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A Study of International Migration from 1999-2006: An Analysis of Political Indices and other Non-Economics Determinants

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Abstract

This paper seeks to model determining factors in international migration from 1999-2006. By accounting for relevant variables, the paper aims to elicit the effect of several non-economic factors and their impact on an individual's decision to relocate. After replicating past literature to legitimize my newly constructed dataset, I add a number of qualitative features, such as a common spoken language, education levels, internet usage and finally an index that aggregates a set of World Bank indices that measures six dimensions of political quality. In the most complete regression, controlling baseline controls as well as a number of relevant features explored in the existing literature, I find statistically significant results for all of the non-economic variables. First, we see that the coefficient on a common spoken language dummy variable is positive and significant at the 1% level, even in the presence of migrant stock. Next, the coefficients on the secondary and tertiary education levels for the origin country are positive and significant at the 1% level. The coefficients on origin country internet usage are positive and significant at the 1% level, suggesting that the information has cultivated international migration. In the same regression, the coefficient on the aggregated political index for the origin country is negative and significant at the 1% level, meaning that an increase in political quality reduces migration from that country. My findings are consistent with theoretical and empirical models, which state that immigration is driven by the pursuit of freedom/education and facilitated by cost reducing features and the availability of information.

Introduction

For this paper, I create a dataset that includes significant international migration flows from 1999-2006 to elicit the effects of several non-economic variables on immigration. In order to verify the legitimacy of my data, I recreate a number of basic regressions as a comparison against previous literature. Having done this, I analyze a number of other important factors relevant to international migration that are underrepresented in the existing literature. Controlling for the generally accepted baseline variables, I evaluate the specific types of education obtained in various countries, as well as certain political indices in their relation to migration. Accounting for a number of other factors explored in the existing literature, I find that a common spoken language (> 9% of the population) significantly increases the migration flows between two counties, even in the presence of migrant stock, a similar measure of network factors known to decrease the cost of relocation. I also find that an increase in an origin country's secondary and tertiary education levels increase migration flows between those two countries. This result supports the theory that higher education encourages migration in pursuit of the education itself and as a result of obtaining the education (in pursuit of a job or more education). I also find that internet usage in the origin country, likely serving as a signal for information availability, is positively correlated with emigration out of that country. Finally, the model shows that an increase in an origin country's political index (i.e. a more stable political environment) correlates with a lower migration rate, confirming the logic that people emigrate less as they face less internal pressure to move.

Theoretical Background

The causes of migration and its subsequent impact on a country's development remains a heavily debated political topic. The scope of this debate has grown to include economics, forcing academics to model immigration with an econometric view, exploring its causes and its impacts on both origin and destination countries. Recently, there has been a substantial amount of literature concerning immigration, studying a wide variety of possible benefits and other side-effects that immigration may have on a country's economy. A popular measure of migration patterns involves the use of a gravity model, which considers the positive and negative forces that pull/push an individual to/from a country. These determining factors can be understood in terms of a cost-benefit analysis, where an individual's emigration decision is a function of prospective gains and losses.

Migration tends (ignoring refugee situations) to exclusively be a matter of personal choice, contingent on the amount of utility generated by the relocation. In order to properly model immigration, it is important to understand its underlying motivations. In order to model immigration, one must consider the decision making process that an individual faces in light of potential benefits and costs. Incentives (or disincentives) from a potential country of residence may come in the form of personal, financial, social or political motivations (Borjas 1989). Theoretically, an individual will either stay where they are or relocate to another location based on which option maximizes their utility. In light of this utility maximization problem, it is important to consider any aspects that may significantly alter their decision making process. While these key motivations may be easy to detect on the individual level, their effects become blurred when aggregated to a national level. Therefore, when presented with the task of looking at the causes and effects of international migration, economists began to apply the economic equivalent of Newton's law of gravitational force in their study of immigration. Typically used for measuring trade between two countries, the scope of gravity models has been extended to include immigration. These models consider two countries as separate entities, both of which possess particular features that may attract or repel an individual. These features are known as pull (attractive features) and push (unattractive features) forces. For instance, a short distance between countries or a substantial migrant population in the destination country serve to lower the cost of moving. On the other hand, an increase in the GDP differential between countries increases the benefits to moving, as the individual experiences an increase in income. In a cost-benefit framework, it becomes clear how these factors affect immigration, as they reflect an individual's potential utility gains.

There is another category of forces that can impact migration decisions called dyadic effects, which can be understood as the relationship between the two countries. It is important to control for all these types of variables, as they allow economists to more accurately identify the main causes of immigration. Dyadic effects tend to be qualitative measures, and although gravity models are normally interested in economic results, they will also include non-economic determinants in their equation. A common example of a dyadic factor is a common official language, which helps to lower the cost of moving between countries.

There are vast arrays of variables that can be controlled for in the pursuit to accurately model and understand the ramifications of immigration. The standard baseline determinants of immigration concern the seemingly obvious determinants of an individual's decision to move. We see that many of the factors that influence trade between countries also play a role in determining the amount of immigration that occurs between two countries.

The most basic determinants of migration between two countries concern geographical features. Countries that are adjacent or closer together will tend to have more immigration between them, as a shorter distance between countries means a smaller opportunity cost of traveling. This shorter distance or shared border may also increase an individual's knowledge of the nearby area and lessen their opportunity costs due to familiarity with the culture, environment, etc. However, in the internet age, this information effect may no longer be relevant due to the free-flowing nature of ideas between most countries.

Since the model aims to measure determinants of total migration, it is also important to measure quantitative factors. For instance, the model must consider various factors that reflect the living conditions of the countries. Foremost, it is important to control for measures such as a country's GDP and or a country's GDP per capita, since these variables allow the model to control for the financial well being of the countries involved (Borjas 1987, 1989). Low (or high) GDP per capita measures can serve as potential push (or pull) forces in measuring immigration flows. While the GDP measures look at a country's economy as a whole and the average income, respectively, some models include the income disparity within the country to more accurately depict the economic situation. It is also important to include the population of both countries, as migrants tend to migrate toward higher population areas. Along the same lines, a country's youth population is a key determinant, as migration tends to flow toward youth populations.

There are a number of dyadic variables that are important in migration patterns. These variables, often in the form of dummy variables, measure common characteristics that proxy for the relationship between or similarities of two countries. A common spoken language, official or unofficial, can be a major determinant of where an immigrant decides to relocate. Also, the model must be able to account for any variables that describe the history between two countries, such as colonial relationship or history of conflict. It is likely the case that people are less likely to travel between two countries with a history of recent conflicts for fear of personal discrimination. On the other hand, if two countries have a colonial relationship, they may share a similar infrastructure that encourages a more seamless transition in the migration process.

A factor related to these dyadic features is the common immigrant stock already present in the destination country. Like language, a higher level of a nationality's presence in a country helps to smooth the opportunity cost of migration. Not only will an individual be more likely to more efficiently communicate and relate to people of their own nationality, but they may also provide additional benefits such as employment. Including this variable also helps to control for the possibility that the immigrant may be relocating to reunite with family and/or relatives. Another factor related to both population measures and immigrant stock is the urban density of the destination country. Immigrants are more likely to migrate to areas of high population density (Bae 2004). This factor is likely related to the stock of common nationality within the country, and more particularly, a major city.

The education levels in both countries can also have a major impact on migration levels, either as push and pull effects (Borjas 1989). Many people travel to other countries in search of secondary and tertiary education. Once in a professional setting, these highly educated individuals may continue to relocate to new countries. As such, it is important to consider the effects of education levels on immigration.

While many of these variables are stagnant, such as distance or dummy variables, many of these factors need to be considered in the context of a particular time period. An increase in a destination country's per capita GDP may be related to immigration, but the effect may not be immediate. Rather, certain variables become more significant after a certain time lag, where the

effect has an opportunity to change an individual's utility decision. Controlling for time lags may help to account for imperfect information flows between countries.

There are also important factors in the measurement of migration that lie outside the spectrum of financial incentives. The political and social environment of the origin country is an important indicator of whether or not a person will continue to live there. One would expect that if the political stability of the country decreased over time, individuals would leave the country in pursuit of an environment that is more favorable for their beliefs and/or well-being.

In consideration of the multitude of potential variables that may be included in a gravity model, it is important to consider the nature of the utility maximization problem. Any potential pull features, whatever form they take, have a high chance of being related to other pull features. For instance, education levels and per capita GDP are likely to be highly correlated, somewhat skewing our interpretation of the coefficients. A model could potentially include hundreds of variables in order to model migration flows, but it would be difficult to determine the key driving aspects of immigration in light of such multicollinearity.

Literature Review

There has been an extensive and growing literature within the last 25 years devoted to studying the relationship between migration, trade, and country development. Most studies have been extensions of the basic gravity model, seeking to include new explanatory variables with the goal of eliciting the proper relationship between the variable and migration flows. Karemara et al. (2000) serves as a baseline study, analyzing the migration patterns to Canada and the US during the late 70s and early 80s. As one would expect, they find that contiguous countries yield more immigrants, and that origin country population and destination country average GDP increase migration levels. They also find that, on average, a higher origin country income decreases the migratory flow out of that country. In their study of African countries, Hatton and Williamson (2003) find a positive effect of destination-to-origin wage ratio on migration, as well as similar results for origin country population and GDP per capita growth.

Pedersen et al. (2008) find that greater distance between countries and higher origin country per capita GDP reduce migration. They also find that a higher origin population increases the flow of migration out of the country. When lagging the previous year's migration, they find that lagged flows yield larger migration in the following year. However, they conclude that the effect of a higher destination country per capita GDP yields an insignificant result on migration flows.

Clark et al (2007) offers further explanations of the determinants of immigration by analyzing U.S. immigration during the period from 1971-1998. They isolate various factors such as "real incomes, education, demographic composition, and inequality", as well as their innovative "friends and relative effects" (Clark et al 359). The authors also recognize that the majority of previous literature has failed to account for some relevant aspect of immigration, whether it is one of the aforementioned elements or a country's immigration policies. This paper defines the probability that an individual will migrate from one country to another in a theoretical function of relative wages, distance migration costs and immigration policies. Their empirical formula includes such features as schooling, inequality, poverty, stock of origin country population, common language, distance and whether or not the countries are landlocked. Their results find both significant results for individual preferences and policy limitations. They find that the number of previous immigrants from the same country has a significant, positive effect on future immigration from that country. They also find that "while the effects of

differences in source-country per capita income shifted the composition away from developed regions toward poorer regions, education effects generally work in the opposite direction" (Clark et al 369). Their results support the finding that lagged migration increases migration and distance between countries decreases migration. However, contrary to Karemara et al. (2000), they find that origin country income promotes migration.

Mayda (2010) extends the analysis of immigration to a broader scope, considering a multitude of destination and origin countries, utilizing both cross sectional data as well as time series data. By controlling for country fixed effects, she also claims to control for a number of issues that arise in previous immigration gravity models, such as endogeneity and reverse causality. Mayda finds that various pull factors, proxied by per worker GDP, significantly increase the size of emigration rates. As one would expect to see, migration is seen as an increasing function of destination country GDP and decreasing function of other host countries. In other words, an increase in destination country per capita GDP will have a positive effect on immigration flows only if it increases relative to the GDP of "competing" countries. At the other end of the equation, Mayda finds that the impact of push factors from the origin country, are seldom negative and often insignificant. Mayda argues this asymmetric result may be caused by restrictive destination country migration policies, which shift migration flows away from their natural equilibriums.

Data

I merge a number of data sources to construct a dataset containing international migration and trade flows, as well as a number of pertinent economic, cultural and political variables. The data for migration flows comes from the Organization for Economic Co-operation and Development (OECD) online database. They repost yearly migration flows from a wide variety of origin countries to a limited number of 20 destination countries for which data is consistently available from 1999-2006.

Data on the youth population comes from the United Nations online database. Information on migrant stock comes from the Development Research Centre, which presents migrant stocks in the form of a 226 by 226 matrix of origin-destination country, with 2000 as the reference year. Data on a country's percentage of citizens with primary, secondary and tertiary education comes from the Barro and Lee Educational Attainment Dataset (considering population aged 15 and over). All other measures of distance, population, colonial and language relationships come from the CEPII Gravity Dataset.

My political indices come from the World Bank and their Worldwide Governance Indicators (WGI) project, which reports country specific governance indicators for the breadth of countries. Their project reports yearly indices for six dimensions of governance; which they categorize into three distinct groups. The first category, which contains Voice and Accountability (VA) and Political Stability and Absence of Violence/Terrorism (PV), looks at "the process by which governments are selected, monitored, and replaced" (Kaufmann 4). The second considers the "capacity of the government to effectively formulate and implement sound policies", measuring Government Effectiveness (GE) and Regulatory Quality (RQ). The last category looks at "the respect of citizens and the state for the institutions that govern economic and social interactions among them", and contains Rule of Law (RL) and Control of Corruption (CC). For an in-depth description of the six indices, the methodology used to create them and potential limitations, please consult Kaufmann (2010).

Figure 1: summary statistics of my study's most relevant variables

Variable	Obs	Mean	Min	Max
Immigration Flow	13846	1921.25	11 (KNA ->	218822 (MEX->USA)
Per capita GDP, origin (incurrent USD)	13218	8935.95	84.5574 (BDI)	89563.63 (LUX)
Per capita GDP, destination (in current	13753	29742.44	2119.448 (TUR)	89563.63 (LUX)
Average Political Index Score, origin	8639	2.514	0.25155 (AFG)	4.400558 (FIN)
Average Political Index Score, destination	8732	3.909	2.17848 (TUR)	4.400558 (FIN)
% with secondary education, origin	11668	41.815	2.36027 (MOZ)	82.39128 (TJK)
% with tertiary education, origin	11668	11.74	0.3384 (MWI)	48.4735 (USA)
% with secondary education, destination	13846	51.72	25.8881 (TUR)	77.8403 (HUN)
% with tertiary education, destination	13846	22.50	9.0631 (TUR)	48.4735 (USA)
% with Internet, origin	13386	0.1726	0.00 (PRK)	0.8880 (ISL)
% with Internet, destination	13846	0.4954	0.02292 (TUR)	0.8807 (SWE)

Model Specification

The gravity model of migration specifies migration patterns as a positive function of the attractive features between the two countries and a negative function of the repellent features.

$$FLOWRATE_{i,j,t} = \beta 0 + \beta 1\, DIST_{i,j} + \beta 2\, GDPCAP_{i,t-1} + \beta 3\, GDPCAP_{j,t-1} + \beta 4\, CONTIG_{i,j} + \beta 5\, OFFLANG_{i,j} + \beta 6\, COMLANG_{i,j} + \beta 7\, COL_{i,j} + \beta 8\, EDUC_{i} + \beta 9\, EDUC_{j} + \beta 10\, POP_{i,t-1} + \beta 11\, POP_{j,t-1} + \beta 12\, YOUTHPOP_{i} + \beta 13\, YOUTHPOP_{j} + \beta 14\, MIGRANTSTOCK_{i,j} + \beta 15\, POLSCORE_{i} + \beta 16\, POLSCORE_{j} + \beta 17\, INTERNET_{i} + \beta 18\, INTERNET_{j} + \epsilon_{ij,t}$$

Equation 1

Where *i* is the destination country, j is the origin country and t is the time period. $FLOWRATE_{ijt}$ is defined as the total migrant flow from j to i at time t divided by the origin country (j) population at time t. $DIST_{ij}$ is the weighted distance between the two countries in kilometers. $GDPCAP$ is a one-year lagged measure of the log of a country's per capita GD $CONTIG$, $OFFLANG$, $COMLANG$, and COL are all dummy variables measuring a common border between countries, official language similarities, common unofficial language similarities and a history of colonial relationshi $EDUC$ is the percentage of a country's population level primary, secondary and tertiary education. POP is a one-year lagged variable measuring the log of a country's population. $YOUTHPOP$ measures the log of a country's youth population. $MIGRANTSTOCK$ measures the stock of origin country migrants within the destination country. $POLSCORE$ measures the aggregated political index of a country. Lastly, $INTERNET$ measures the number of internet users per 100 citizens. (A list of regression specific variables is included in the appendix.) Based on the model and previous literature, I expect to find that for the gravity model of migration, $\beta 1<0$, $\beta 2>0$, $\beta 3<0$, $\beta 4>0$, $\beta 5>0$, $\beta 6>0$, $\beta 7>0$, $\beta 8>0$, $\beta 9>0$, $\beta 10>0$, $\beta 11<0$, $\beta 12>0$, $\beta 13<0$, $\beta 14>0$, $\beta 15>0$, $\beta 16<0$, $\beta 17>0$, and $\beta 18>0$,

Empirical Results

Table 1 reports the results from four limited regressions run from Equation 1. In the most simple regression (1), I regress log of flowrate, controlling for a lagged measure of GDP per capita, the log of distance, and a common land border dummy variable. I generally find the expected results. All coefficients, except for the origin country per capita GDP, are the expected sign, as well as statistically and economically significant. As compared to Mayda's most basic regression, we find the same results for destination country per capita GDP and distance, but she finds an insignificant coefficient for origin country per capita GDP and a negative coefficient for land border. Interpreting some of the results from this regression, we see that a 100% increase in destination per capita GDP yields a 14.5% increase in immigration flows, whereas a 100% increase in origin per capita GDP yields a 16.2% increase in immigration.

In the next column (2), I add two dyadic variables to control for origin-destination relationships. Both variables are statistically significant and positive and seem to be correlated to destination country GDP, as the coefficient on that variable is significantly lessened by the inclusion of the two dyadic variables. Column (3) includes all of the population measures, including total population, youth population and migrant stock within the destination country. With the addition of these population measures, there are a number of significant changes to our previous results. First, the coefficient on origin per capita GDP changes from positive to negative. Also, 'common land border' and 'colonial relationship' change from positive to negative and lose significance. All of the new population variables have the expected signs and significance levels, except for origin country youth population, which is economically and statistically insignificant.

In the last column (4) of Table 1, I include the common language dummy variable. Interestingly, the only variable significantly altered by inclusion of this variable is the common official language dummy variable. The coefficient on the official language variable maintains its positive sign; however its magnitude is nearly cut in third. This is a significant finding, as we generally expect origin migrant stock in the destination country to control for the network effects generally believed to induce migration.

TABLE 1– De Variable = ln (flowrate)	(1)	(2)	(3)	(4)
Lag log (per capita GDP), origin	0.1619543 (12.79) ***	0.1896843 (15.88) ***	-.0432736 (-4.8) ***	-0.0480747 (-5.33) ***
Lag log (per capita GDP), destination	0.1447174 (5.07) ***	0.0647646 (2.42)**	0.1049114 (3.76) ***	0.0906383 (3.24)***
Log (distance)	-0.2723244 (-11.46)***	-0.3913579 (-17.29)***	-0.4321547 (-33.03) ***	-0.4387909 (-33.5)***
Share a border (=1)	1.19196 (10.28)***	0.6171081 (5.61)***	-0.0049295 (-0.08)	0.0028045 (0.04)
Share an official language (=1)		1.851686 (34.01)***	0.3508504 (11.87) ***	0.1305156 (2.87)***
Colonial Relationship (=1)		1.291873 (10.01)***	-0.260438 (-4) ***	-0.255205 (-3.93)***

Lag Log (population), origin			-0.7430974 (-108.75)***	-0.7405557 1)***
Lag Log (population), destination			0.151444 (16.16)***	0.1490368 (15.92)***
Log (youth population), origin			-0.051078 (-0.69)	-0.1018788 (-1.37)
Log(youth population), destination			2.183228 (16.64)***	2.09152 (15.88)***
Log (migrant population in destination)			0.6403662 (104.05)***	0.6330636 (101.31)***
Share a language >9% (=1)				0.295236 (6.36)***

T-statistics reported
(*** - significant at the 1% level)
(** - significant at the 5% level)

The positively significant coefficient on the common language variable reveals that there is a portion of the network effect that goes unaccounted for in the presence of migrant stock. To interpret the effect of per capita GDP on immigration flows, a 100% increase in per capita GDP yields a 9% increase in immigration flows. Also, the coefficient on the dummy variable in a log-model can be interpreted using: x% = 100(exp(C - V(C)/2) - 1), where C is the coefficient and V(C) is the variance of the coefficient. Using this interpretation, having a common language corresponds with a 34% increase in immigration flows between those two countries.

In Table 2, I add to the previous regression (4), by including a number of non-economic variables in order to elicit their impact in the presence of the generally accepted baseline gravity model. In the first column (5A) of Table 2, I report the results with the inclusion of the political indicators for the origin and destination countries. While I find the expected negative coefficient on the origin country index, I also find a negative result for the destination country. I attribute this result to the limited number of destination countries (20) available in my dataset. With such a small number of countries, we see little variation in destination country political index score. Also, with a small number of destination countries, it is likely that countries with the highest government index scores also experience lower amounts of immigration than other countries. This conclusion is supported by the data, where Finland, Denmark, Luxembourg and the Netherlands are among the highest rated countries. However, I believe the negative sign on the origin country variable accurately reflects how individuals tend to move away from unstable or unjust governance.

In regression (5B), I only include the origin and destination country education levels, which are measured in the percentage of the population with a certain level of education. I find positive results for origin country secondary and tertiary education, perhaps revealing the tendency of more educated citizen to move away from their origin country, either in the pursuit of more education or an occupation. I do find negative results for destination country education levels, although this result may be due to the same reasoning provided for destination country political score.

TABLE 2 – De Variable = Ln (flowrate)	(5A)	(5B)	(5C)	(5D)
Lag log (per capita GDP), Origin	0.0006127 (0.04)	-0.1490697 (-13.02)***	-0.0892209 (-7.99)***	-0.1266985 (-7.3)***
Lag log (per capita GDP), destination	0.1665942 (4.53)***	0.2884749 (7.93)***	0.0947018(3. 02)***	0.1577789 (3.38)
Log (distance)	-0.3552767 (-21.78)***	-0.3880621 (-25.2)***	-0.438397 (-33.16)***	0.3756318** (-20.49)
Share a border (=1)	-0.0265523 (-0.36)	-0.0345352 (-0.55)	-0.0052611 (-0.08)	-0.0740002 (-1)
Share an official language (=1)	0.1576239 (2.94)***	0.1986324 (4.09)***	0.1190947 (2.62)***	0.2164584 (3.76)***
Colonial Relationship	-0.4786482 (-6.16)***	-0.4482684 (-5.7)***	-0.2799127 (-4.26)***	-0.5042629 (-5.38)***
Lag Log (population), origin	-0.7699007 (-92.97)***	-0.7400558 (-92.35)***	-0.7415698 (-108.59)***	-0.7544356 (-78.04)***
Lag Log (population), destination	0.0712156 (5.78)***	0.1613094 (15.33)***	0.147162 (15.64)***	0.1024342 (7.01)***
Log (youth population), origin	-0.5612919 (-5.83)***	0.1197026 (1.51)	0.1514073 (1.86)*	-0.1338791 (-1.22)
Log (youth population), destination	0.4070035 (2.15)**	1.719071 (10.97)***	1.98528 (14.95)***	0.3659118 (1.51)
Log (migrant population in destination)	0.655624 (87.21)***	0.6486872 (87.82)***	0.6331326 (100.68)***	0.6552381 (74.22)***
Share a language >9% (=1)	0.3832883 (6.96)***	0.3073697 (6.23)***	0.3110291 (6.72)***	0.3624848 (6.18)***
Average Political Index Score, origin	-0.1977102 **			-0.2409125 (-7.7)***
Average Political Index Score, destination	-0.7682027 (-12.24)***			-0.4961948 (-6.35)***
% with primary education, origin		0.0002695 (0.32)		0.0010306 (1.04)
% with secondary education, origin		0.0057664 (7.65)***		0.0065265 (7.19)***
% with tertiary education, origin		0.0210075 (13.64)***		0.0200842 (10.94)***
% with primary education, destination		-0.0413304 (-10.64)***		-0.0267558 (-5.2)***

% with secondary education, destination		-0.0475821 (-12.37)***		-0.0319472 (-6.23)***
% with tertiary education, destination		-0.0413719 (-11.61)***		-0.0236441 (-4.67)***
% with Internet, origin			0.59259 (7.12)***	0.6266 (5.63)***
% with Internet, destination			-0.16539 (-2.36)**	0.05594 (0.6)

T-statistics reported
(*** - significant at the 1% level)
(** - significant at the 5% level)
(* - significant at the 10% level)

The next column (5C) includes a measure of a country's internet capabilities. I find that origin country internet capability has a significantly positive impact on immigration levels, perhaps acting to reduce the imperfect information that exists between countries. By increasing the flow of information between countries, potential immigrants can be become more familiar with other countries than in the past. Yet again, I do find negative results for the destination country, which may be driven by the limited sample of those countries.

In the final and most complete regression (5D), I include political indices, education levels and internet usage to the base regression (4). While I expected a great deal of multicollinearity between these non-economic variables, the results from the previous three regressions generally retain the same level of economic and statistical significance, the only exception being destination country internet usage, which becomes insignificant. To interpret some of the results from this final regression, a 100% increase in destination country per capita GDP yields a 15.8% increase in immigration flows. A one point change in an origin country's political score corresponds with a 24% decrease in emigration flows out of that country. In terms of education, a 100 percentage-point increase in an origin country's tertiary education levels corresponds with a 2% increase in emigration. Finally, a 100% increase in an origin country's internet usage yields a 62% increase in emigration out of that country.

Table 3 includes a fixed effect model (6), where the fixed effect controlled for is the destination-origin country combination. This fixed effect model is somewhat limited, as a good portion of my information is static. Most data sources only report data for a particular year and therefore is not subject to be analyzed in term of yearly fluctuations. Nevertheless, I display the results of this regression next to the most complete regression from Table 2 (5D) for the sake of comparison. This regression confirms the legitimacy of my dataset and previous regressions, as the fixed effect coefficient on the origin country political index is -0.265 and statistically significant (compared with -0.241 from the most specified regression). The GDP coefficients of the fixed effects model are in line with previous literature, with destination country per capita GDP positive and significant, while origin country is insignificant. This confirms that people tend to flow to wealthier, more highly populated areas. The main difference between the two models is the drastically different results for internet usage, both for origin and destination country.

TABLE 3– De Variable = ln (flowrate)	Most Specified Regression (5D)	Fixed Effects (6)
Lag log (per capita GDP), origin	-0.1266985 (-7.3) ***	-0.0297635 (-0.99)
Lag log (per capita GDP), destination	0.1577789 (3.38) ***	0.1567706 (3.15) ***
Average Political Index Score, origin	-0.2409125 (-7.7) ***	-0.2530852 (-5.62) ***
Average Political Index Score, destination	-0.4961948 (-6.35) ***	-0.2658311 (-3.88) ***
Internet Users/100 citizens, origin	0.6266 (5.63) ***	-0.31852 (-3.7) ***
Internet Users/100 citizens, destination	0.05594 (0.6)	0.14142 (2.12) **

T-statistics reported
(*** - significant at the 1% level)
(** - significant at the 5% level)

Conclusion

The results of this paper expand on the findings of existing migration literature by adding measures of specific country education levels and political indices. By first recreating the results of existing literature (Mayda in particular), I show that my data is legitimate and sufficient to conduct more specific regressions. After recreating the results of previous literature, I add a dummy variable to account for a common shared language (>9% of the population). The coefficient on this variable remains positive and significant, even the presence of migrant stock.

Next, I re-specify the model by adding certain non-economic variables. In doing so, I find significant results for the origin country political index, education levels and internet usage. These results confirm my hypothesis that there is a gap in the existing migration literature, as a number of non-economic influences are not accounted for in the consideration of an individual's utility maximization problem.

There are a number of variables I would like to consider in light of information availability and time constraints. First, a measure of income disparity or poverty within the countries could be relevant towards migration flows. Second, the percent of population in an urban environment could be particularly significant in the case of migration, as immigrants tend to settle in urban areas. Also, this study forgoes the inclusion of destination (origin) country immigration (emigration) policies, refugee populations, conflict levels and does not account for natural disasters. All of these variables are pursued in other literature, but a comprehensive study could be of particular interest.

Appendix

Laglngdpcap_o	Log of the one-year lagged per capita GDP, origin country (2006 USD)
Laglngdpcap_d	One-year lagged per capita GDP, destination country (2006 USD)
Lndistw	Log of population weighted distance between countries (km)
Contig	Dummy = 1 if countries are contiguous
comlang_off	Dummy = 1 if common official language
comlang_ethno	Dummy = 1 if a language is spoken by at least 9% of both populations
col45	Dummy = 1 if in a post 1945 colonial relationship
laglnpop_o	Log of the one-year lagged population, origin country
laglnpop_d	Log of the one-year lagged population, destination country
lnyouthpop_o	Log of youth population, origin country
lnyouthpop_d	Log of youth population, destination country
Ln_migrant_stock	Log of origin country migrant population within the destination country
edu_percpri_o	Percent of population with primary education, origin country
edu_percsec_o	Percent of population with secondary education, origin country
edu_percter_o	Percent of population with tertiary education, origin country
edu_percpri_d	Percent of population with primary education, destination country
edu_percsec_d	Percent of population with secondary education, destination country
edu_percter_d	Percent of population with tertiary education, destination country
inet_per_100_o	Internet Users per 100 citizens, origin country
inet_per_100_d	Internet Users per 100 citizens, destination country
avgscore_o	Average political index score (0-5), origin country
avgscore_d	Average political index score (0-5), destination country

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