The Effects of English in the Development of a Country

by

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Abstract

When traveling around the world, even in developing countries, one can easily identify that English is the de facto mode of communications between locals and foreigners in most countries. There are regional languages, like Chinese, that can be easily used to communicate in certain regions like South East Asia. However, in most countries, English is the favored language.

The problem is that not only do the percentage of people who speak English varies by country, but the level of English spoken by people who claim to speak English also varies. For example, as a business, you might find a higher level of English spoken in the Netherlands or Germany compared to in Italy. This paper tries to prove that learning English is beneficial to the development of countries, mainly because it gives the country access of the international market and removes barriers that would otherwise be imposed by not speaking a common language with another market.

Introduction

English rose as the predominant language for international relations with the rise of English Empire in the 19th century and the rise of the United States in the 20th century. The English dominions adopted English as their own language. With the rise of the United States as the world economic superpower English became a necessary fort trade– technical knowledge (science), international relations (diplomacy), and technology (The Internet).

In order to understand the importance of learning English, one can look, for example, at the types access that English provides. How can, for example, knowing English, help a person develop knowledge or skills that are not readily available to him or her in their native language? Michael Gordon, a Princeton University professor of History of Science, in an interview with Patrick Cox, journalist, explains how World War I & II helped shape English into the dominant language in sciences–And therefore a requirement for any respectable scientist according to Cox. During World War I, explains Cox, a boycott of axis power scientists led to creation of international organization to govern science. These organizations had English as their official language. The first, the International Union of Pure and Applied Chemistry was crucial to promote English within the scientific war. This course was further fomented after World War II, when American science started to dominate in the world. This thus allowed the scientific community to become very U.S.-centric, and therefore very English-centric.

The world of international relations, dominated by international organizations like the United Nations, World Bank, or the International Court, have *officially* a few different official languages. I mean *officially* because English and French for example, are the working languages in the

aforementioned institutions. However, even in institutions like the European parliament, English dominates. Alison Graves, Head of Training of Interpreters at the European Parliament notes that:

> "All languages are equal but to coin a phrase some are probably more equal than others. Our official line is very definitely that all languages are equal but there's no point denying the fact that English is becoming more used and therefore more valued."

This statement was further corroborated by György Schöpflin, a Hungarian Member of the European Parliament who affirms that:

> "English has become dominant. Pretty much everybody who wants to have some kind of a role and function and above all influence will know English" (Worlds of English).

The epicenter of technology has been the United States since the great wars. Technologies like the internet and software are written in languages based of English (SQL, Python, C++, among others). This has led to creators and users of technology to learn English. Web Technology Surveys shows an analysis of the top 10 million websites on the Alexa rank indicating that English is the most common language in the internet.[1] Over 52 percent of websites use English in their content.[2] That is 8 times the number of websites than that of the second most used

[1] Alexa is a company that provides data of website traffic. They have a complex ranking determining the importance of each website. Though it may not always be accurate to represent web traffic, it nonetheless works for the purpose of the analysis.

[2] *"Note: a website may use more than one content language" (WTS)*

language–Russian with 6.4 percent. This, additionally, has helped English expand at a higher pace. As English becomes more available to people of lower resources. It is no longer necessary to have physical contact with a someone to learn. Social media, for example, allows you to connect with people around the glove instantly, breaking down the physical barriers.

English dominates our world, there is no doubt about that, Gary Simons and Charles Fennig of Ethnologue found that around 20 percent of the world speak English. The majority who speak it as a second language. In this paper, we will try to quantify the importance of English as it relates to economic measures of development. The aim is to understand how does increasing the level of English in a country affects its development.

Review of Literature

English as a language tool for countries to access international markets.

There has been extensive literature that shows that learning English allows countries to access the international markets. The British Council considers that similar how a single currency facilitates trade between countries, a common language undoubtedly contributes to "dialogue, understanding, trust and the brokering of deals."[3] This is corroborated by The Economist Intelligence Unit survey that shows that around 70 percent of executives across the globe say that English is required for international expansion. It further shows that 95 percent of executives believe that 50 percent of their employees will need to know English whereas only 8 percent said Chinese was a requirement. [4] This is the case, because, as the British Council noted, language is

[3] Robson, Mark.
[4] The Economist.

like currency. This shows that language is a tool to access international markets for trade, financing, and knowledge.

There is data to back up the concept of language as a tool. Professor Pankaj Ghemawat, Director of the Center for the Globalization of Education and Management at NYU Stern, has identified that if two countries share a common language, they trade 42 percent more than two similar countries without a linguistic connection.[5] The effect is less than the impact of using a common currency which increases trade by 114 percent, but is it still an important one.[6] A big example of the importance of language in trade can be easily seen in China, were 68 percent of the foreign direct investment that entered the country last year came from countries where Chinese is a primary language–like Hong Kong and Singapore.[7] The effect (in terms of foreign direct investment flows) is similar with the United Kingdom and its former colonies, and between the colonies themselves. Though this shows the relative levels of trade, most of these cases do not show the added benefit for countries whose people learn the universal language–English.

English as an advantage in the labour market

English not only affects a country as a whole, but it also serves as an advantage to individuals who can speak it. Geoffrey Carliner, an economics professor at Boston University, quantifies in his research the added benefit of English in his paper *Wage Differences by Language Group and the Market for Language Skills in Canada.* Carliner shows that there is a wage premium for knowing a language whose demand is not met by native speakers.[8] He makes the simple analysis

[5] *Ibid*
[6] *Ibid*
[7] *Ibid*
[8] Carliner, Geoffrey.

that helps us understand better the effects of learning English. In a multilingual environment, there are A_n native speakers of language A, and B_n native speakers of language B, you can also have three types of jobs, those that require A, those that require B, or those that require both. Finally, if you have scenario where more jobs require language A, then the demand for A is larger than A_n if there is no (wage) premium. The opposite would happen to language B, where the demand for B would be smaller than B_n without a premium. The key finding is that for an equilibrium to occur, the wage rate for jobs that require A must be higher than the wage rate for jobs that require B.[9] Exhibit 1, shows the wage regressions of the different language groups in the region.[10] We focus in the region of Quebec, and the findings are very interesting. Carliner shows that in 1971 in Quebec, there was a substantial wage premium for those who learned English and French for people who spoke neither. There were also substantial rewards to learning English for native French speakers. The wage of bilingual English is 109 percent. [11]

Exhibit 1

[9] *Ibid*
[10] *Ibid*
[11] *Ibid*

TABLE 1
MEAN AGE, EDUCATION, AND WAGE RATES BY LANGUAGE GROUP AND AREA

	Monolingual English	Bilingual English	Bilingual French	Bilingual Other	Monolingual French	Nonnative French	No Official Language	Nonnative English	Total
Montreal									
Age	39.9	39.6	38.4	38.9	36.3	40.6	42.7	40.0	38.4
Education	11.6	11.6	10.4	9.2	8.1	6.5	5.6	9.5	10.0
Wage	$4.71	$4.69	$3.87	$3.32	$3.05	$2.88	$2.09	$3.08	$3.81
Percent	13%	13%	42%	3%	23%	2%	1%	3%	
Sample size	697	664	2254	172	1244	107	56	161	5355
Quebec									
Age	39.9	39.7	37.7	35.9	36.6	37.3	45.3	42.1	37.9
Education	10.9	11.6	10.8	11.4	7.9	6.5	5.7	8.7	9.4
Wage	$4.06	$4.49	$3.72	$3.27	$2.88	$3.17	$2.20	$3.54	$3.43
Percent	8%	9%	36%	2%	41%	1%	1%	2%	
Sample size	830	890	3736	198	4269	100	81	185	10289
Toronto									
Age	39.0		37.0			40.2		38.8	38.9
Education	11.2		12.3			6.0		8.8	10.7
Wage	$4.41		$4.58			$2.98		$3.50	$4.23
Percent	74%		7%			4%		15%	
Sample size	4186		427			204		836	5356
English Canada									
Age	38.6	36.9	37.6	37.4		36.3	39.3	38.4	38.8
Education	10.6	11.6	8.5	12.4		6.1	5.2	8.7	10.4
Wage	$3.97	$4.21	$3.62	$6.15		$3.17	$2.80	$3.49	$3.93
Percent	81%	6%	3%	0.3%		0.8%	1%	8%	
Sample size	22502	1740	913	111		141	324	2026	27757
Canada									
Age	38.6	38.0	37.7	36.3	36.6	38.1	40.8	38.6	38.5
Education	10.6	11.6	10.4	11.7	7.9	5.7	5.3	8.7	10.1
Wage	$3.97	$4.31	$3.71	$4.08	$2.89	$3.15	$2.65	$3.50	$3.79
Percent	61%	7%	12%	0.8%	12%	0.3%	1%	6%	
Sample size	23334	2689	4649	308	4398	110	407	2211	38046

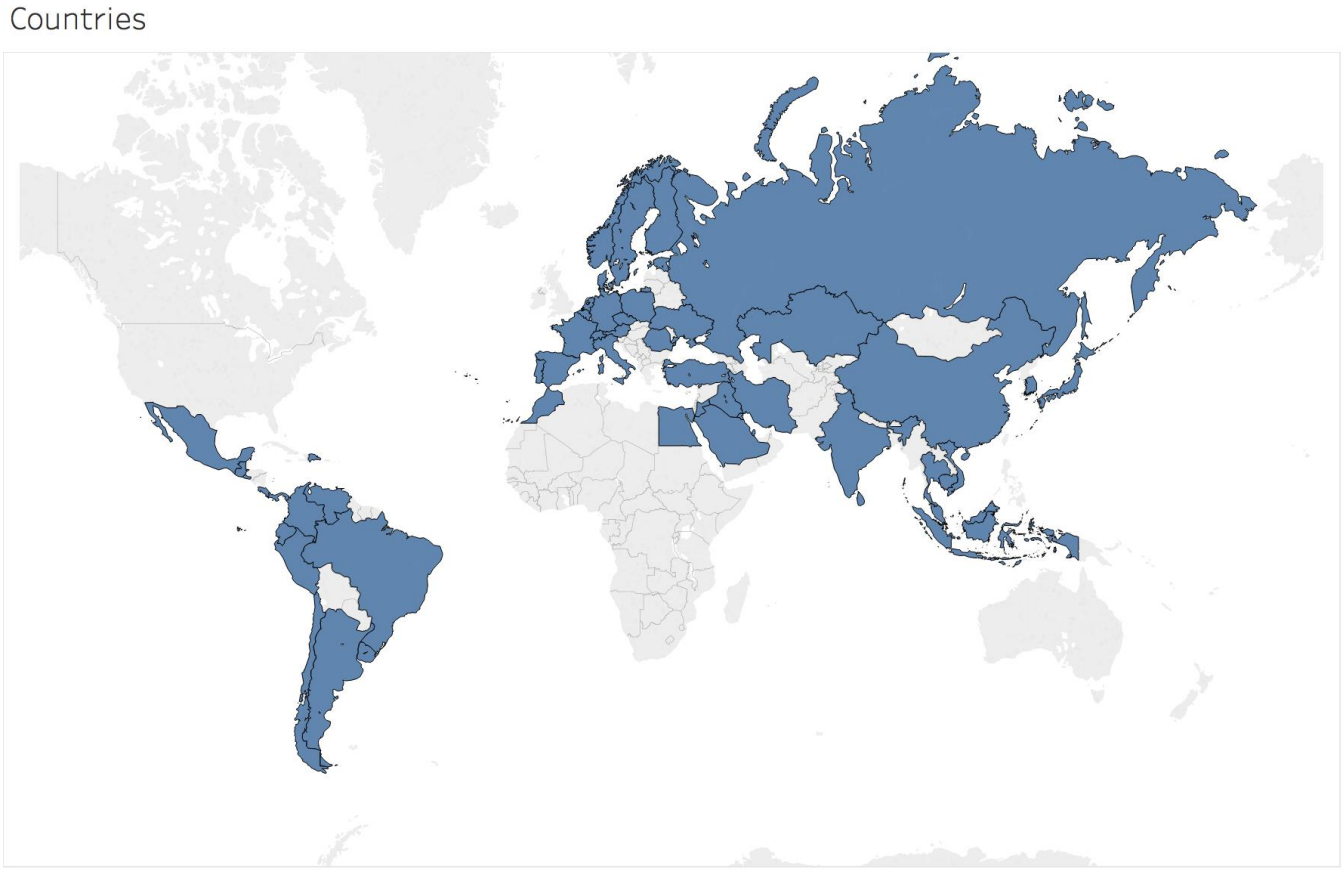
Methodology

Data

For this research, I am going to look at a cross-section of countries to show that English proficiency has an impact on economic development. I will define two base equations using Gross National Income per capita in real dollar terms and the Human Development Index as dependent variables and a measure of capital and labour as the independent variables. From that base equation, I will add a measure of English proficiency called the English Proficiency Index as an independent variable and will see how it affects both GNI Per Capita and HDI.

I looked at data from 55 countries (See Exhibit 2). None of these countries have English as their first language. The countries were selected based on whether their information was available for all the metrics used in the study. It includes developed and developing countries alike, spanning from South America all the way to Asia. The only continent that is underrepresented is Africa. The only countries purposely excluded were those with English as the primary language as they are assumed to have a perfect English proficiency.

Exhibit 2



Establishing a Base Equation

The first step is to define the concept of development. There are many ways of measuring development. We can look at well-being, social progress, quality of life, or human development amongst others.[12] I believe it is best to take a two-tier approach which encompasses the different definitions. Human Development Index and the Gross National Income per capital in real United States Dollars can give us a picture of the development of a country. We will be using these two as the dependent variables.

[12] Gallardo, Glenda.

1) HDI as quality of life: The Human Development Index was developed by the United Nations and it measures the achievements of what they consider are the key dimensions to development: *"a long and healthy life, being knowledgeable and have a decent standard of living."*[13]
2) Gross National Income as Development: When thinking about development, it is easy to consider, what makes people happy. For thousands of years people have related happiness with development. Richard Easterlin famously looked at the relationship between a country's Income and the happiness of its people. He found that there was little significance in the links between aggregate income and the average level of happiness in different countries across time. This phenomenon became known as the *Easterlin's Paradox*[14]. However, recent research has demonstrated that thought this might be true across country, in the sense that a high-income country is not necessarily happier than a low-income country, relative wealth within a country does affect happiness.[15] Wolfers and Stevenson demonstrate that indeed, within a country, as people gain wealth they become happier.[16] Thus, assuming that happiness measures development because people work towards what makes them happy. Gross National Income per capita in real dollar term allows us to n look at how the factors of production affect income and the relative happiness of the people.

To build the model, we need the factors of production of a country to explain the dependent variables. For capital (*k)*, I use a country's ***Private Capital Stock*** as a percentage of nominal

[13] United Nations
[14] Stevenson, Betsey, and Justin Wolfers.
[15] *Ibid*
[16] *Ibid*

GDP and for labour (*l)*, I use the country's ***Unemployment Rate.*** This gives us our base equations:

$$GNI = f(Private\ Capital\ Stock, Unemployment\ Rate)$$

$$HDI = f(Private\ Capital\ Stock, Unemployment\ Rate)$$

With these two equations, we now run a regression of the data from the 55 different countries.

GNI Regression[17]

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	7121	10251	0.69	0.490	
Private Capital Stock	17799	6998	2.54	0.014	1.00
Unemployment	-34935	62823	-0.56	0.581	1.00

The model shows a regression with Gross National Income per capita in real dollar terms as a dependent variable. N= 55 Countries. R-Sq.= 23.13%.

HDI Regression

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0.6562	0.0456	14.39	0.000	
Private Capital Stock	0.1091	0.0311	3.50	0.001	1.00
Unemployment	0.023	0.279	0.08	0.936	1.00

The model shows a regression with Human Development Index as a dependent variable. N= 55 Countries. R-Sq.= 18.74%.

The Coefficients do show that as Private Capital Stock increases, so does HDI and GNI Per Capita. Unemployment does not do as well of a job to explain the either GNI and HDI. This can

[17] The regression for both HDI and GNI are composed of the data of the 55 countries previously mentioned for the year 2014.

be for a multiple of reasons, including how countries measure unemployment. My theory is that unemployment measures the quantity of labour but does not determine the quality of the labour. This is why we add another component to our equation $G_{l,i}$– the normalized number of graduate students from each of the countries in the data set that got to the United States for advance degrees in the Science, Technology, Engineering, and Math (STEM). We chose the students coming to the Unites States for a variety of reasons, one is that STEM graduate programs are well funded with scholarships thus removing the bias that exists in the data to only show people that can afford advance studies. Second, every country reports data differently and thus inconsistent, making it unviable to be compared. The graduate student data adds the component of quality to the composite of labour in our equation. Studies (O'Carrol, C, 2006; Castillo, 2017) show that the level of education is positively correlated with income given the increased quality of labour. The higher the education attained, the higher the yearly salary (even after adjusting for difference if working hours).[18] The data is taken from the same 55 countries, and to remove the effect of large countries sending more people than smaller countries, we normalize the data by dividing the number of graduate students by the number 18-32-year old in each country.[19] This thus yields an approximation of the percentage of students who go for graduate education in the United States from each other individual countries.

Exhibit 3 shows the relationship between the Log GNI Per Capita and the Log of the Normalized Graduate data. The seems to be a positive correlation between the two. Exhibit 4,

[18] Harmon, Colm
[19] World Bank

shows the same relationship of the Log of the Normalized Graduate data but with the Log of HDI.

Exhibit 3

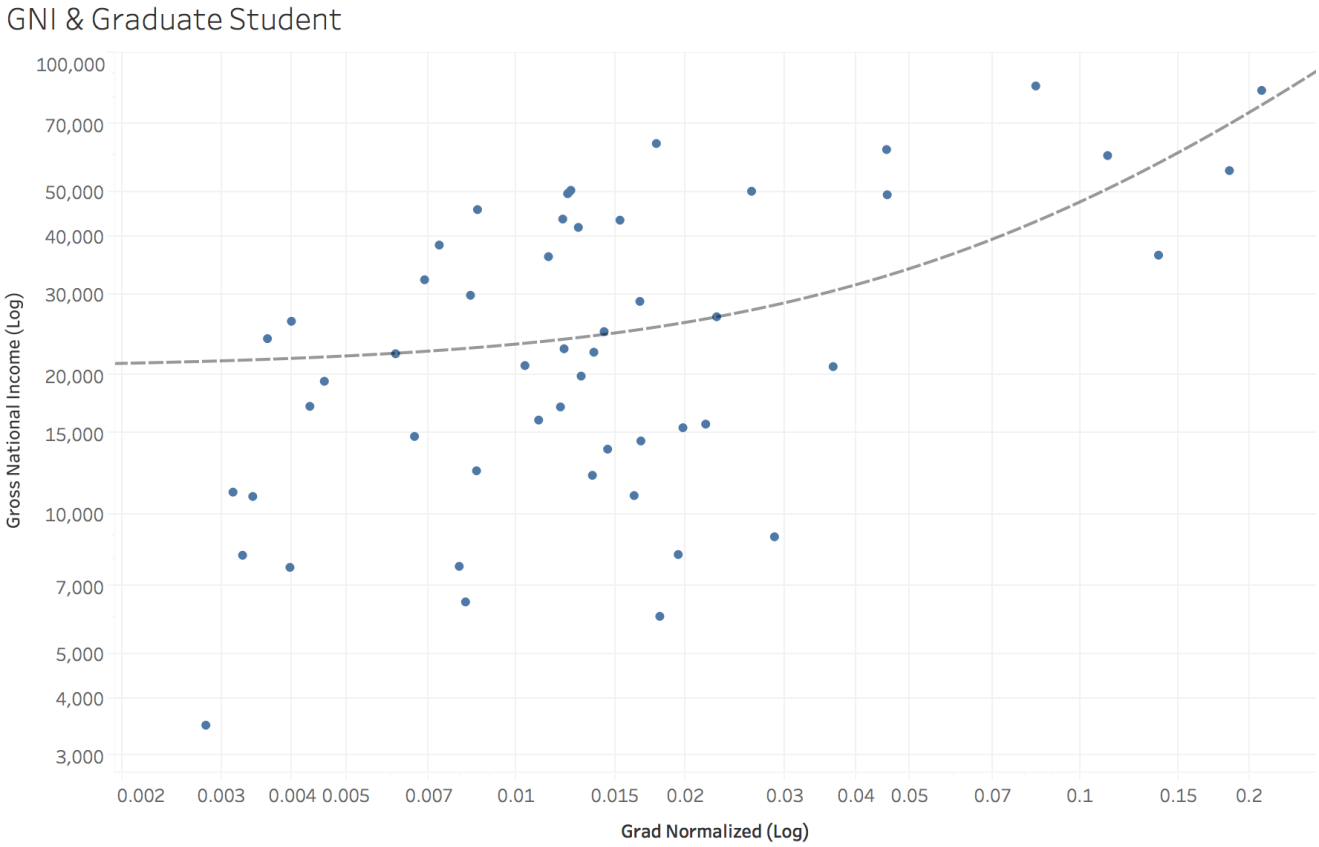
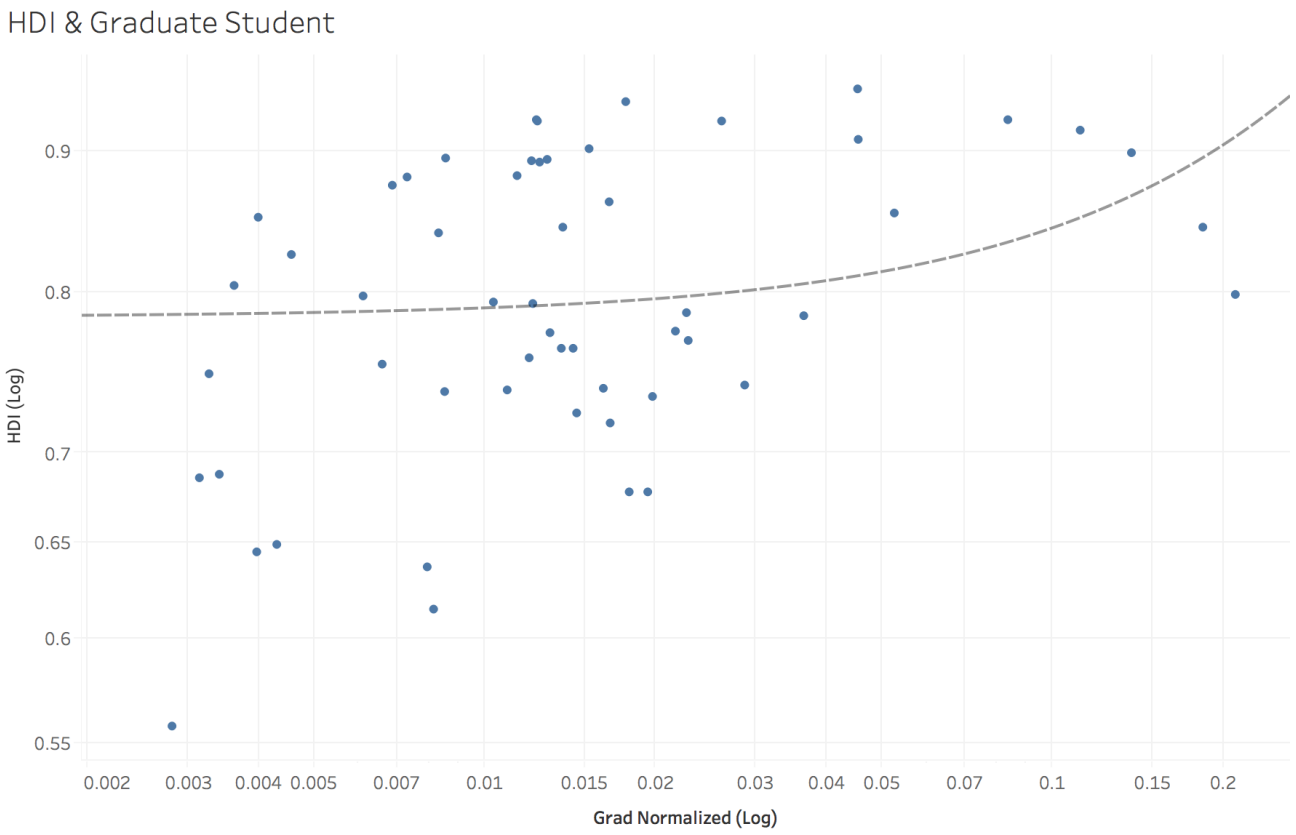


Exhibit 4



This return on education (the difference between the less educated and the more educated), shows that the more people attain advance degrees, the better off the country will be. I see this as the Labor component explaining a rise in economic progress. This is because one can see labour as the effort that people contribute to the produce goods and services, and education takes effort.[20] Studying takes time and effort. To Learn something, men and women have to input hours of work into developing the expertise that will yield knowledge to work in a specific field or function. [21]

Thus, our two equations:

[20] Federal Reserve Bank of St. Louis.
[21] *Ibid*

$$GNI = f(Private\ Capital\ Stock, Unemployment\ Rate, Normalized\ Graduate\ Data\ )$$

$$HDI = f(Private\ Capital\ Stock, Unemployment\ Rate, Normalized\ Graduate\ Data)$$

GNI Regression

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	-5256	8692	-0.60	0.548	
Grad Normalized	279771	53689	5.21	0.000	1.07
Private Capital Stock	17696	5709	3.10	0.003	1.00
Unemployment	37908	53116	0.71	0.479	1.08

The model shows a regression with Gross National Income per capita in real dollar terms as a dependent variable. N= 55 Countries. R-Sq.= 42.15%.

HDI Regression

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0.6268	0.0454	13.80	0.000	
Grad Normalized	0.665	0.281	2.37	0.022	1.07
Private Capital Stock	0.1089	0.0298	3.65	0.001	1.00
Unemployment	0.196	0.278	0.71	0.484	1.08

The model shows a regression with Human Development Index as a dependent variable. N= 55 Countries. R-Sq.= 27.22%.

The results are very interesting. With an R-squared of 42.15 percent compared to 23.12 percent in the previous models, normalized graduate data seems to really add to the significance of the equations. Similarly, for the HDI regression, R-Squared goes up to 27.22 percent. The large coefficient of Grad Normalized is explained because of the really small number graduate

students represent of the population making a percentage point change substantial. Having thus established our base equations we now move to see how English affects these two equations.

English Proficiency Index as a compliment *k* of (human capital)

Language skills satisfy the three requirements for human capital, that it is productive, costly to produce, and embodied in the person.

First, proficiency in a dominant language is productive in the labor market. Those who speak/read a dominant language, like learning English in Canada, will find it easier to get a job and will generally be more productive on the job and will be better compensated for that Job. In addition, language skills are productive in consumption activities. Proficiency in the dominant language will make it easier (efficient) to find better (higher quality) goods and services and at lower prices.

Second**,** acquiring language proficiency costs. Immigrants spend money in schools, buying books, etc., to become proficient in another country's language. Even for kids that are learning languages it does not come without costs. The parent's time taken to speak and read to their child is costly.

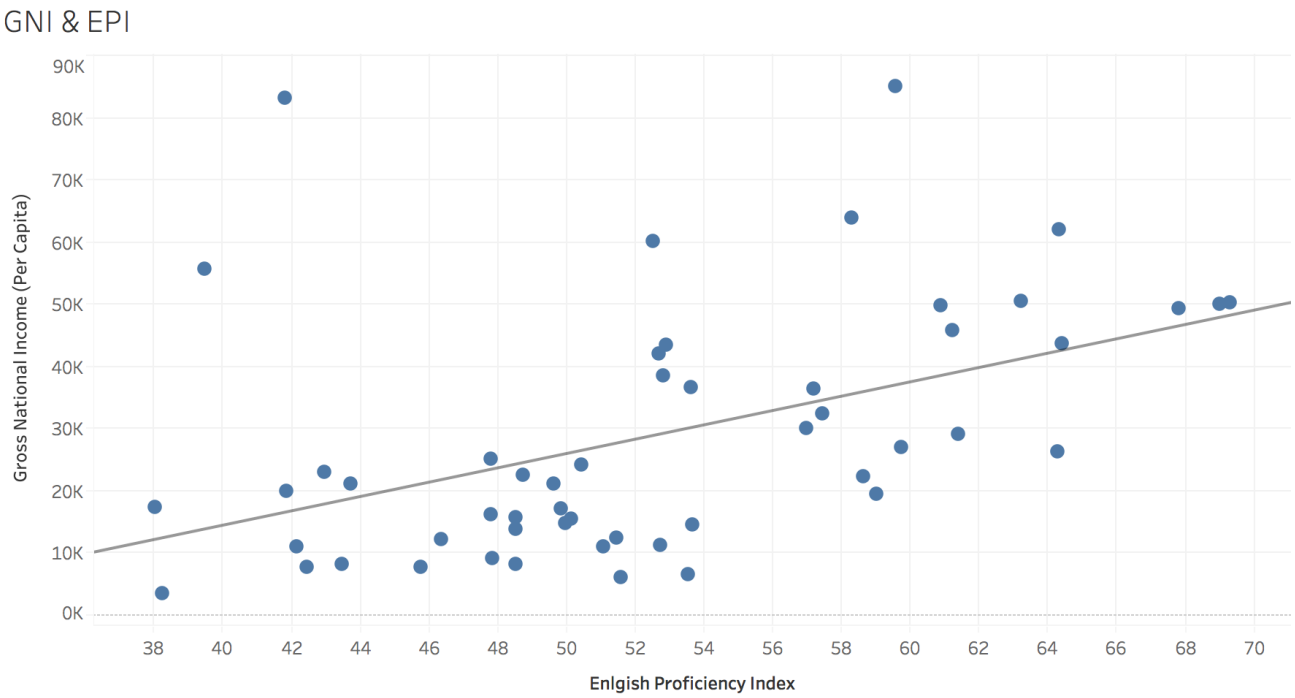
Third, language skills are *embodied* in the person. Unlike owning physical capital (cash), language skills cannot be separated from the person similar to knowing how to play the piano or throw a basketball.

In order to measure the level of English in each of the countries, we look at Education First (EF). EF is an international education and research company based in Massachusetts. Since 2011, they have been publishing an English Proficiency Index that attempts to measure different countries' level of English through data gathered of over 1 million tests.[22] EF explains their methodology for the score as a normalized score of the average of 3 test taken in each country, giving each test equal weight.

Exhibit 5 and 6 give us a snapshot of how English Proficiency Index compares with both Gross National Income per capita and Human Development Index of all the countries. You can clearly see a positive relationship.

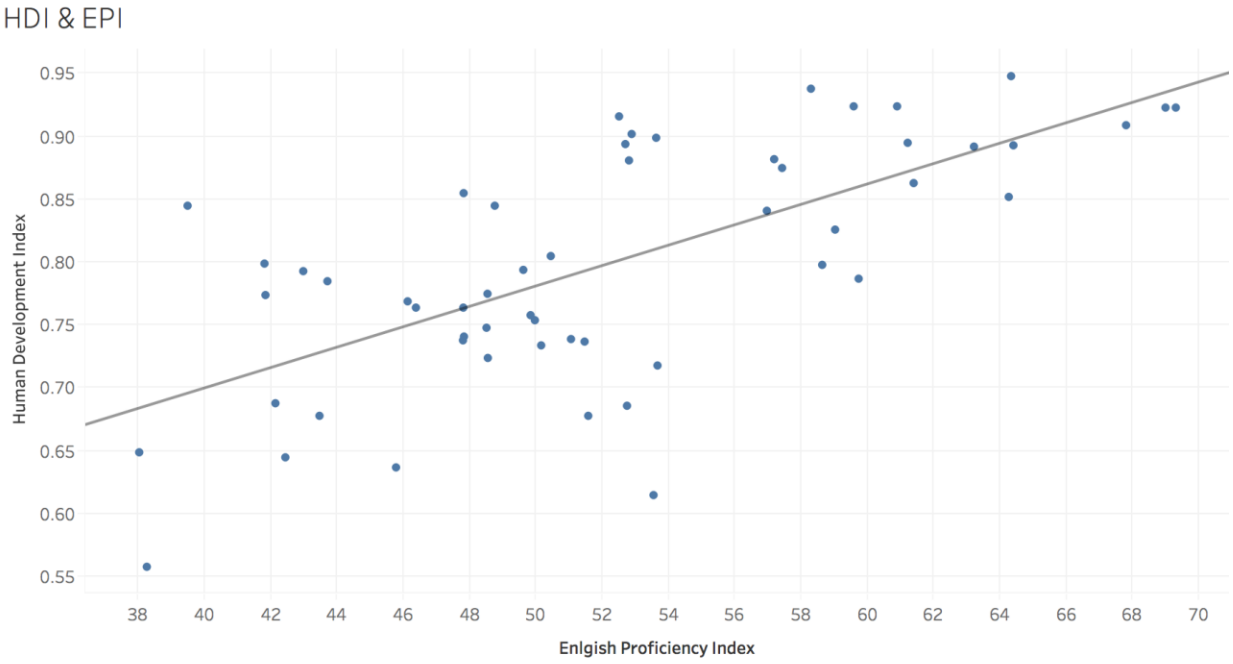
[22]EF Education First

Exhibit 5



EPI vs. GNI. Details are shown for Country. The view is filtered on Country and Exclusions (Country,EPI,GNI). The Country filter keeps 55 of 55 members. The Exclusions (Country,EPI,GNI) filter keeps 53 members.

Exhibit 6



The trend of sum of HDI for EPI. Details are shown for Country. The view is filtered on Country, which keeps 55 of 55 members.

When we look at the statistical data, we see that there is great significance in the relationship.

GNI & EPI

EPI vs. GNI. Details are shown for Country. The view is filtered on Country, which keeps 55 of 55 members.

P-value: 0.0002113
Equation: GNI = 1224.56*EPI + -36301.9

Coefficients

Term	Value	StdErr	t-value	p-value
EPI	1224.56	307.737	3.97924	0.0002113
intercept	-36301.9	16289.7	-2.22852	0.0301105

HDI & EPI

The trend of sum of HDI for EPI. Details are shown for Country. The view is filtered on Country, which keeps 55 of 55 members.

P-value: < 0.0001
Equation: HDI = 0.00810473*EPI + 0.375342

Coefficients

Term	Value	StdErr	t-value	p-value
EPI	0.0081047	0.0011962	6.7753	< 0.0001
intercept	0.375342	0.0633204	5.92767	< 0.0001

With a 99 percent confidence level, a point increase in the EPI leads to around 1,224.56 dollars increase in the Gross National Income per-capita. There is also a slight increase in the HDI. With this in mind, we can look at how EPI affects HDI and GNI when considering for the capital and labour components of development.

$$GNI = f(Private\ Capital\ Stock, Unemployment\ Rate, EPI)$$

$$HDI = f(Private\ Capital\ Stock, Unemployment\ Rate, EPI)$$

GNI Regression

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	-62894	12139	-5.18	0.000	
Private Capital Stock	6560	4879	1.34	0.185	1.19
Unemployment	43658	41666	1.05	0.300	1.08
Grad Normalized	319704	42675	7.49	0.000	1.10
EPI	***1350***	***235***	***5.74***	***0.000***	***1.22***

The model shows a regression with Gross National Income per capita in real dollar terms as a dependent variable. N= 55 Countries. R-Sq.= 65.12 %.

HDI Regression

Term	Coef	SE Coef	T-Value	P-Value	VIF
Constant	0.2671	0.0578	4.62	0.000	
Private Capital Stock	0.0461	0.0231	2.00	0.052	1.18
Unemployment	0.297	0.199	1.49	0.142	1.07
Grad Normalized	0.899	0.199	4.51	0.000	1.10
EPI	***0.00812***	***0.00110***	***7.38***	***0.000***	***1.20***

The model shows a regression with Human Development Index as a dependent variable. N= 55 Countries. R-Sq.= 64.15 %.

Conclusion & Future Implications

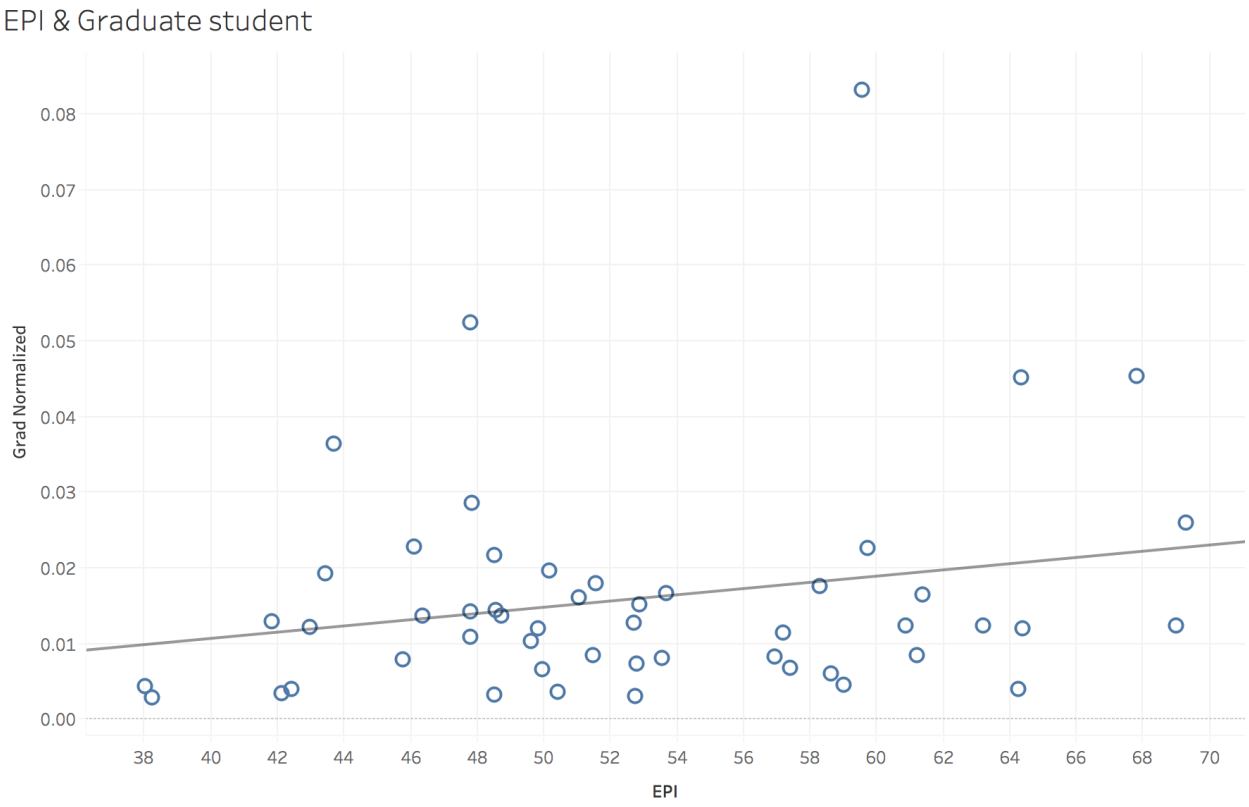
The evidence found in data shows that there is a strong correlation between the development of countries and higher national income per capita and higher levels of human development. This can be attribute in large part to the access to the international markets. When looking at the regression, a one-point increase in English Proficiency (as measured by the EPI) is associated with a $1350 increase in per-capita national income and a 0.008-point increase in the Human

Development Index. This is important, because if a country like Colombia were to increase its English level so that its EPI would go from 48.54 to 60.89, its average income per capita would increase by $16,672.5, to over $30,000 placing among high earning countries like Spain and South Korea. Furthermore, its HDI would increase to 0.872, placing it in the developed country lists. This shows two things:

One, that the monetary advantages to a country are substantial enough to compel a country to build an English language incentive program. This means building government sponsored institutions that help the population learn English. It also means that is it in the best interest of English Speaking countries like the UK and the Unites States to promote the use of English to keep its status as the de facto international language.

Two, the high correlation with HDI shows that the effect of English is in the standard of living of a country is significant. This can be explained partly by the increase in income, which leads to higher standards of living, but it is also explained by the increased education that comes along with formally learning a language. One can assume that in order to learn English, you need to have a relative advance level of knowledge in the local language. Thus, with English comes higher level of human capital. This is further corroborated by the positive relationship between EPI and the number of graduate students. Exhibit 7 shows this relationship.

Exhibit 7


EPI & Graduate student
Grad Normalized
0.08
0.07
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EPI

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