta, however, is nonexistent, likely due to its small population. English proficiency in Malta though is quite high with 89% of the population able to hold a conversation in the language (European Commission, 2006). Despite being an EFTA member, data from Liechtenstein is omitted from nearly all studies, again most likely due to its small population. In their study Micola et al. classify voiceover as dubbing, which is adhered to here. Since the authors' study the OECD and EU have both been enlarged. This is reflected in the data below with the inclusion of data for Chile, Croatia, and Israel. Countries and territories where English is the predominant language have been omitted from the analyses.

The following table contains data for 34 EU/EFTA and OECD countries. The table is adapted from Micola et al. with the addition of data for recently acceded EU and OECD countries. 2013 data for TOEFL test scores, EPI, BEI, and GDP per capita are represented below.

**Table 8 – EU/EFTA and OECD Countries**

Country	Translation Method	TOEFL Reading	TOEFL Listening	TOEFL Speaking	TOEFL Writing	TOEFL Total	EPI	BEI	GDP
Austria	Dubbing	24	26	26	25	100	62.66	5.23	44,149
Belgium *	Subtitling	24	25	24	24	97	58.74	6.45	40,338
Bulgaria	Voiceover	21	23	22	22	89		6.08	15,941
Chile	Dubbing	21	22	21	21	85	48.2	3.24	21,911
Croatia	Subtitling	22	24	23	22	91			20,904
Cyprus	Subtitling	19	21	22	22	84			29,450
Czech Republic	Dubbing	22	24	23	22	91	54.4	4.82	27,344
Denmark	Subtitling	23	25	26	24	98	65.15	5.43	42,764
Estonia #	Subtitling	22	24	24	23	94	65.55		25,049
Finland	Subtitling	23	25	24	24	96	62.63	6.39	38,251
France	Dubbing	22	22	22	22	88	50.53	5.18	36,907
Germany	Dubbing	23	25	25	24	97	58.47	5.12	43,332
Greece	Subtitling	23	23	22	24	92			25,651
Hungary	Dubbing	22	24	23	23	92	60.41	5.22	22,878
Iceland	Subtitling	22	25	24	23	95			39,996
Israel	Subtitling	22	25	24	22	93		5.37	32,760
Italy	Dubbing	24	23	22	22	91	50.97	5.1	34,303
Japan	Subtitling	18	17	17	18	70	53.21	4.29	36,315
Korea	Subtitling	22	21	21	22	85	53.46	5.28	33,140
Latvia	Voiceover	21	23	24	22	89	57.66		23,028
Lithuania	Voiceover	20	22	23	22	86			25,417

Luxembourg	Dubbing	23	24	25	24	97			90,790
Mexico	Dubbing	21	22	22	21	86	49.91	3.14	16,463
Netherlands ^	Subtitling	24	26	26	24	100	66.19	7.03	43,404
Norway	Subtitling	21	24	25	23	94	66.6	7.06	65,461
Poland	Voiceover	22	23	23	22	90	62.25	5.19	23,275
Portugal	Subtitling	23	25	24	23	95	57.52	5.47	25,900
Romania	Subtitling	22	23	23	23	91		5.72	18,635
Slovakia	Dubbing	21	23	23	23	90	54.58	4.83	26,114
Slovenia	Subtitling	23	25	24	24	86	60.19	5.88	28,298
Spain	Dubbing	22	22	22	22	89	53.51	4.43	32,103
Sweden	Subtitling	21	25	25	23	94	68.69	6.33	43,533
Switzerland	Dubbing	24	25	24	24	97	57.59	5.51	53,672
Turkey	Dubbing	18	19	19	20	76	49.52	3.3	18,975

Table 8 data comes from Educational Testing Service, EF English First, Pearson English, and the World Bank. TOEFL data exists for every country that is a member of the EU, EFTA, or OECD save Malta and Liechtenstein. For that reason these two countries have not been included. Smaller countries are sometimes absent from EPI and BEI data. Belgium is classified as a subtitling country due to the fact that Dutch-speaking Flanders has a greater population than French-speaking Wallonia. Estonia is classified as a subtitling country due to a sizeable Estonian-speaking area that uses subtitles compared to a Russian-speaking minority within the country where voiceover is more prevalent. Data for the Netherlands is from 2012.

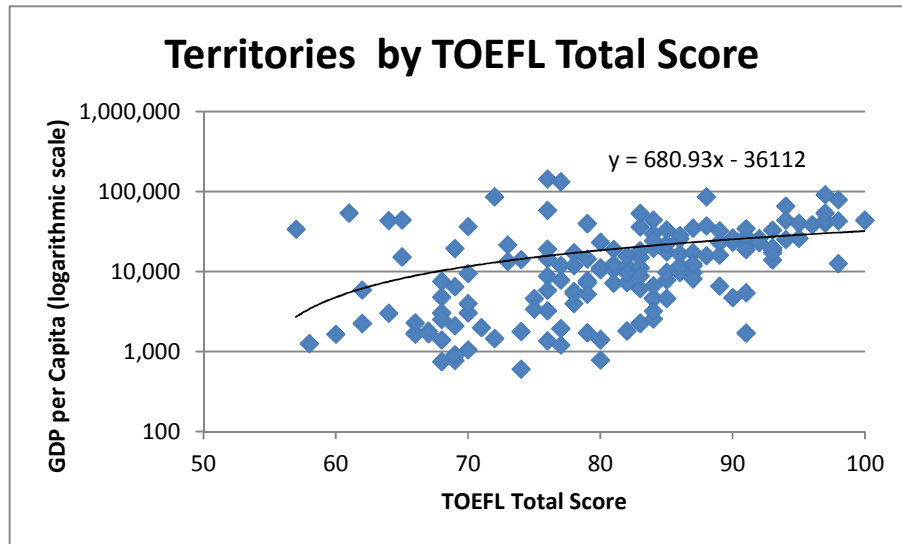
A matter of contention with Micola's et al. data lies with the authors' translation method classification for Japan and Mexico. In the authors' study Japan is classified as a dubbing territory and Mexico as a subtitling one. There is a serious shortage of reputable information pertaining to dubbing and subtitling practices in all geographic regions with the exception of a study undertaken in the European Union. Despite this lack of information, research has indicated a preference for subtitling in Japan when it comes to cinematic releases of movies and live-action television programming (Fong & Au, 2009) (Wikipedia, 2014). As for Mexico, the only available data of any substance comes from Wikipedia, which indicates that the country primarily dubs television programming into Spanish rather than using subtitles (Wikipedia, 2014). The Spanish language Wikipedia article on dubbing, *doblaje*, leaves little doubt about this practice (Wikipedia, 2014). Online forums, while far from reputable sources, have corroborated this. Micola et al. also adjust their data in proportion to the total number of test takers per population. Figures indicating the number of TOEFL test takers per country have not been released since 2006, making this adjustment impossible for 2013 data.

## Results

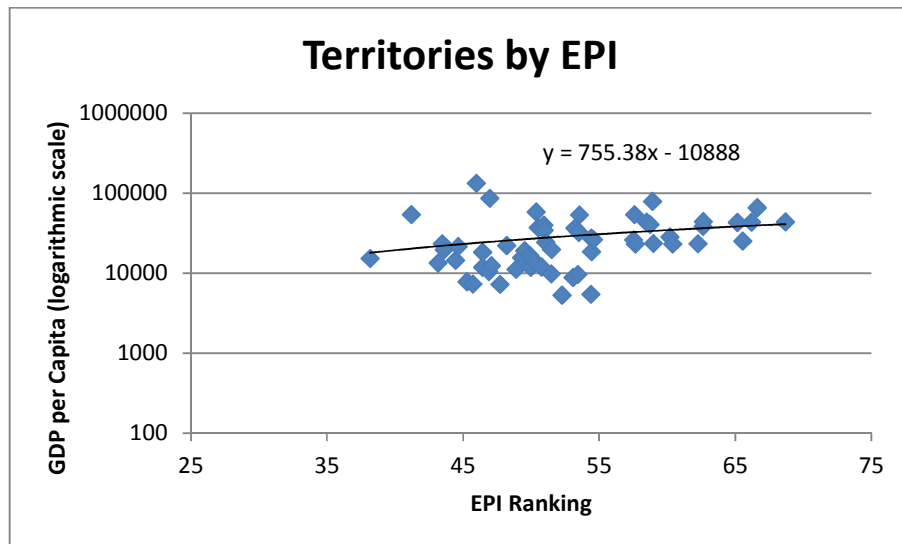
Below is the correlation between GDP (PPP) per capita and TOEFL iBT total score for 157 countries and territories that does not include jurisdictions with English as a predominant language or the French overseas departments of Guadeloupe, Martinique, or Réunion. On a



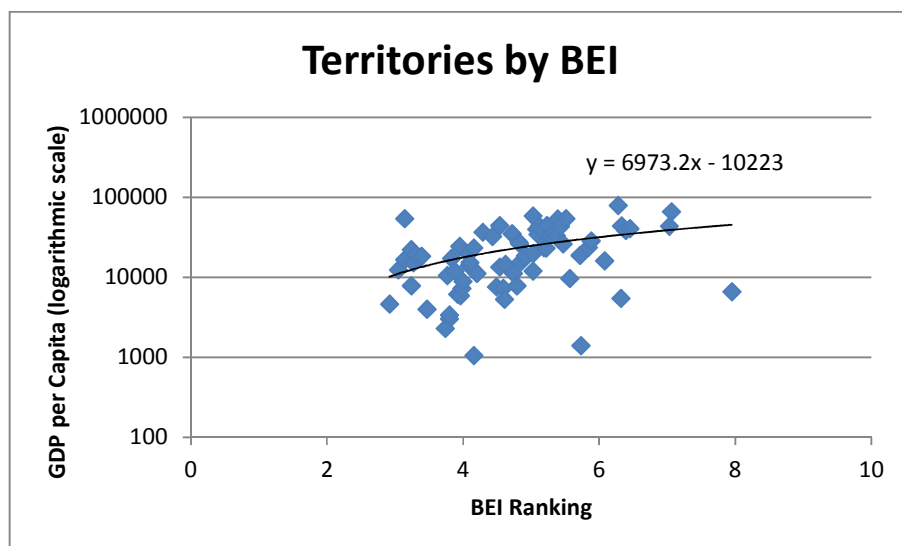
linear scale an additional point in overall TOEFL score correlates with an additional \$680.93 in GDP (PPP) per capita. Full details of TOEFL scores for each territory can be found in Appendix 6.



For the EPI the correlation between GDP (PPP) per capita and index ranking is represented below. For EPI all 60 countries and territories are represented below with no omissions. On a linear scale an additional point in English proficiency on the EPI scale correlates with an additional \$755.38 in GDP (PPP) per capita. The EPI rankings for each territory can be found in Appendix 6.



Likewise, the correlation between GDP (PPP) per capita and BEI ranking is represented below. For BEI 73 countries are plotted with the exclusion of countries where English is the predominant language. On a linear scale an additional point on the Business English Index correlates with an additional \$6973.20 in GDP (PPP) per capita. The BEI rankings for each territory can be found in Appendix 6.



Summary data for the countries in Table 8 according to their classification as dubbing or subtitling follows below along with the two-sample T-test with unequal variances for the dubbing and subtitling data.

**Table 9 – Dubbing/Subtitling Summary Data and Two-Sample T-Test (34 Countries)**

	TOEFL Reading	TOEFL Listening	TOEFL Speaking	TOEFL Writing	TOEFL Total	EPI	BEI
<b>Dubbing Countries</b>							
Obs	17	17	17	17	17	14	14
Mean	21.8235	23.0588	22.8823	22.4117	90.1764	55.0471	4.7421
Std Dev	1.5506	1.5996	1.6538	1.2776	5.6594	4.8631	.8997
Min	18	19	19	20	76	48.2	3.14
Max	24	26	26	25	100	62.66	6.08
<b>Subtitling Countries</b>							
Obs	17	17	17	17	17	11	12
Mean	22	23.7058	23.4117	22.8235	91.4705	61.63	5.8916
Std Dev	1.5811	2.2294	2.1230	1.4677	7.0809	5.3764	.8002
Min	18	17	17	18	70	53.21	4.29

Max	24	26	26	24	100	68.69	7.06
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**Two-Sample T-Test**

Difference in Means	-.1764 (.5371)	-.6470 (.6655)	-.5294 (.6527)	-.4117 (.4719)	-1.2941 (2.1985)	-6.5828*** (2.0777)	-1.1495*** (.3334)
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Table 9 data comes from Educational Testing Service, EF English First, and Pearson English. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The table above displays the difference in means between the dubbing and subtitling countries, i.e. (Dubbing Mean – Subtitling Mean), with their respective standard errors. Negative values indicate higher means for subtitling countries than for dubbing countries. In the table above only the EPI and BEI data are shown to be statistically significant. Figures from Micola et al. indicated statistical significance at 99% for all TOEFL data. The reason for this difference is unclear but could be related to a number of factors. One being the much higher number of observations available in the data used by Micola et al. The authors also adjust their TOEFL data in their paper to reflect the proportion of examinees per total territory population – a feat which is impossible to mimic given the lack of appropriate data in the latest figures from ETS. Another possibility is that either dubbing countries are catching up to subtitling countries, subtitling countries are falling behind, or some combination of the two. Yet another possibility is technological change in television programming delivery, which is discussed further below.

The change in data may also be related. Rerunning the statistics with identical data to Micola et al., that is, excluding data from Chile, Croatia, and Israel, and classifying Mexico as a subtitling country and Japan as a dubbing one, but with figures from 2013 yields different results. This data is not reproduced herein, but in this case the TOEFL listening and speaking scores are significant with 90% confidence, and the TOEFL writing score is significant with 95% confidence in this sample. The reading and total TOEFL scores however are still insignificant and the EPI and BEI figures drop to a 95% confidence level. The differences in means observed by the authors for the TOEFL scores are consistently higher and may indicate a shrinking gap in English proficiency between dubbing and subtitling countries.

Using the same methods with another set of data follows below. This time figures include classification of translation method for 94 jurisdictions, the largest amount for which classification as dubbing or subtitling could be found. Summary data for these countries and territories is below followed by the two-sample T-test with unequal variances.

**Table 10 – Dubbing/Subtitling Summary Data and Two-Sample T-Test (94 Countries)**

	TOEFL Reading	TOEFL Listening	TOEFL Speaking	TOEFL Writing	TOEFL Total	EPI	BEI
<b>Dubbing Countries</b>							
Obs	44	44	44	44	44	31	33
Mean	20.5454	21.7954	22.1818	21.5454	86.0681	51.5838	4.3824
Std Dev	1.9344	1.8872	1.5291	1.4216	6.4063	5.2423	.9041
Min	16	18	19	18	70	43.47	2.92
Max	24	26	26	25	100	62.66	6.32
<b>Subtitling Countries</b>							
Obs	50	50	50	50	50	28	30
Mean	19.52	21.26	22.02	21.04	83.6	53.8875	5.2603
Std Dev	2.8301	2.8771	2.0750	2.3119	9.6785	8.3509	1.1215
Min	13	15	17	15	61	38.16	3.14
Max	24	26	26	25	100	68.69	7.95
<b>Two-Sample T-Test</b>							
Difference in Means	1.0254** (.4952)	.5354 (.4964)	.1618 (.3731)	.5405* (.3909)	2.4681* (1.6751)	-2.3036 (1.8377)	-.8779*** (.2582)

Table 10 data comes from Educational Testing Service, EF English First, and Pearson English. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In this data, only the BEI remains negative and significant, indicating higher English proficiency for subtitling nations.

When looking at samples across the EU, EFTA, and OECD this data suggests significant effects of subtitled television programming on English proficiency. The most robust data for 94 countries, however, results in positive mean differences for all TOEFL data, i.e. dubbing countries perform better than subtitling ones. This data is statistically significant for the reading, writing, and total scores. Yet the BEI data continues to reflect strong significance in favor of subtitling countries. This result is not a clear-cut as expected. A likely explanation is the impact of Arabophone countries and their penchant for subtitling. Research indicates that Arabic countries routinely subtitle their foreign language media, and while mineral-rich countries like Qatar and the United Arab Emirates are considerably wealthy, the vast majority of these states are relatively poor. T-tests without the Arabian states confirm this suspicion though these results are not reproduced here.

Ordinary least squares (OLS) regressions for the two data sets follow. Here translation method is tested as a categorical variable to determine its significance on different proxies for English ability. The following data has controls for education, linguistic distance, and language size. The data for the 94 countries contains a control for English as an official language since some of the territories recognize English as an official language, though it is not the native language of the majority.

The data used as a control for education is the Education Index published by the United Nations. This data is a component of the organization's well-known Human Development Index, and is calculated using mean years of schooling and expected years of schooling as metrics. As the United Nations does not recognize Taiwan (Republic of China (ROC)) as a sovereign entity, the figure for Taiwan was interpolated based on information released by the ROC to calculate its own HDI ranking and data relating to Hong Kong and South Korea.

Data for linguistic distance comes from Chiswick and Miller's *Linguistic Distance: A Quantitative Measure of the Distance Between English and Other Languages*. Languages are assigned a value between 1 and 3 according to their learning difficulty for English speakers with 1 between the most difficult and 3 being the easiest. The use of this scale also assumes that the inverse relationship is true, namely that if a language is easy to learn for an English speaker it will be easier for a speaker of that language to learn English. Linguistic distance from English was interpolated for some smaller languages based on the difficulty for their nearest linguistic neighbors. Examples of such languages include Albanian, Georgian, Latvian, and Lithuanian.

The control for language size is based on the total number of native speakers for the language with the largest number of native speakers within a country. For instance, in Kazakhstan both Kazakh and Russian are spoken as a native language by a sizeable amount of the population, but Russian has a larger number of native speakers, so the figure for language size as it pertains to Kazakhstan refers to the Russian language. This control attempts to counter the general rule that languages with larger numbers of speakers tend to dub while smaller languages tend to subtitle.

**Table 11 – OLS Regression (34 Countries)**

	TOEFL Reading	TOEFL Listening	TOEFL Speaking	TOEFL Writing	TOEFL Total	EPI	BEI
Translation Method	-0.0117 (0.0250)	-0.00532 (0.0260)	-0.0109 (0.0245)	-0.00532 (0.0260)	-0.0111 (0.0220)	0.0599* (0.0341)	0.0780 (0.0575)
Education Index	0.347** (0.161)	0.267 (0.168)	0.217 (0.158)	0.267 (0.168)	0.228 (0.142)	0.239 (0.250)	1.091*** (0.372)
Linguistic Distance	0.0505* (0.0254)	0.0950*** (0.0265)	0.0930*** (0.0249)	0.0950*** (0.0265)	0.0813*** (0.0223)	0.0626* (0.0305)	0.115** (0.0515)
Language Size	0.00156 (0.00648)	-0.0113 (0.00675)	-0.0155** (0.00634)	-0.0113 (0.00675)	-0.00759 (0.00570)	-0.0263*** (0.00895)	-0.0587*** (0.0180)
Constant	2.999*** (0.132)	3.167*** (0.137)	3.227*** (0.129)	3.167*** (0.137)	4.490*** (0.116)	4.370*** (0.175)	2.505*** (0.349)
Observations	34	34	34	34	34	25	26
R-squared	0.261	0.454	0.495	0.454	0.436	0.626	0.707

Table 11 data comes from Educational Testing Service, EF English First, and Pearson English. Data for Translation Method comes from Media Consulting Group and other sources. The Education Index comes from the United Nations. Linguistic Distance comes from Chiswick and Miller. Data for Language Size comes from Ethnologue. Figures for the English ability measurements, Education Index, and Language Size use a logarithmic scale. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 12 – OLS Regression (94 Countries)**

	TOEFL Reading	TOEFL Listening	TOEFL Speaking	TOEFL Writing	TOEFL Total	EPI	BEI
English Official	-0.153*** (0.0413)	-0.149*** (0.0345)	-0.111*** (0.0263)	-0.149*** (0.0345)	-0.139*** (0.0303)	-0.191*** (0.0511)	-0.379*** (0.0787)
Translation Method	-0.0374 (0.0225)	-0.00890 (0.0188)	0.00638 (0.0143)	-0.00890 (0.0188)	-0.0136 (0.0165)	0.0311 (0.0238)	0.135*** (0.0443)
Education Index	0.311*** (0.0662)	0.242*** (0.0551)	0.0848** (0.0422)	0.242*** (0.0551)	0.193*** (0.0484)	0.345*** (0.0924)	0.478*** (0.133)
Linguistic Distance	0.122*** (0.0274)	0.134*** (0.0228)	0.0994*** (0.0175)	0.134*** (0.0228)	0.117*** (0.0201)	0.0906*** (0.0278)	0.0833 (0.0505)
Language Size	-0.00611 (0.00581)	-0.0109** (0.00484)	-0.00973** (0.00370)	-0.0109** (0.00484)	-0.00772* (0.00425)	-0.0328*** (0.00742)	-0.0537*** (0.0145)
Constant	3.094*** (0.147)	3.194*** (0.123)	3.189*** (0.0939)	3.194*** (0.123)	4.524*** (0.108)	4.617*** (0.175)	2.763*** (0.335)
Observations	94	94	94	94	94	59	63
R-squared	0.472	0.549	0.479	0.549	0.531	0.650	0.590

Table 12 data comes from Educational Testing Service, EF English First, and Pearson English. Data for Translation Method comes from Media Consulting Group and other sources. The Education Index comes from the United Nations. Linguistic Distance comes from Chiswick and Miller. Data for Language Size comes from Ethnologue. “English Official” data comes from Wikipedia. Figures for the English ability measurements, Education Index, and Language Size use a logarithmic scale. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In these instances, for the EU/EFTA and OECD countries the translation method used in each territory has a significant impact on EPI ranking, while in the set of 94 countries translation

method is significant for BEI ranking. This is similar to the T-test results, though the impact of the translation method is less than expected, and in fact most of the TOEFL data in the above results have negative coefficients. This contrasts with Micola's et al. findings where the translation method is statistically significant in nearly all of their results.

Diminishing differences between dubbing and subtitling countries may be attributable to advances in technology related to the transmission of television programming. The advent of satellite TV and digital cable has increasingly moved the decision between dubbing and subtitling from the television networks to the viewer. Now many programs are broadcast with both mediums and the viewer only needs to select whether he prefers to watch the program dubbed or subtitled. Such technological advances coupled with consumer preferences are rendering the labels "subtitling country" and "dubbing country" obsolete. Other forces are also disturbing the trends. For instance, the comparatively low cost of subtitling is pushing some traditional dubbers to opt for it instead (Fong & Au, 2009). Likewise, production companies are increasingly releasing features in both a subtitled and a dubbed version in an effort to capture as large a part of the market as possible (Riggio, 2010). These forces may explain the differences between Micola's et al. results and those observed here. Given these tendencies it is likely that in the future differences in foreign language proficiencies between territories historically considered as dubbing or subtitling will be less stark.

Tables 11 and 12 have revealed that the relationship between translation method and English proficiency is shaky at best. Despite this and relying on the viability of the results observed by Micola et al. the tables below contain two-stage least squares (2SLS) regressions for each country set testing the significance of the different metrics for English proficiency on GDP (PPP) per capita. The control variables are the same as those used above in the OLS regressions. Data for GDP (PPP) per capita comes from 2013 World Bank data. Some figures come from prior years of World Bank and International Monetary Fund (IMF) data when 2013 figures were unavailable from the World Bank.

**Table 13 – 2SLS Regression (34 Countries)**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Translation Method	-0.0117 (0.0250)	-0.00532 (0.0260)	-0.0109 (0.0245)	-0.00440 (0.0203)	-0.0111 (0.0220)	0.0599* (0.0341)	0.0780 (0.0575)
Linguistic Distance	0.0505* (0.0254)	0.0950*** (0.0265)	0.0930*** (0.0249)	0.0501** (0.0206)	0.0813*** (0.0223)	0.0626* (0.0305)	0.115** (0.0515)

Language Size	0.00156 (0.00648)	-0.0113 (0.00675)	-0.0155** (0.00634)	-0.00889 (0.00526)	-0.00759 (0.00570)	-0.0263*** (0.00895)	-0.0587*** (0.0180)
Education Index	0.347** (0.161)	0.267 (0.168)	0.217 (0.158)	0.198 (0.131)	0.228 (0.142)	0.239 (0.250)	1.091*** (0.372)
TOEFL Reading	2.594 (2.510) [0.301]						
TOEFL Listening		1.825 (1.196) [0.127]					
TOEFL Speaking			1.755* (1.054) [0.0957]				
TOEFL Writing				3.200 (1.968) [0.104]			
TOEFL Total					2.150 (1.369) [0.116]		
EPI						0.357 (0.820) [0.663]	
BEI							0.207 (0.387) [0.592]
Constant	2.491 (7.863)	4.775 (3.831)	5.024 (3.359)	0.524 (6.209)	0.836 (6.230)	9.267*** (3.404)	10.43*** (0.727)
Observations	34	34	34	34	34	25	26
R-squared	0.175	0.172	0.269	0.226	0.267	0.444	0.551
F-statistic	2.560	6.022	7.095	3.808	5.595	8.374	12.65

Table 13 data comes from Educational Testing Service, EF English First, and Pearson English. Data for Translation Method comes from Media Consulting Group and other sources. The Education Index comes from the United Nations. Linguistic Distance comes from Chiswick and Miller. Data for Language Size comes from Ethnologue. Models 1-7 refer to GDP per capita data, which is from the World Bank. Figures for the English ability measurements, Education Index, and Language Size use a logarithmic scale. P-values are in brackets. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 14 – 2SLS Regression (94 Countries)**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
English Official	-0.153*** (0.0413)	-0.149*** (0.0345)	-0.111*** (0.0263)	-0.142*** (0.0303)	-0.139*** (0.0303)	-0.191*** (0.0511)	-0.379*** (0.0787)
Translation Method	-0.0374 (0.0225)	-0.00890 (0.0188)	0.00638 (0.0143)	-0.0165 (0.0165)	-0.0136 (0.0165)	0.0311 (0.0238)	0.135*** (0.0443)
Linguistic Distance	0.122*** (0.0274)	0.134*** (0.0228)	0.0994*** (0.0175)	0.0922*** (0.0201)	0.117*** (0.0201)	0.0906*** (0.0278)	0.0833 (0.0505)
Language Size	-0.00611 (0.00581)	-0.0109** (0.00484)	-0.00973** (0.00370)	-0.0101** (0.00426)	-0.00772* (0.00425)	-0.0328*** (0.00742)	-0.0537*** (0.0145)
Education Index	0.311*** (0.0662)	0.242*** (0.0551)	0.0848** (0.0422)	0.147*** (0.0485)	0.193*** (0.0484)	0.345*** (0.0924)	0.478*** (0.133)
TOEFL Reading	-0.544 (0.842) [0.518]						



TOEFL Listening			-0.381 (0.819) [0.641]				
TOEFL Speaking				-0.312 (1.098) [0.776]			
TOEFL Writing					-0.385 (1.023) [0.707]		
TOEFL Total						-0.413 (0.932) [0.658]	
EPI							-0.316 (0.986) [0.748]
BEI							0.646* (0.377) [0.087]
Constant	12.38*** (2.588)	11.91*** (2.569)	11.69*** (3.432)	11.90*** (3.169)	12.57*** (4.186)	12.08*** (4.029)	9.659*** (0.639)
Observations	94	94	94	94	94	59	63
R-squared	0.533	0.531	0.529	0.531	0.530	0.426	0.625
F-statistic	15.71	21.40	16.19	15.02	19.90	19.71	16.42

Table 14 data comes from Educational Testing Service, EF English First, and Pearson English. Data for Translation Method comes from Media Consulting Group and other sources. The Education Index comes from the United Nations. Linguistic Distance comes from Chiswick and Miller. Data for Language Size comes from Ethnologue. Models 1-7 refer to GDP per capita data, which is from the World Bank. "English Official" data comes from Wikipedia. Figures for the English ability measurements, Education Index, and Language Size use a logarithmic scale. P-values are in brackets. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The results from the EU/EFTA and OECD countries yield only one significant data point when testing the relation between GDP per capita and English proficiency. The results for the 94 territory sample largely hold with the findings from the OLS regressions with only the BEI showing statistical significance. Despite the lack of statistical significance there is still much that can be gleaned from the results. The P-value data has been included for the English proficiency regressions in brackets in both tables. A lower P-value indicates strong statistical significance. For instance, in the 34 country dataset the regression between GDP per capita and TOEFL Reading score has a P-value of .301 meaning it is significant with only 69.9% confidence. Comparing the P-values between the two datasets reveals much higher confidence levels in the 34 country dataset than in the 94 country dataset for all proficiency measurements except the BEI. In fact, TOEFL Listening, Writing, and Total scores all fall just shy of the 90% confidence level in the 34 country set. Again, Arabophone countries may be disproportionately affecting the results for subtitled countries. Despite a very large language base, economic and cultural forces have pushed these countries toward the use of

subtitling, but is it fair to single them out, discarding their data as outliers? There may be an overarching theme at play here.

Micola et al. find positive and significant effects of English proficiency on FDI flows with increasing English abilities yielding increases in FDI net inflows, FDI net outflows, and exports (Micola, Bris, & Banal-Estañol, 2012). These specific relationships were not studied above, but the attempt to duplicate some of the results observed by Micola et al. have by and large proved elusive, but due to changing practices with regards to dubbing and subtitling this is to be expected at least to some extent. That being said, a systematic relationship between the data appears evident. The EU/EFTA and the OECD are by and large “rich country clubs.” The expanded data set of 94 countries contains a considerable number of developing countries. The average GDP (PPP) per capita for the first data set is \$33,719. The average for the data set of 94 territories is \$24,623 and includes all of the countries from the first data set for EU/EFTA and OECD countries. Recall that neither data set includes primarily English-speaking nations like Australia, Canada, the UK, or the US. If English proficiency matters little for the economic outcomes of low-income countries, then this would be reflected in the 94 territory regressions by lower statistical significance despite the higher number of observations. Therefore an in-depth look at English policy and its effects in such countries is warranted.

### **Rwanda: Adieu Français, Hello English**

In 1994 post-genocidal Rwanda began a transformation of sorts. For political and economic reasons the country began to shift away from French towards the English language. This change was motivated by a number of factors. For one, there were significant numbers of refugees returning from neighboring Anglophone countries. A reorientation away from French and towards English was seen as a way to spurn Rwanda’s roots as a French-speaking Belgian colony. There was also a desire to snub France for its perceived role in the genocide. Economically, Rwanda sought to align itself towards its more economically stable Anglophone neighbors of Uganda and Tanzania, and away from war-torn Francophone Congo and Burundi. French and English reign as co-official languages alongside the more widely spoken Kinyarwanda, but in 2008 a concerted effort to move more definitively towards English and away from French was announced. Was this a prudent decision for

Rwanda? With this unusual and intriguing change in language policy we can see what effects, if any, occur as a result (Economist, 2012) (The Commonwealth) (McGreal, 2009).

In order to examine Rwanda in context, six other nations are chosen for comparison analysis. These states were chosen for their similarities in GDP per capita, population, and linguistic differentiation. Regional figures for sub-Saharan Africa are also included when available.

**Table 15 – Comparison of Selected African Nations**

Country	Majority Language	Colonial Language	Population	GDP	GDP/capita
Rwanda	Kinyarwanda	French	11,776,522	7,451,677,749	\$ 1,452
Tunisia	Arabic	French	10,886,500	47,128,700,683	\$ 11,092
Mozambique	Makhuwa	Portuguese	25,833,752	15,318,970,100	\$ 1,045
Burkina Faso	Mòoré	French	16,934,839	11,582,556,068	\$ 1,634
Sierra Leone	Mende	English	6,092,075	4,929,214,080	\$ 1,927
Zambia	Bemba	English	14,538,640	22,383,715,315	\$ 3,181
Benin	Fon	French	10,323,474	8,307,019,675	\$ 1,791
SS Africa	-	-	936,876,497	1,607,159,813,460	\$ 3,229

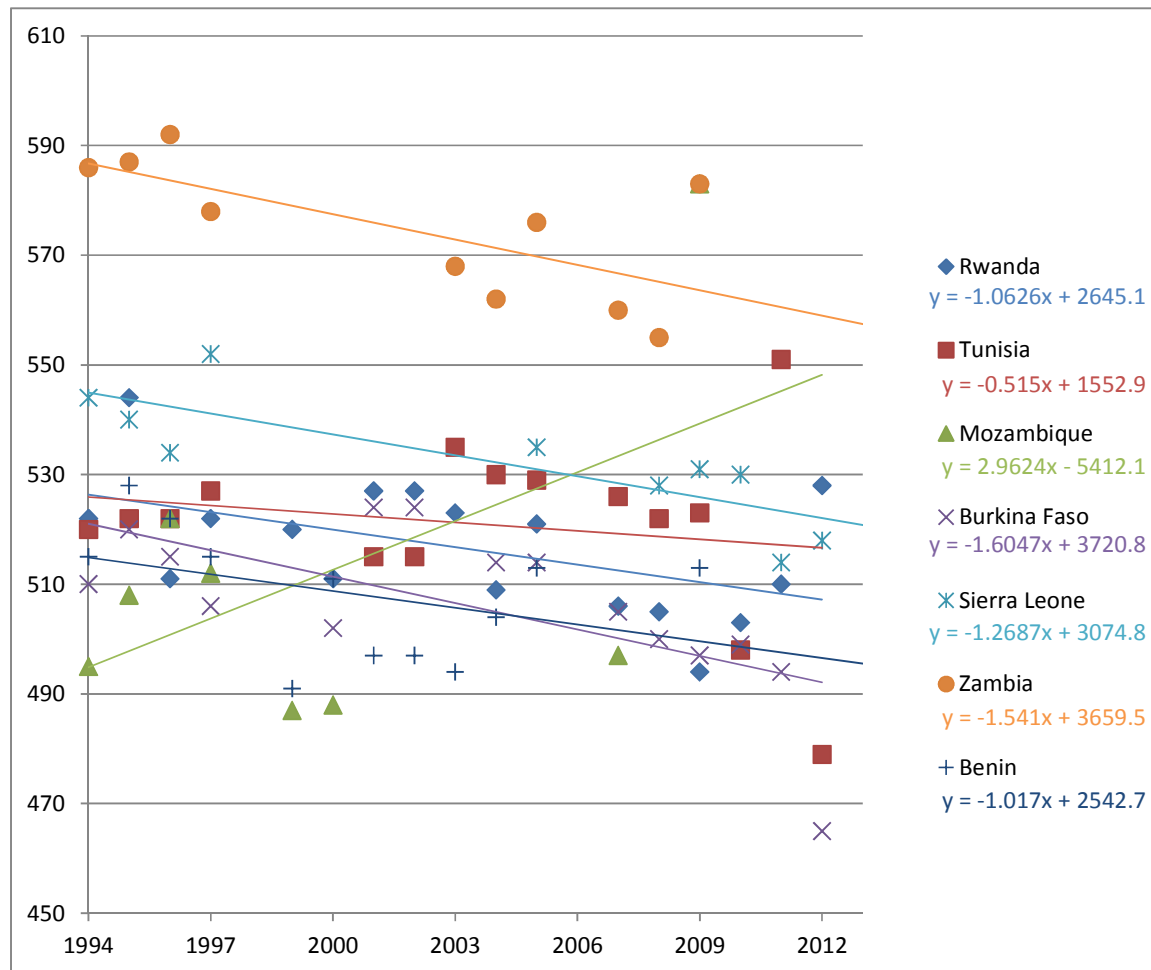
Table 15 data for languages comes from Ethnologue. Population and GDP data comes from the World Bank.

Data for population, GDP (nominal), and GDP (PPP) per capita are for 2013 and come from the World Bank. Language information comes from Ethnologue. Tunisia is not part of sub-Saharan Africa, but was chosen as the representative country from the Maghreb region of Northern Africa. Of the above countries only Rwanda and Tunisia are largely monolingual societies. The majority languages of the other countries reflect the language with the largest number of native speakers in that country, but in reality only accounts for a fraction of its population. These countries contain a large linguistic diversity and the colonial language often serves an important role as a lingua franca among citizens.

Rwanda has a stated goal of ameliorating its citizens' English abilities and an official language policy to reflect that goal. The other countries do not have such a goal, at least not explicitly. Comparing the English skills of Rwandans against those of the citizens of the other countries will allow firstly for a benchmark of success on the Rwandan policy. After that, comparing the English skills of these nations in a time series against various economic variables will reveal any relation between these variables.

English proficiency data from these nations is taken from the TOEFL paper based test, or PBT. TOEFL is used because it is the only known measure of English proficiency for the selected countries. The PBT version is used to quantify English skills going back as far as 1994. Computer-based testing was not available from TOEFL until 1998 and was replaced by iBT in 2006; both use different scoring methods. The PBT is the only test version with results that are available with consistent scoring for a majority of the desired timeframe, though data is missing from 2006 and no longer available as of 2013. The data for the time series of English skills for these nations can be seen in Appendix 7. The data is shown graphically below.

**Graph: African Nations by TOEFL Total Score (PBT) 1994-2012**



The graphed data represents the available data points for the countries' TOEFL PBT total score from 1994 to 2012. Shockingly, all the observed countries show regressing English skills with the exception of Mozambique. For Mozambique the data is most likely skewed

due to an outlier in the 2009 data that shows a total test score of 583 (2009, 583). This figure represents an 86 point, or 17 percent, increase over the prior available data from 2007 (2007, 497). Results from the TOEFL iBT for 2009 do not show a similar improvement with only a 1 point increase over the prior year on a 120 point scale, or about 1.5 percent. Simply removing this point (2009, 583) from the data yields a trend line very similar to those of the other countries. An increasingly difficult TOEFL test could explain this trend among the countries. More likely is that with the introduction of the computer and internet based tests the paper based test may be servicing increasingly disenfranchised examinees where access to computers and the internet are not readily available.

The equations for the linear lines of best fit reveal surprising results. Despite a policy of Anglicization in Rwanda average TOEFL test scores in the country have been falling at a rate of just more than 1 point per year over the past 20 years. Benin fares only slightly better while Tunisia is losing just slightly more than half a point in average test score per year, which in terms of time series performance makes Tunisia the group's best performer. According to this data, Rwanda's policies do not seem to be having any positive effects on measurable English skills in absolute terms. However, Rwanda's policies may be preventing an even more dire regression from occurring.

Results of ordinary least squares (OLS) testing for the seven countries comparing the total TOEFL results on the PBT to each country's GDP per capita, GDP, foreign direct investment (FDI) inflow as a percent of GDP, FDI inflow as shown in the Balance of Payments (BoP), exports as a percent of GDP, imports as a percent of GDP, and services as a percent of GDP are below. Each OLS result is from the time series from 1994 to 2012.

**Table 16 – OLS Regressions for 7 African Nations**

	Rwanda	Tunisia	Mozambique	Burkina Faso	Sierra Leone	Zambia	Benin
GDP/ Capita	-9.368* (4.498)	-1.184 (2.780)	3.078 (2.424)	-10.24*** (3.076)	-14.48** (4.019)	-11.91* (5.829)	-2.289 (2.248)
GDP	-14.26** (6.157)	-1.591 (3.321)	4.406 (3.290)	-14.12*** (4.232)	-21.45** (6.404)	-16.58* (7.292)	-5.497 (3.128)
FDI net in %GDP	-37.09 (23.30)	-7.519* (3.737)	3.987 (4.650)	-16.85** (6.010)	-71.80** (28.55)	-20.64** (6.877)	-3.788 (7.059)
FDI net in BoP	-51.35* (28.24)	-9.110 (5.848)	8.393 (7.535)	-30.97*** (6.066)	-93.25** (33.21)	-37.22** (11.17)	-9.285 (8.050)
Exports %GDP	-6.651* (3.169)	-0.732 (0.891)	2.528 (2.349)	-8.284*** (2.017)	-1.050 (2.788)	-1.497 (1.655)	2.591 (1.674)

Imports %GDP	-0.565 (2.590)	-1.280 (0.967)	0.432 (1.620)	-2.821*** (0.539)	-16.02*** (2.839)	-0.976 (1.184)	0.769 (1.177)
Services %GDP	-2.712 (1.876)	-0.0454 (0.513)	-0.232 (0.214)	0.665 (0.491)	-15.21* (6.324)	-0.376 (0.643)	-0.0721 (0.378)
Obs	17	15	8	15	8	10	10

Table 16 data comes from the World Bank. TOEFL scores come from Educational Testing Service. Each OLS result is from the time series from 1994 to 2012. Observations refers to the number of years for which data existed for a specific country. All figures use a logarithmic scale. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The time series OLS regressions of the selected countries yield striking results. Most results have negative coefficients as many of the economic variables for these countries over this time frame were improving. All significant figures are negatively correlated. Yet it would be desirable to know the results of a static snapshot in time to see if there are any cross-country correlations between English proficiency and various economic variables.

Below are the OLS results comparing the TOEFL total iBT from 2013 with various economic variables for all the countries of Africa. All data comes from the World Bank. The variables for GDP (PPP) per capita, FDI as a percentage of GDP, and trade as a percentage of GDP are from 2013. The other three variables are from 2011. The internet based test, or iBT, is used due to the availability of 2013 test scores. For more information on the TOEFL PBT, CBT, and iBT formats see Appendix 8.

**Table 17 – OLS Regressions for African Nations**

	GDP/capita	FDI net in %GDP	Exports %GDP	Imports %GDP	Services %GDP	Trade %GDP
African iBT Scores	1.938 (1.252)	-0.163 (0.632)	-0.000556 (0.467)	-0.873 (1.349)	1.056*** (0.308)	-0.147 (0.469)
Obs	45	45	43	43	38	42

Table 17 data comes from the World Bank. The variables for GDP (PPP) per capita, FDI as a percentage of GDP, and trade as a percentage of GDP are from 2013. The other three variables are from 2011. TOEFL Scores come from Educational Testing Service. Observations indicate the number of countries in each regression. All figures use a logarithmic scale. Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Again, comparing data across the African countries yields similar results to the time series OLS results above. Though these are simple regressions the theme is clear: there is little correlation between the English abilities and the economics of this region. Strikingly, there is one exception in the above data. Services as a percentage of GDP is strongly correlated with total TOEFL iBT score. The reason that this particular variable would be so strongly correlated while the others are not is unclear.

As for Rwanda, in order to determine if the policy that Rwanda has pursued has had any meaningful effects the difference in differences method can be used to observe any changes in English proficiency over time. The other six countries will serve as the control group. 2007, the year before Rwanda's official change, will serve as the base year, and 2013 will serve as the comparison year. This gives a six year time frame over which to discern any effects from Rwanda's policy change. Below is a table for all seven countries' TOEFL total iBT test score from 2006 to 2013, which is the full duration of the iBT's existence. The iBT is used because it is much more robust over this time frame than the PBT. Too few test takers took the TOEFL in Mozambique in 2006 and 2007 so 2008 serves as the base year for Mozambique.

**Table 18 – TOEFL Total Scores for 7 African Nations**

Country	2006	2007	2008	2009	2010	2011	2012	2013
Rwanda	77	74	68	69	68	75	74	72
Tunisia	79	77	75	77	77	79	79	80
Mozambique			65	66	72	72	72	70
Burkina Faso	71	62	62	65	65	67	66	66
Sierra Leone	73	75	71	69	69	72	70	77
Zambia	87	83	78	86	78	80	83	84
Benin	69	57	58	64	64	65	66	67

Table 18 data for iBT Total test scores comes from Educational Testing Service.

Using this data to perform a difference in differences statistical model comparing Rwanda to the control group yields the following.

**Table 19 – TOEFL Total Score Difference-in-Differences Model for Rwanda**

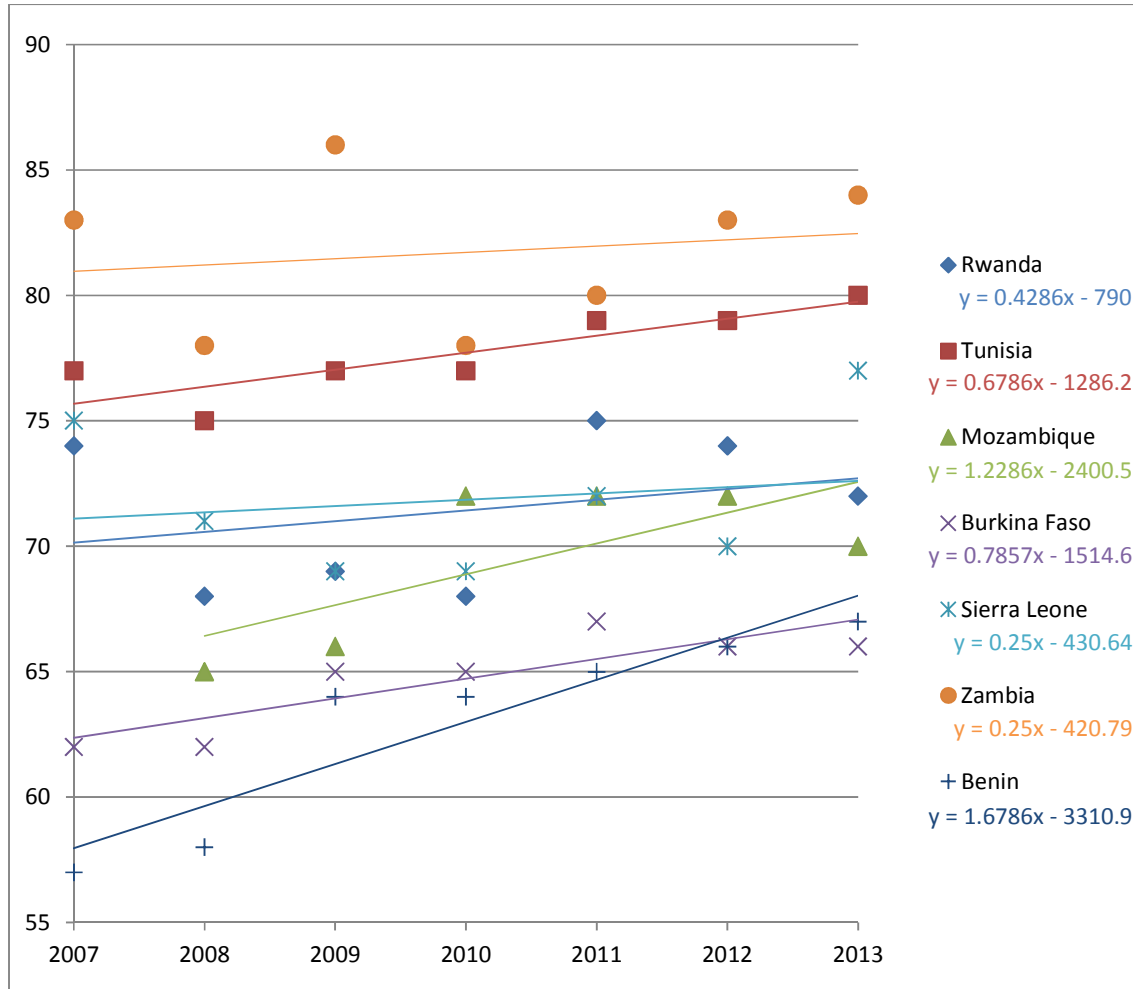
	2007 Control	2007 Rwanda	2007 Difference	2013 Control	2013 Rwanda	2013 Difference	Difference in Differences
TOEFL Total	69.833	74.000	4.167	74.000	72.000	-2.000	-6.167

Table 19 data comes from Educational Testing Service.

In 2007 Rwanda's total TOEFL iBT score was 74. The average for the control group was 69.833. By 2013 Rwanda's score was 72. The average for the control group was 74. Rwanda's score declined by 2 points over the allotted time frame while that of the control group increased by 4.167 points, a difference in differences of 6.167 points. In absolute terms

all six of the control countries' scores increased while Rwanda's fell. Alternatively, the scores of each of the seven countries are represented below graphically.

**Graph: African Nations by TOEFL Total Score (iBT) 2007-2013**



The scores represented above indicate the TOEFL iBT total score over the period from 2007 to 2013. Over this time Rwanda's score has increased .4286 points annually on a linear scale. Rwanda only outperforms Sierra Leone and Zambia, the two Anglophone countries, in this sense. These results suggest that Rwanda's English language policy has had little, if any, effect on the English skills of its citizens.

The results could be complicated due to the newly released TOEFL iBT. The first year of data, 2006, often has one of the highest test scores for each country. It is not difficult to imagine this being due to the rollout of the test with the highest-populated, more highly-



connected metropolitan areas being serviced by the iBT before more rural locations. Such a launch would make the iBT the least accessible to the most disenfranchised examinees early on. In fact, the scores seem to reach a nadir around 2008. Even so, analyzing Rwandan TOEFL test scores from 2008 on continues to evince inferior performance. Simply no matter what way the data is analyzed, Rwanda often comes out as one of the poorest-performing nations of the group.

All of this is quite unexpected. The expected results were that Rwanda's policies would be having some positive measurable effect. Instead, these results indicate the opposite. At this point in the paper the objective would have been to analyze the relationship between various economic variables and English proficiency for Rwanda and other countries. The assumption was that Rwanda's English skills would be improving at a faster rate than its peers, but that this improvement would not translate into a faster rate of improvement for these economic variables. However, the results above have rendered further analysis at this point moot.

So was changing from French to English a prudent choice for Rwanda? Based on the analyses, Rwanda's policies have not had any significant effects on its citizens' abilities to speak English. The data also suggests that for sub-Saharan African nations English proficiency has little bearing on economic outcomes. In economic terms the switch to English is most likely to be inconsequential. Unless it can be shown that the policy is doing more harm than good, say, by requiring inordinate amounts of funding, it is also unlikely to be a burden for Rwanda.

### **The OECD v. Rwanda – Bringing It Together**

Results from above show a positive and significant relationship between English skills and wealth, albeit with some caveats. Different datasets yield different results for different metrics with varying degrees of confidence. For the EU and OECD the results show that English ability is a much more significant determinant of income than it is for the larger subset of 94 territories. Results from the inquiry on Rwanda's switch to English and usage throughout sub-Saharan Africa, though the data is meager, suggest little to no effects from English on economic variables. In light of these findings, a reasonable hypothesis would suggest that economic effects from increased English proficiency are more likely to accrue to wealthier nations than developing ones. This mirrors the results found by Azam et al. in their

study on returns to English proficiency in India wherein more highly educated and experienced workers realized higher gains from English than their less skilled counterparts (Azam, Chin, & Prakash, 2010).

Micola et al. established that there is “a positive and significant relationship between English skills and FDI flows” as well as exports (Micola, et al., 2012). Micola et al. were examining the effects of subtitling versus dubbing on English proficiency and its subsequent effects on economic variables. The authors’ dataset included a 32 country dataset, which is the extent of the non-English speaking countries of the EU/EFTA and OECD at the time. This set of countries represents some of the world’s wealthiest, most highly-developed, and most interlinked and inter-cooperative countries. If English is going to make a difference anywhere it would seem most likely to make a difference in these countries.

With the data suggesting English bears significance primarily for only a certain subset of territories it would be useful to try to define what criteria would qualify. Firstly, wealth would play a role. For the poorest nations it is unsurprising that English would have little consequence on economic development. But where is the cutoff? Which nations fit in which category? Based on the observations a threshold seems apparent at around \$20,000 GDP per capita. As a general rule, incomes above this level would be able to recognize measurable economic returns to English. Additionally, knowledge-based innovative economies would be most likely to accrue benefits from English proficiency for a variety of reasons, one of them being the vast corpus of research conducted in English, especially pertaining to subjects of a technical or scientific nature. Territories actively engaged in far-reaching multi-national cooperative efforts are also likely to gain from English. The European Union is the most extensive and best example that can be given. The effort to harmonize the different countries of the EU into one cohesive monolithic economy has bred the necessity for a common means of communication despite repeated claims to the contrary (Baker, et al., 2001). Running the 34 country regression along these assumptions without the 4 countries with GDP (PPP) per capita under \$20,000 yields significant results between GDP per capita and TOEFL Listening, TOEFL Speaking, TOEFL Writing, and TOEFL Total scores at a 95% confidence level. However, these results have not been reproduced here. In countries that meet these criteria investments in human capital and their subsequent spillover effects have more tangible economic effects. The return on investment, at least in a macroeconomic sense, is greater for these countries than it is in the developing world.

Mexico provides an interesting example. Of the countries included in the dataset of 34 EU/EFTA and OECD countries, Mexico is the second poorest after Bulgaria at \$16,463 in GDP (PPP) per capita. It is an exceptionally large Spanish-speaking country that is geographically proximate to Spanish-speaking Central and South America and English-speaking North America. The country shares an extensive terranean border with the United States and is a party to the North American Free Trade Agreement (NAFTA), a free trade bloc between Canada, Mexico, and the United States. As a result, 81.6% of Mexico's exports and 51.8% of Mexico's imports are between NAFTA (World Bank, 2014). According to the Global Competitiveness Index Mexico is currently in transition to an innovation-driven economy (Schwab & Sala-i-Martin, 2014). Mexico is effectively on the cusp. The economy is rather well integrated and Mexico is party to many international agreements, but falls a bit short in terms of income and development.

Other factors are likely to play a role in the relevance of English on an economy, language size and geography being among them. For instance, French and German are large and important languages in Europe with many L2 speakers. If enough people are compelled to learn these languages, it may serve as a substitute for speaking English to some degree on the part of the French and Germans. The prevalence of Spanish in Central and South America also diminishes the need for English. With the exceptions of Brazil, French Guiana, Guyana, and Suriname this region already has a common language. This holds with results observed by Lee on returns to English in Latin America (Lee, 2012). After all, English proficiency is little more than a proxy for the ability to communicate. However, that is not to say that English would not be useful. Additionally, geographic isolation would seem to diminish gains from English. Consider Slovenia and Japan with respective populations of just over 2 million and 127 million. Slovenia has land borders with four countries: Italy, Austria, Hungary, and Croatia. All five countries speak a unique language. As an island nation Japan has no terranean borders. Slovenia's small size and linguistically diverse neighbors encourage knowledge of English. Japan's large size and relative isolation make it less so.

Of course, it also seems likely that reverse causation has occurred. The prime candidates for countries that speak English because they are wealthy and not the other way around are the mineral-wealthy Arab states. Take the United Arab Emirates (UAE) for example. The UAE has the highest ranking for English proficiency of all the Arab states in both the EPI and BEI.

Yet, according to the Global Competitiveness Index the UAE is not quite an innovation-driven economy, though it is in the penultimate stage (Schwab & Sala-i-Martin, 2014). The nation's wealth grew incredibly quickly in the 1970s largely due to petroleum. In his Technology, Entertainment, Design (TED) Talk Hans Rosling states that wealth tends to precede social change in the UAE (Rosling, 2006). English is likely no exception here.

### Shortcomings and Further Research

There is any number of shortcomings with the data incorporated in this research. Firstly, there is no known economic study about the economic weight of languages that has been performed before with the exception of the French *L'impact économique de la langue française et de la Francophonie* (The Economic Impact of the French Language and the Francophonie)<sup>7</sup>. Calculating the economic weight of these languages came with a number of challenges. The number of speakers of a given language is often a surprisingly poorly defined figure. Even for some of the world's largest languages the data can be considerably antiquated. There are a number of associated issues where some linguistics training would certainly be helpful, such as the difference between a language and a dialect. The data contained in this paper is rudimentary at best. Serious studies could be made on this front.

Concerning *L'impact économique de la langue française...* it is amazing that there is no equivalent for English, or any other language for that matter. There is an unbelievably well-documented treasure trove of information in this report. It achieves fantastically more than could have been hoped in this paper, but for French. The report even reads like propaganda at times. The organization responsible for its publication, Francophonie, is an organization expressly of French-speaking nations. English lacks anything similar. Similar reports for other languages would be extremely valuable.

As stated before, there is a serious lack of information on dubbing and subtitling practices across different countries. Besides a report that identifies practices within the European Union, there is very little authoritative data on the subject. An encyclopedic review of this that analyzes the practices of each territory or region would provide a useful reference. Collaboration with a production house like Warner Brothers or similar could potentially provide the relevant information. Looking at the worldwide release for a particular movie,

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<sup>7</sup> Author's translation

whether it was subtitled, dubbed, or both and the revenue streams per translation mode per language would provide some insight. Such information is likely readily available to a production house, but does not ever seem to have been exploited for research purposes.

As with Rwanda, Gabon announced a reorientation from French to English in 2012 citing primarily economic reasons though English would lack official status (Reynolds, 2012) (Look & Shryock, 2012). Similarly, in 2010 the country Georgia made English instruction mandatory in schools in a switch from Russian (Robinson, Ivanishvili, & Harding, 2010) (Brooke, 2012). Conversely, in early 2014 Gambia announced its intention to abandon English as an official language in favor of more broadly spoken local languages (Stapleton, 2014) (The Telegraph, 2014). Along with Rwanda and any future converts these countries can serve as an important basis for analyzing the effects of stark language policy changes on economic outcomes.

## **Conclusion**

English has dominated recent history militarily through colonial conquest, culturally through forces like Hollywood and other media, politically through British then American hegemony, and economically through the economic might of the Anglophone countries. For wealthier states like those comprising the OECD, English is an important factor in economic growth. Developing nations, however, are less likely to see positive economic returns from English proficiency. As always there are numerous caveats to contend with, but one thing is clear: the world's wealthiest countries stand to gain the most. The be-all and end-all statement that can be made about the economic importance of English is this: English is important; however, it is more important for high-income, knowledge-based, and highly-interconnected economies. For the rest of the world, language seems to bear little significance on economic outcomes.

## Appendix 1 – Chinese

### China

Taking into account all the sublanguages of Chinese yields a total number of 1,151,500,000 native speakers in China, about 300 million more than Mandarin alone (Lewis, Simons, & Fennig, 2014). This yields a figure near the total population of China, estimated in 2013 as 1,357,000,000 (World Bank, 2014). Many L2 speakers of Chinese in China are likely to be cross-dialect speakers, but the pervasive use of the Chinese sublanguages as a lingua franca within China is obvious.

### Hong Kong

The primary dialect of Hong Kong is Yue accounting for slightly more than 6 million speakers as of the 2006 census. Other dialects comprise an additional 200,000 speakers of Chinese with a total population of 7.188 million in 2013 (Lewis, Simons, & Fennig, 2014) (World Bank, 2014).

### Macao

Chinese dialects account for 398,560 speakers as of the 2001 census with a 2013 population of 566,400 (Lewis, Simons, & Fennig, 2014) (World Bank, 2014).

### Taiwan

Taiwan harbors a great diversity of peoples and languages, but Min Nan Chinese reigns supreme as a native language with Mandarin spoken by many both natively and as an additional dialect of Chinese as the result of governmental legislating and serves as a lingua franca for the island (Lewis, Simons, & Fennig, 2014).

### Not Included

#### Singapore

Singapore is a quadrilingual society that recognizes Tamil, Malay, English, and Mandarin Chinese as official languages. A considerable proportion of the population speaks Chinese, but the same is true for English. Given Singapore's use of both languages its economic output will not be included in the figures for either language.

## Appendix 2 – Spanish

### Latin America

Latin American Spanish is a pretty straightforward affair. Outside of Spanish, native languages are often of the Native American variety. The entire populations or very close can be considered native Spanish speaking in Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Nicaragua, Panama, Uruguay, and Venezuela. Guatemala and Peru have a considerable population that speaks Native American languages as a native language, but close to 90% of the populations of each country speak Spanish either as a native or second language. (Fernández & Roth, 2006). Paraguay is a bilingual country with the Native American language guaraní sharing co-official language status with Spanish, which is spoken by about 90% of the population (U.S. Department of State, 2010).

### Spain

Despite the existence of Catalan, Basque, Galician, and other languages in Spain the majority are native Spanish speakers, and those who are not almost always speak Spanish as a second language. Within Spain 38.4 million people are L1 Spanish speakers and 7.5 million are L2 Spanish speakers. This combined figure is very near Spain's total population of 46.8 million. Given the lexical similarity between Spanish and the other languages (save Basque), the whole of the population of Spain can safely be considered Spanish speaking (Lewis, Simons, & Fennig, 2014).

### Not Included

#### Andorra

The situation in Andorra is a unique one with the official language being Catalan. Other widely spoken languages are Spanish, French, and Portuguese, with no one language of the four being immensely more popular (Lewis, Simons, & Fennig, 2014).

#### Belize

Belize also is in an interesting position with English as an official language, but Belizean English Kriol, English, and Spanish all sharing a roughly equal proportion of native speakers and many bilingual speakers (Lewis, Simons, & Fennig, 2014).

### **Puerto Rico**

Puerto Rico is in the unusual position of being primarily a Spanish speaking dependency of the United States. That being the case, about 50% of the population is bilingual in both Spanish and English (Lewis, Simons, & Fennig, 2014). Puerto Rico's figures will not be included in the calculations for either Spanish or English.

## **Appendix 3 – English**

### **Australia**

English serves as a *de facto* national language in Australia. Comprehensive census data for Australia was not forthcoming, but according to Ethnologue, 88.8% of the population of Australia speaks English (Lewis, Simons, & Fennig, 2014).

### **Canada**

Canada recognizes both English and French as official languages, but Statistics Canada data from 2011 indicates that disproportionately more people speak English than French with 85.6% of the population able to hold a conversation in English and with the same figure for French at 30.1% (Government of Canada, 2011).

### **Caribbean Islands**

A number of nations in the Caribbean claim English as an official language. Many of these nations speak a creole or patois with varying degrees of intelligibility with English. The ones with significant population included here are The Bahamas, Barbados, Jamaica, and Trinidad and Tobago. Significant majorities in all these nations use English or creole-based English as a first language (Lewis, Simons, & Fennig, 2014).

### **Guyana**

According to Ethnologue, a significant majority of Guyanese speak an English-based creole as a first language (Lewis, Simons, & Fennig, 2014).

### **Ireland**

While recognizing both Irish and English as official languages, Irish is spoken by a minority of speakers (Lewis, Simons, & Fennig, 2014). Ireland's Central Statistics Office reports that 97.7% of the population of the Republic of Ireland speaks English "well" or better (Central Statistics Office, 2012).



### **New Zealand**

English serves as an official language in New Zealand alongside Maori, an aboriginal language. According to 2013 New Zealand census data 96.1% of the population speaks English (Statistics New Zealand, 2013).

### **United Kingdom**

Like Australia, the United Kingdom uses English as a *de facto* national language, but it is spoken by a very large proportion of the population with much less language diversity than in the US (Lewis, Simons, & Fennig, 2014). According to the UK's Office for National Statistics' data from 2011 98.1% of the population speaks English "well" or better (Office for National Statistics, 2013).

### **United States**

Like Australia and the UK, English serves as a *de facto* national language in the United States. In addition there are more than 200 immigrant and Native American languages within the US. Most notably Spanish is spoken natively by more than 10% of the population with many of these speakers achieving bilingual status (Lewis, Simons, & Fennig, 2014) (Fernández & Roth, 2006). According to US census data from 2011 95.3% of people in the United States speak English "well" or better (Ryan, 2013).

### **Not Included**

#### **South Africa**

South Africa is often conceived of as being an English-speaking nation, but according to Ethnologue less than 5 million South Africans speak English as a first language with an additional 11 million L2 speakers out of a total population exceeding 50 million (Lewis, Simons, & Fennig, 2014).

## **Appendix 4 – Hindustani**

### **India**

According to the 2001 Indian census there are 422 million Hindi speakers in India, 41.0% of its total population of 1.029 billion. There are additionally 51.5 million Urdu speakers in India, accounting for 5.0% of its total population (Government of India, 2001). Ethnologue further indicates an additional 120 million L2 speakers of Hindi in India. This yields a total of

593.5 million Hindustani speakers, or 57.7% of the population (Lewis, Simons, & Fennig, 2014).

### Pakistan

The most recent Pakistani census data from 1998 indicates that 7.57% of the population speaks Urdu as a native language, or slightly more than 10 million speakers, which is consistent with data provided by Ethnologue (Government of Pakistan, 1998). Data from Ethnologue indicates an additional 94 million L2 speakers of Urdu in Pakistan in 1999 for a combined 104 million or 78.6% of the 1998 population (Lewis, Simons, & Fennig, 2014).

Thus, the combined Hindustani speaking population of the Indian subcontinent based on data from the governments of India and Pakistan from 2001 and 1998 respectively as well as Ethnologue in light of a lack of information on second language proficiency of Urdu in Pakistan is roughly 697.5 million – a significant figure, and one that has surely augmented since these measurements were made. This calculation places Hindustani as the world’s second-largest language by number of speakers, behind only Chinese.

## Appendix 5 – Arabic

This first chart shows the number of speakers for each Arabic dialect, the country in which they are located, the year to which the data corresponds (if available), and whether the data pertains to L1 or L2 speakers. All data is sourced from Ethnologue.

**Table 20 – Speakers of Arabic Dialects**

Dialect	Country	Speakers	Year	Notes
Algerian Saharan	Algeria	100,000	1996	
Algerian Saharan	Egypt	20,500		
Algerian	Algeria	26,000,000	2012	L1
Algerian	Algeria	3,000,000	2012	L2
Algerian	Egypt	1,300,000		
Baharna	Bahrain	300,000	1995	
Baharna	Oman	10,000	1995	
Dhofari	Oman	70,000	1996	
Eastern Egyptian Bedawi	Egypt	860,000	2006	
Eastern Egyptian Bedawi	Jordan	700,000		
Eastern Egyptian Bedawi	Palestine	10,000	1996	
Eastern Egyptian Bedawi	Syria	70,000		
Egyptian	Egypt	52,500,000	2006	

Egyptian	Libya	500,000		
Egyptian	Iraq	450,000		
Egyptian	Saudi Arabia	300,000		
Egyptian	UAE	100,000		
Egyptian	Syria	75,000		
Egyptian	Kuwait	20,000		
Egyptian	Jordan	10,000		
Egyptian	Yemen	10,000		
Gulf	Kuwait	500,000	1986	
Gulf	Bahrain	100,000	1995	
Gulf	Iraq	40,000		
Gulf	Oman	441,000	1995	
Gulf	Qatar	104,000	1986	
Gulf	Saudi Arabia	200,000		
Gulf	UAE	744,000		
Gulf	Yemen	10,000		
Hadrami	Yemen	300,000	1995	
Hijazi	Saudi Arabia	6,000,000	1996	
Hassaniyya	Mauritania	2,770,000	2006	
Hassaniyya	Algeria	150,000	1995	
Hassaniyya	Morocco	195,000	2004	
Libyan	Libya	4,000,000	2006	
Libyan	Egypt	315,500	2002	
Mesopotamian	Iraq	11,500,000		
Mesopotamian	Syria	1,800,000		
Mesopotamian	Jordan	500,000		
Moroccan	Morocco	18,800,000	1995	L1
Moroccan	Morocco	5,000,000		L2
Moroccan	Egypt	1,340,000		
Moroccan	Libya	228,000		
Najdi	Saudi Arabia	8,000,000		
Najdi	Iraq	900,000		
Najdi	Jordan	50,000		
Najdi	Kuwait	200,000		
Najdi	Syria	500,000		
North Levantine	Syria	8,800,000	1991	
North Levantine	Lebanon	3,900,000	1991	
North Levantine	Egypt	117,000		
North Mesopotamian	Iraq	5,400,000	1992	
North Mesopotamian	Syria	300,000	1992	
North Mesopotamian	Jordan	200,000		
Omani	Oman	720,000	1996	
Omani	UAE	80,000		
Sa'idi	Egypt	19,000,000	2006	

Sana'ani	Yemen	7,600,000	1996	
Shihhi	UAE	5,000	1995	
Shihhi	Oman	22,000	2000	
South Levantine	Jordan	3,500,000	1996	
South Levantine	Palestine	1,600,000	1996	
South Levantine	Kuwait	85,000		
South Levantine	Libya	54,000		
South Levantine	Egypt	50,000		
Sudanese	Sudan	29,000,000	2013	L1+L2
Sudanese	Egypt	1,420,000		
Sudanese	Libya	227,000		
Sudanese	Saudi Arabia	86,000		
Ta'izzi-Adeni	Yemen	6,760,000	1996	
Ta'izzi-Adeni	Egypt	116,000		
Ta'izzi-Adeni	Libya	98,000		
Tunisian	Tunisia	9,000,000	1995	
Tunisian	Libya	159,000		

Table 20 data comes from Ethnologue.

Reorganizing and aggregating this data yields the total number of Arabic speakers per country.

**Table 21 – Arabic Speakers by Country**

Country	Total Speakers	Year	% Arabic
Algeria	29,100,000	2012	99
Bahrain	400,000	1995	73
Egypt	77,039,000	2006	98
Iraq	18,290,000	1992	75
Jordan	4,960,000	1996	98
Kuwait	805,000	1986	78
Lebanon	3,900,000	1991	95
Libya	5,266,000	2006	97
Morocco	23,800,000	1995	99
Mauritania	2,770,000	2006	80
Oman	1,263,000	1996	72
Palestine	1,610,000	1996	89
Qatar	104,000	1986	40
Saudi Arabia	14,586,000	1996	90
Sudan	29,000,000	2013	70
Syria	11,545,000	1992	90
Tunisia	9,000,000	1995	98
United Arab Emirates	929,000	1995	42

Yemen	14,680,000	1996	98
<b>Total</b>	<b>249,392,000</b>		<b>88.3</b>

Table 21 data for the number of Arabic speakers comes from Ethnologue. Percentage of Arabic speakers comes from Baker and Jones, CIA World Factbook, and the Sultanate of Oman.

The table above is problematic for a variety of reasons. For one, the data comes from a variety of different years, spanning from 1986 to 2013. Another is that there are some discrepancies between the total population as represented in the main text and the number of Arabic speakers represented above. Yet another is that many of the Arabic Gulf states have low percentages of Arabic speakers as part of their total populations raising the question as to whether or not these countries harbor significant amounts of Arabic speakers so as to be considered “Arabic speaking” and thus included in the calculations. However, these countries also tend to be the wealthiest countries on a GDP per capita basis; not including them in the calculations would likely depress figures for the Arabic language. That being said, these countries also tend to be less-populated, giving more weight to the other countries.

### Algeria

With relatively current data, the only figure of interest pertaining to Algeria is its sizeable population of Berber speakers, amounting to more than 6,500,000 speakers, many of whom speak Arabic as a second language (Baker & Jones, 1998) (Lewis, Simons, & Fennig, 2014).

### Bahrain

Bahrain’s total speakers are calculated based on data from 1995. Bahrain also harbors a considerable expatriate community. According to the Central Intelligence Agency’s World Factbook, in 1995 the total population was 575,925 and Bahraini and “Other Arab” populations totaled 73% of the population.

### Iraq

At least one piece of data for Iraq is from 1992, though dates for the other statistics are not obvious in the data published by Ethnologue. In 1992 Iraq’s population was 19,524,700 – near the aggregated total number of Arabic speakers according to the data from Ethnologue. *The Encyclopedia of Bilingualism and Bilingual Education* indicates 75% Arabic ethnicity in Iraq, yet states “Most speakers of minority languages also speak Arabic” (Baker & Jones, 1998).

### **Kuwait**

The most significant piece of data pertaining to Kuwait is from 1986 when Kuwait's population was 1,771,000 and the percentage of ethnic Arabs totaled 78% according to the World Factbook. This puts the figure closer to the total number of Arabic speakers, but with a considerable margin of error.

### **Mauritania**

The prevalent Arabic dialect in Mauritania is Hassaniyya, which is not intelligible with other dialects of Arabic, but is written in the same script as other dialects of Arabic. This yields a situation similar to that with the Chinese dialects. Eighty percent of the population is considered "Arab-Berber" and speaks this dialect (Baker & Jones, 1998).

### **Morocco**

Data for Morocco dates to 1995 when the country's population was 29,168,848. Like Algeria, Morocco is home to a significant Berber-speaking population of around 7,500,000, many of whom are bilingual in Arabic (Lewis, Simons, & Fennig, 2014).

### **Oman**

Oman had a population of 2,216,000 in 1996 with 72% Omani nationality. Detailed data for Oman was not forthcoming from the CIA's World Factbook, and instead is from the Sultanate of Oman Ministry of National Economy, which only contains Omani and expatriate figures from the most recent census in 2010, but Arabic expatriates are reliably low in Oman amounting to 68,986 people according to the 2010 census (Sultanate of Oman).

### **Palestine**

Data from Ethnologue is from 1996 in which there was a population of 2,308,433, 89% of which was ethnically Arabic.

### **Qatar**

Data for Qatar stretches back to 1986 when the country's population was 305,000 with a 40% Arabic makeup.

### **Saudi Arabia**

In 1996 Saudi Arabia's population was 19,408,771 of which 90% was ethnically Arabic. The resulting figure is much closer to that presented by Ethnologue.

### Syria

Syria had a population of 12,966,000 in 1992. *The Encyclopedia of Bilingualism and Bilingual Education* indicates 90% of Syria's population is Arabic (Baker & Jones, 1998).

### United Arab Emirates

According to the World Factbook, in 1995 the UAE had a population of 2,924,594 with 42% Arab ethnicity.

### Yemen

In 1996 Yemen had a population of 14,728,474 – very near the aggregated number of Arabic speakers according to Ethnologue. Data published by the Central Intelligence Agency in 2002 indicates 98% of the population is Arabic (Central Intelligence Agency, 2002).

All statistics for prior year data are from the CIA World Factbook, hosted by Information Technology Associates at [www.theodora.com/wfb](http://www.theodora.com/wfb), unless otherwise cited. Data presented above also assumes that ethnic Arabs speak Arabic. This may not always hold true but is the most reliable proxy available for determining the number of Arabic speakers per country. While there are a number of other countries populated by Arabophones, their populations are insufficient for inclusion in this country analysis. These countries include Chad, Cyprus, Djibouti, Eritrea, Iran, Israel, Tajikistan, and Uzbekistan.

## Appendix 6 – TOEFL, EPI, and BEI Scores

Below is the TOEFL data as reported in Educational Testing Service's summary of test and score data for examinations occurring between January and December 2013. This data reflects results from the TOEFL internet Based Test, or iBT. Territories with fewer than 30 examinees, and thus lacking test data, are omitted from the following table. Territories in *italics* indicate jurisdictions where English is either a *de facto* or *de jure* national language. Representations for countries such as Australia, Ireland, United Kingdom, etc. are likely due to individuals resident in those countries who speak English as a second language. Data for the Netherlands for 2013 was unavailable and is substituted here with data from 2012. This report and others are available for download from ETS's website at <http://www.ets.org/toefl>.

Also included is the English Proficiency Index ranking from the 2013 report. This report ranks the English proficiency of 60 countries and is available from EF Education First's website at <http://www.ef.edu/epi/>.

Along with TOEFL and EPI is the ranking of 77 countries according to the Business English Index. Countries like Australia and the United Kingdom etc. are represented by individuals who speak English as a foreign language. The report is available from Pearson's website at [http://www.globalenglish.com/business\\_english\\_index](http://www.globalenglish.com/business_english_index).

The 94 countries used in the studies above also include a classification in the "Translation Method" column. This data comes from a plethora of sources.

**Table 22 – Countries by TOEFL, EPI, and BEI**

Country	Translation Method	TOEFL Reading	TOEFL Listening	TOEFL Speaking	TOEFL Writing	TOEFL Total	EPI	BEI
Afghanistan		15	16	21	19	71		
Albania	Subtitling	19	20	22	21	81		
Algeria	Subtitling	16	18	20	18	73	43.16	4.54
Angola		14	16	20	18	68		4.49
Argentina	Dubbing	23	24	23	23	93	54.43	4.92
Armenia		18	19	21	20	77		4.79
Aruba		18	21	23	21	83		
<i>Australia</i>		21	23	23	23	89		6.78
Austria	Dubbing	24	26	26	25	100	62.66	5.23
Azerbaijan		18	19	20	20	78		3.83
Bahrain	Subtitling	18	21	23	21	84		
Bangladesh		20	21	21	22	84		
Belarus		20	22	22	21	85		4.91
Belgium	Subtitling	24	25	24	24	97	58.74	6.45
Benin		16	15	18	18	67		
Bhutan		17	18	22	21	79		
Bolivia	Dubbing	19	21	22	21	83		3.92
Bosnia and Herzegovina	Subtitling	20	22	23	21	86		
<i>Botswana</i>		20	21	23	23	88		
Brazil	Dubbing	21	21	20	20	83	50.07	3.27
Bulgaria	Voiceover	21	23	22	22	89		6.08
Burkina Faso		15	16	18	17	66		
Burundi		15	16	20	18	69		
Cambodia		15	16	19	19	69		
<i>Cameroon</i>		16	16	20	19	70		



<i>Canada</i>		22	24	24	23	94		5.71
Cape Verde		12	16	19	17	64		
Chad		15	16	20	18	69		
Chile	Dubbing	21	22	21	21	85	48.2	3.24
China	Dubbing	20	18	19	20	77	50.77	5.03
Colombia	Dubbing	20	20	21	20	81	47.07	3.05
Congo		14	14	18	17	62		
Congo, DR		15	15	20	18	68		3.96
Costa Rica	Dubbing	23	24	23	23	93	50.23	4.09
Côte D'Ivoire		15	15	17	17	64		3.8
Croatia	Subtitling	22	24	23	22	91		
Cuba	Dubbing	19	20	21	20	81		
Cyprus	Subtitling	19	21	22	22	84		
Czech Republic	Dubbing	22	24	23	22	91	54.4	4.82
Denmark	Subtitling	23	25	26	24	98	65.15	5.43
Dominican Republic	Dubbing	19	21	22	21	82		
Ecuador	Dubbing	19	19	21	20	80	46.9	3.77
Egypt	Subtitling	19	21	22	21	83	48.89	4.74
El Salvador	Dubbing	20	21	23	21	85	45.29	3.24
Equatorial Guinea		12	13	18	15	57		
<i>Eritrea</i>		18	19	20	20	77		
Estonia	Subtitling	22	24	24	23	94	65.55	
Ethiopia		17	19	21	19	76		
Finland	Subtitling	23	25	24	24	96	62.63	6.39
France	Dubbing	22	22	22	22	88	50.53	5.18
French Polynesia		21	22	22	21	86		
Gabon		15	16	19	18	69		
<i>Gambia</i>		14	15	20	18	67		
Georgia	Voiceover	19	21	22	20	81		
Germany	Dubbing	23	25	25	24	97	58.47	5.12
<i>Ghana</i>		18	19	21	21	78		
Greece	Subtitling	23	23	22	24	92		
Guatemala	Dubbing	19	21	22	21	82	45.72	4.59
Guinea		12	12	18	16	58		
Haiti		14	15	19	17	66		
Honduras	Dubbing	19	22	23	21	85		2.92
<i>Hong Kong</i>	Subtitling	19	21	21	22	83	53.54	5.39
Hungary	Dubbing	22	24	23	23	92	60.41	5.22
Iceland	Subtitling	22	25	24	23	95		
<i>India</i>	Dubbing	22	23	23	23	91	54.38	6.32
Indonesia	Subtitling	20	21	20	21	82	53.44	5.57
Iran	Subtitling	20	20	21	21	82	49.3	4.85
Iraq	Subtitling	14	16	19	17	65	38.16	4.1
<i>Ireland</i>		22	24	25	25	96		

Israel	Subtitling	22	25	24	22	93		5.37
Italy	Dubbing	24	23	22	22	91	50.97	5.1
<i>Jamaica</i>		19	21	24	22	86		
Japan	Subtitling	18	17	17	18	70	53.21	4.29
Jordan	Subtitling	18	20	21	19	78	46.44	
Kazakhstan	Dubbing	18	20	22	20	80	43.47	4.16
<i>Kenya</i>		19	20	22	22	83		
Korea, DPR		20	20	20	21	82		
Korea, Republic of	Subtitling	22	21	21	22	85	53.46	5.28
Kosovo		16	18	22	20	76		
Kuwait	Subtitling	16	18	20	18	72	46.97	
Kyrgyzstan	Dubbing	17	19	21	20	76		
Laos		15	16	20	18	68		
Latvia	Voiceover	21	23	24	22	89	57.66	
Lebanon	Subtitling	20	22	23	22	87		
<i>Liberia</i>		14	16	21	18	69		
Libya	Subtitling	16	18	21	18	73	44.65	
Lithuania	Voiceover	20	22	23	22	86		
Luxembourg	Dubbing	23	24	25	24	97		
Macao		18	18	19	20	76		
Macedonia	Subtitling	20	22	23	22	86		
Madagascar		19	20	21	21	80		5.73
<i>Malawi</i>		18	19	22	22	80		
Malaysia	Subtitling	22	23	22	23	89	58.99	5.84
Mali		13	13	18	16	60		
Mauritania		14	16	20	18	68		
<i>Mauritius</i>		23	24	23	24	93		
Mexico	Dubbing	21	22	22	21	86	49.91	3.14
Moldova		20	21	22	21	84		
Monaco		21	22	23	22	88		
Mongolia	Voiceover	16	18	19	18	70		
Montenegro	Subtitling	18	20	21	19	79		
Morocco	Subtitling	18	20	21	20	79	47.71	3.98
Mozambique		15	17	20	19	70		4.16
Myanmar	Subtitling	18	19	20	21	79		
<i>Namibia</i>		18	22	24	22	87		
Nepal		20	20	21	21	83		
Netherlands	Subtitling	24	26	26	24	100	66.19	7.03
Netherlands Antilles		16	19	21	19	76		
<i>New Zealand</i>		24	25	24	24	97		
Nicaragua	Dubbing	19	21	22	21	84		
Niger		15	17	19	18	69		
<i>Nigeria</i>		18	19	21	21	78		
Norway	Subtitling	21	24	25	23	94	66.6	7.06

Oman	Subtitling	14	16	19	17	65		4.54
<i>Pakistan</i>	Dubbing	21	22	24	23	90		
Palestine Territories	Subtitling	17	19	21	19	75		
Panama	Dubbing	19	21	22	21	84	43.61	4.08
Paraguay	Dubbing	21	22	22	22	87		
Peru	Dubbing	21	22	22	22	87	49.96	3.88
<i>Philippines</i>	Subtitling	21	22	24	23	89		7.95
Poland	Voiceover	22	23	23	22	90	62.25	5.19
Portugal	Subtitling	23	25	24	23	95	57.52	5.47
<i>Puerto Rico</i>		20	22	23	22	87		4.72
Qatar	Subtitling	17	20	21	19	77	45.97	
Romania	Subtitling	22	23	23	23	91		5.72
Russian Federation	Voiceover	20	21	22	21	84	51.08	3.95
<i>Rwanda</i>		15	17	20	19	72		
Saudi Arabia	Subtitling	13	15	18	15	61	41.19	3.14
Senegal		15	16	19	17	66		3.74
Serbia	Subtitling	20	23	23	21	87		
<i>Sierra Leone</i>		17	19	22	20	77		
<i>Singapore</i>	Subtitling	24	25	24	25	98	58.92	6.28
Slovakia	Dubbing	21	23	23	23	90	54.58	4.83
Slovenia	Subtitling	23	25	24	24	86	60.19	5.88
Somalia		16	18	21	19	74		
<i>South Africa</i>	Subtitling	22	25	26	24	98		
Spain	Dubbing	22	22	22	22	89	53.51	4.43
Sri Lanka		20	21	22	21	85	51.47	
<i>Sudan</i>	Subtitling	16	19	21	19	75		3.8
<i>Swaziland</i>		18	21	23	22	84		
Sweden	Subtitling	21	25	25	23	94	68.69	6.33
Switzerland	Dubbing	24	25	24	24	97	57.59	5.51
Syrian Arab Republic	Subtitling	17	19	21	19	76		
Taiwan	Subtitling	20	20	20	20	79	50.95	5.08
Tajikistan		14	16	20	17	68		
<i>Tanzania</i>		16	17	21	19	74		
Thailand	Dubbing	18	19	19	20	76	44.44	4.62
Timor-Leste		12	12	19	18	62		
Togo		16	16	19	18	68		
Tunisia	Subtitling	19	20	21	20	80		4.2
Turkey	Dubbing	18	19	19	20	76	49.52	3.3
Turkmenistan		16	18	20	19	74		
<i>Uganda</i>		18	19	22	21	80		
Ukraine	Voiceover	19	21	22	21	83	53.09	4
United Arab Emirates	Subtitling	17	19	21	19	76	50.37	5.03
<i>United Kingdom</i>		21	23	24	23	91		6.81
Uruguay	Dubbing	23	24	23	23	93	51.49	5.03

Uzbekistan		18	19	21	20	79		
Venezuela	Dubbing	19	21	22	21	83	46.44	3.39
Vietnam	Subtitling	19	19	19	21	78	52.27	4.61
Yemen	Subtitling	15	17	21	18	70		3.47
Zambia		18	20	24	22	84		
Zimbabwe		21	22	24	24	91		

Table 22 test score data and rankings come from Educational Testing Service, EF English First, and Pearson English. Information on translation method comes from a plethora of sources.

## Appendix 7 – Sub-Saharan Africa

Below is the time series data for the six sub-Saharan countries plus Tunisia. The data includes TOEFL PBT test scores for the years from 1994 to 2012, the final year for which such data is available. The rows labeled with each country's name are the TOEFL Listening score for that country. The table is presented in two parts.

**Table 23 – TOEFL Scores for 7 African Nations**

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Rwanda	52	53	50	51		50	49	51	51	50
Writing	54	56	52	53		54	53	55	55	54
Reading	51	54	52	52		52	51	52	52	53
Total	522	544	511	522		520	511	527	527	523
Tunisia	52	51	51	52				49	49	53
Writing	53	53	53	53				53	53	54
Reading	51	52	53	53				53	53	53
Total	520	522	522	527				515	515	535
Mozambique	49	50	51	51		48	47			
Writing	50	52	52	51		48	49			
Reading	50	51	53	51		50	50			
Total	495	508	522	512		487	488			
Burkina Faso	50	50	50	48			47	50	50	
Writing	53	53	52	52			52	54	54	
Reading	50	53	53	52			52	53	53	
Total	510	520	515	506			502	524	524	
Sierra Leone	54	53	52	56						
Writing	56	57	55	56						
Reading	51	53	52	54						
Total	544	540	534	552						
Zambia	59	57	58	57						56
Writing	61	61	62	60						60
Reading	56	57	58	56						54
Total	586	587	592	578						568

Benin	49	49	49	49		45	48	48	48	46
Writing	54	55	54	53		52	54	52	52	52
Reading	51	52	53	52		50	51	50	50	50
Total	515	528	522	515		491	511	497	497	494

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Rwanda	48	51		48	47	47	49	49	51
Writing	53	54		53	53	52	52	53	55
Reading	52	52		51	52	50	50	51	52
Total	509	521		506	505	494	503	510	528
Tunisia	53	53		51	52	53	50	55	45
Writing	54	53		54	52	52	50	56	50
Reading	52	52		53	53	52	50	55	48
Total	530	529		526	522	523	498	551	479
Mozambique				48		59			
Writing				51		59			
Reading				50		57			
Total				497		583			
Burkina Faso	50	50		48	47	49	48	48	45
Writing	53	54		53	51	51	52	52	48
Reading	51	50		51	51	50	50	49	47
Total	514	514		505	500	497	499	494	465
Sierra Leone		52			52	53	53	52	50
Writing		57			55	55	56	54	55
Reading		51			51	51	51	48	49
Total		535			528	531	530	514	518
Zambia	56	57		56	55	58			
Writing	59	61		59	59	61			
Reading	54	55		53	52	56			
Total	562	576		560	555	583			
Benin	49	49				50			
Writing	53	53				52			
Reading	50	52				51			
Total	504	513				513			

Table 23 test score data comes from Educational Testing Service.

## Appendix 8 – TOEFL

Below is the table that refers to TOEFL test formats and their availability. The Year column is that referenced in the analysis above. The Dates Included column explains the timeframe from which the data comes for a particular year. The PBT, CBT, and iBT columns have X's when data for that specific test was reported in that year's report. The original test, the paper based test, or PBT, is based on three scores for listening, structure and writing, and reading.

All three have a minimum score of 31. Reading has a maximum score of 67. The other two components have a maximum score of 68. To calculate a total score these three components are averaged together, multiplied by 10, and rounded to the nearest integer for a range of 310 to 677. The computer based test, or CBT, was introduced in 1998. The components of this test are identical to the PBT, but have a possible range of scores from 0 to 30. The total score is computed by adding the scores of the three components together. The internet based test, or iBT, began to be phased in in September of 2005. This test has superseded the CBT. This test consists of reading, speaking, listening, and writing components with a range of scores from 0 to 30. Like the CBT, the total score for the iBT is computed by adding together the individual component scores. During its launch year, iBT results were the only ones reported by ETS in its score data and summary report (year 2006). As of mid-2012 the PBT was being phased out in favor of the iBT. In 2013 no PBT results were reported by ETS and seem unlikely to be reported in the future.

**Table 24 – TOEFL Test Formats**

Year	Dates Included	PBT	CBT	iBT
1994	July 1993-June 1995	X		
1995	July 1996-June 1996	X		
1996	July 1997-June 1997	X		
1997	July 1997-June 1998	X		
1998	July 1998-June 1999	X	X	
1999	July 1999-June 2000	X	X	
2000	July 2000-June 2001	X	X	
2001	July 2001-June 2002	X	X	
2002	July 2002-June 2003	X	X	
2003	July 2003-June 2004	X	X	
2004	July 2004-June 2005	X	X	
2005	July 2005-June 2006	X	X	
2006	September 2005-December 2006			X
2007	January 2007-December 2007	X		X
2008	January 2008-December 2008	X		X
2009	January 2009-December 2009	X		X
2010	January 2010-December 2010	X		X
2011	January 2011-December 2011	X		X
2012	January 2012-December 2012	X		X
2013	January 2013-December 2013			X

Table 24 data comes from Educational Testing Service.

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