Gravity effects of Culture, Institutions and Religion on Internal Migration in Brazil*

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Abstract

This paper conducts empirical research on the migration dynamics with a focus on the role of CIR distances of the Brazilian population. We have confirmed expectations about the explanatory power of the selected variables obtained by the Principal Component Analysis Method applied to data from the Latin American Public Opinion Project (LAPOP). The 2010 Brazilian Census compounds specific data on migrants. Thereafter push-and-pull factors of internal migration are analyzed with the background of a gravitational model. To account for omitted variables and endogeneity issues, we opt for the method Poisson Pseudo Maximum Likelihood with Fixed Effects (PPMLFE). By considering CIR distances we avoid bias in the outcomes, that otherwise would exist if they were not taken into account. The results provide robust evidence that people choose for a county with a smaller distance (in relation to the city of origin) in terms of life satisfaction, tolerance to corruption, political freedom, trust in the and praise for religious diversity. The research paves the way for public policy strategies. We stress, for example, a positive externality of migration, i.e. the renewal of the local social tissue.

Keywords: internal migration, cultural distance, gravity model, institutions, religious diversity
JEL Classification: L26, C26, D22, O31

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1 Introduction

As it has been addressed in the migration literature, human mobility is substantially affected by the increase of income, health and education. But migration is also dependent upon other elements. In this paper, we investigate cultural, institutional and religious factors (hereafter CIR factors) that also take part in the migration decision-making process. Migration is a key element to enable human freedom (Klugman 2009). In a country of continental proportions as Brazil, besides international migration, it is also relevant to take into consideration the internal migration.

The effects of internal migration flow in the Brazilian economy has been addressed in the literature (Da Mata *et al.* 2007; de Lima *et al.* 2019). We have found some relevant considerations about internal migration pointed by Carvalho and Rigotti (2015). He observed four main points: a) the relative reduction of the expansion process of large cities; b) the reduction of migration due to long geographical distances; c) an increased selectivity of the migrant to elect a destination; and d) an increased circularity process due to return migration i.e. coming back to the county of origin.

While considering that recurrent elements as age, wage, scholarship, population and GDP are crucial to explaining migration movements, there are also important gaps that lack explanation. The gaps when only accounting for the above-mentioned components could be caused by the lack of CIR factors. Therefore socialpsychological and structural attributes are also considered. Socialpsychological attributes are motives, aspirations, values, perceptions and modes of orientation. In this vein, we deploy the following variables: proud of being Brazilian, life satisfaction, political freedom, tolerance to corruption, evangelical church trust and praise for religious diversity. Structural attributes indicate the individual's status in society as a lifecycle position. As a proxy for structural attributes, we deploy time to travel, origin and destiny unemployment rates and population density.

Moreover, we consider the parameters of the migration gravity model and then we measure it in distance terms.

We formulate our model based on the assumption that population mobility is determined by push-and pull-factors. This study explores how the voluntary flow of migrants varies with the time to travel, the population density, the unemployment rate and CIR distances between counties of origin and destination.

In light of the above mentioned, we address two questions: i) what are the migrants? characteristics that contribute to the internal migration from a gravity theory perspective, accounting for monetary and non-monetary costs. In addition, we inquire ii) to which extent CIR components influence the internal migratory movement in Brazil? The last question relates to the first one because, for example, the cultural component in a society is a non-pecuniary cost and it is generally is not considered in this sort of analysis.

There is an abundance of studies assessing the relationship between international migration and CIR factors among the countries ((Collier and Hoeffler 2018; Collier *et al.* 2014; Falck *et al.* 2018). Some studies address this relationship with a focus on internal migration such as

Molloy *et al.* (2011) but disregarding political freedom and culture. Internationally, countries as India, China and the USA are concerned about internal migration issues. The voluntary process of migration is also a field of study explored abound by Brazilian scholars. We explore the connection to geographical and economic variables in connection with the migration gravity model by using as criteria time to travel, population density and unemployment rate. Further we include sociological and other characteristics such as proud of being Brazilian, life satisfaction, political freedom, tolerance to corruption, trust in the evangelical church and support to religious diversity.

It is far from clear what happens in the cities where people are moving into, especially when considered that not everyone would be equally affected. We deem that places with some similarities provide a friendly environment to be introduced in the new city in the same sense of Akerlof (1997) since group with levels of coordination could benefit from externalities until reach social optimum equilibrium. The distance is an important element to this analysis since could establish the level of proximity between peoples at places. And we believe that this social decisions are related to the choice of the place to leave in migration process. Another effect is the diaspora. Collier and Hoeffler (2018) points out that the movement is oriented by the support of prior migrants, who diminish the overall investment costs of migration. The variable of population density is a way to measure the effect of the diaspora since this could mean that the previous presence of relatives and friends at the destination cities could be a source of informational and momentaneous support for the adaptation process at the new city.

Our study expands this field of research by looking at the intra-national economic interaction promoted by culture yet not sufficiently addressed in Brazil. The existing literature on the impact of culture on internal migration is very limited. We have Combes *et al.* (2005) for French regions; (Liaw and Qi 2004; Sauter 2012) for Canadian regions; Falck *et al.* (2018) for Germany and Herrmann-Pillath *et al.* (2014) for China prefectures.

About the cultural distance, some authors as (Aggarwal *et al.* 2009; Lucey and Zhang 2010) take this issue as a transactional cost. And they confirm the negative effect between these3 cultural features and financial portfolio investments.

In this article, we use the Latin American Public Opinion Project (LAPOP) survey and the Brazilian Census from 2010. Other variables are obtained from the survey of IBGE, Brazilian Yearly Statistics Report. We choose the variables on the place of birth at the Brazilian Census from 2010 and integrate it into CIR variables from the 2010 LAPOP database. Thereafter we analyze the push-and-pull factors of internal migration with the background of the gravitational model applying for this a Poisson Pseudo Maximum Likelihood with Fixed Effects (PPMLFE).

By this model, we integrate the gravitational model with CIR distances and these effects in the movement of the population within the Brazilian territory. Currently, in this field of national literature, CIR distances are not taken into account so as to to mitigate the problem of omitted variables whose absence bias the model of migration flux.

We expect to find the importance of CIR components in choosing which county to migrate. And we could say that agglomerations are better in this context due to some reasons. First, the migrants tend to choose cities with more opportunities and second-wave migrants tend to go to

places selected by prior migrants. We offer a contribution to the literature with the inclusion of CIR aspects that are important telling factors faced in individual decision making. We hold the act of migrating to be an investment on which the migrant yields a return at a later moment. Furthermore, we regard that impediments to mobility, such as geographical distance, require additional investment. CIR components are consistent factors that may facilitate or not the process of migration. Similarities among migrants have an inducing effect on migration that could lead to diaspora effect Collier and Hoeffler (2018). If friends or acquaintances at a given moment have migrated to a certain county, one is more prone - when and if migrating - to opt for that same place. Among others, this study focuses on understanding how the host cultural identity and the cultural distance between the host and origin cities might help us to understand that relationship. Results of previous studies suggest that internal migration is generally accompanied by improvements in objective factors that partially depend on the reason for moving: income for migrants moving due to work or housing conditions for those moving for residential reasons. Findings up to date suggest that internal migration is positively associated with housing satisfaction and life satisfaction in general. Brazilian studies about internal migration do not account for subjective well-being elements. We, instead, opt to investigate whether these factor interfere in the decision to migrate to a specific location.

The results are paramount to highlight how Brazilians take into consideration a set of specific characteristics when choosing to migrate to a certain city. We address this set of features in the empirical analysis. The condition of those tending to migrate to a place similar to the place of origin is a concerning issue addressed by certain strategies. Justo and Neto (2008) depicts the profile of the Brazilian migrant using census data from 1980, 1991 and 2000: they are younger and more educated people, usually male and coming from a more precarious region. Sachsida *et al.* (2009) confirms these observations by adding that age and educational level affect the decision to migrate. Further, Golgher *et al.* (2005) include regional and individual aspects as influencers to the migration decision. One of the stylized facts in the migration literature is positive selection. That takes place by reason of unobserved characteristics of migrants. Chiswick (1999) argues that migrants are generally more aggressive, ambitious, entrepreneurial and motivated. Our article further builds thereupon by adding to this analytical framework the variables pride of being Brazilian and life satisfaction.

A large difference in CIR may, consequently, either impede migration or accelerate its increase. To sum up, our article contributes to the migration literature in two ways. First, we improve on existing studies applying the latest methodology in migration gravity models with a new database (LAPOP) and second, we examine the impact of cultural, institutional and religion distances between sending and receiving people in Brazilian counties, considering: a) proud of being Brazilian, b) life satisfaction, c) political freedom, d) tolerance to corruption, e) trust in the evangelical church and f) religious diversity.

The social-psychological attributes used in this study are the pride of being Brazilian, life satisfaction, political freedom, tolerance to corruption, trust in the evangelical church and religious diversity. It is essential to highlight that these factors could be divided into CIR factors. We consider all these aspects in our analysis. We include these variables because legal institutions are connected to cultural features Stulz and Williamson (2003) and we need to rule out this

additional information to make sure that our cultural variables only capture the behavioral information of a county. As institutional distance variables, we use political freedom and tolerance to corruption. And finally, as religion distance variables, we include trust in evangelical trust and religion diversity. We include this variables because of the benefits of social exchanges, so people could be motivated to move to another place where others people are close in social terms as stated by Akerlof (1997).

The chosen variables related to cultural values are proud of being Brazilian and life satisfaction. In the literature, we have not found studies including proud of being Brazilian in their analysis. Life satisfaction, in its turn, is more present in the migration studies.

Life satisfaction as criteria for migration yields different outcomes. De Jong *et al.* (2002) points out that migration is associated with decreased post?move satisfaction. Otrachshenko and Popova (2014) found out that people have a greater intention to migrate when dissatisfied with life. Cárdenas *et al.* (2009) analyzed the effect of life satisfaction examining the relationship between life satisfaction, vulnerabilities, and migration in Latin America. They found that controlling for income, migration experience increases life satisfaction of the respondent.

Rapoport and Docquier (2006) regard that there are two situations that the migrants face at the voluntary process of moving to another place. One of the causes is family separation and other cause is the gain of the new life at the new place. Not necessarily one is bigger in relation to another. It is a subjective factor of the migration process. In this sense, we intend to deepen this issue in the context of migrants in Brazil.

Institutions are another important and vastly studied determinant of the migration influx. In this realm, our paper adds to the sweeping literature on the connections between culture and institutions, see Alesina and Giuliano (2015) for a review. It is material to highlight that we view institutions as the perceptions of the people about them. The two variables representing institutions are i) political freedom and ii) tolerance to corruption - measured by subjective perceptions. We include this kind of perception because we need to be sure that the effects of culture in a certain way are separated one from another. This is pointed by Bertocchi and Strozzi (2008) demonstrating the effects of institutional as an attracting factor of migrants, but recognizes that are confounding endogenous elements as colonial history. By another way, Nifo and Vecchione (2014) regard that favorable socioeconomic contexts enable higher income and better employment opportunities in the context of migration. And reinforce that better institutions are a way to reach this objective. Another concern is the possibility of people do not trust in each other, but trust at one institution. People could migrate to places with more similarities in the specific term of trust in institutions.

The regard of the role of religion is more explored at the international level in contrast to the internal point of view. Blunt (2007) explain the effect of religion to the diaspora movement. Lucey and Zhang (2010) consider religion as a root of behavioral patterns of people in most social and economic activities. Dupré (2008) related that when a person is out of the city home the identity of the migrant is one of the things that deserves more relevance then the religion?s values are primordial. Guiso *et al.* (2003) found that on average, religious beliefs are associated with higher per capita income and growth. So we expect that this is a relevant issue since the migrant

is stimulated by the opinion of the former migrant at the internal migration in the Brazilian counties. Since we have the trust evangelical church, then we consider Alesina and La Ferrara (2002) for a review about the trust literature. We point that this variable could measure the trust that people have with one and another and that feeling could improve economics results.

The organization of this paper is as follows. In the second section, we review the literature on the subject and expose how our approach and its outcomes complement previous findings. The third section explains our empirical strategy. The fourth section presents the data and descriptive statistics. Section five contains the main results, further investigations on the transmission channel of migration. At last, section six offers concluding remarks.

2 Empirical Strategy

First, we show why existing gravity studies are unable to obtain estimates of the effects CIR on the county internal migration flow. In this estimation, it is presented a core model based on the assumption that migration is determined by push-and- pull factors. This gravity model of migration suggests that differences in the unemployment rate, time to travel and population density between host and origin counties in Brazil are central factors in the migration decision. We develop and present our identification strategy based on internal migrants with CIR aspects tending to move to places with more opportunities - proxied by the populational density of the county of attraction. So because of the analogy with the physical of gravity we can explain social movements, here, characterized by CIR factors as same as Akerlof (1997). The original gravity model can not detect the probability of migrants with close subjective characteristics to move to places similar to the origin. For being an unobserved characteristic that can not be directly controlled, we include the dyadic variable unemployment rate which controls for local amenities and disamenities, among others. When one chooses a place to work, the cost of living and the amenities are taken into account. We understand that other subjective factors - CIR - may intervene in this decision, the reason for them to be included in the analysis. Then we show that it is not possible to identify the separate effects of CIR factors on the migrants? flow. We present this step as an opportunity to introduce the design of our analysis as well as the econometric notation. The basic of migration gravity models in their traditional form are inspired by the Newtonian law of gravitation:

$$F_{ij} = G\frac{M_i M_j}{D_{ij}^2}.$$

The force F between two bodies i and j with $i \neq j$ is proportional to the masses M of these bodies and inversely proportional to the square of their geographical distance D. G is a constant and as such of no major concern.

The underlying idea of a traditional gravity model, shown for migration influx as stated by Anderson (2011) follows the same rationale:

$$M_{ij} = G\frac{P_i^{\beta_1} P_j^{\beta_2}}{D_{ij}^{\beta_3}}.$$

The migration flows M are explained by P_i and P_j that embody the masses of the population that move to the county and D_{ij} that is the distance between the counties. We omit dummy variables such as common borders *contig* or regional trade agreements *rta* that can be added to the model. So the model states as shown above. Then we make a logarithmic transformation to form a log-linear model.

$$\log M_{ij} = \beta_0 \log GRAV + \beta_1 \log P_i + \beta_2 \log P_j + \beta_3 \log D_{ij}$$

We have replaced the bilateral migrant cost variables M_{ij} at the log-linearized equation with a vector of migrant cost variables $GRAV_{ij}$, where we include determinants of bilateral migration influx that may influence this relation.

To fit the purpose of our investigation, we explicitly separate the three groups of variables of interest that measure CIR aspects from both sides (IC_i) and (IC_j). Another issue relates to the fixed effects of the counties. So, we regress the above model with fixed effects to the origin and host counties. In the literature, the inclusion of the multilateral resistance (MRT) term plays a starring role. Normally MRT represents the barriers to migrate. Since we are considering the intra-municipality migration, we define that we do not have barriers to migrate in MRT terms. Put differently, we do account for the costs, but not for the barriers. Baldwin *et al.* points out that the non-inclusion of the MTR term may bias the coefficients of the cost variables, especially those associated with border dummies. We follow his approach but applying it for internal migration.

In order to isolate the effect of CIR factors on the migrants? influx, it is key to control for the potential confounding factors discussed in the previous section. For this reason, we use the variables from LAPOP database and calculate the distances in the same way Kogut and Singh (1988). Silva and Tenreyro (2006) explains that an exponential multiplicative model makes it impossible to estimate the coefficients of the gravitational equation using ordinary least squares (OLS). The solution proposed by the authors is the adoption of the non-linear estimator called the Poisson pseudo-maximum likelihood. In addition, the conditions of identification of the PPML are incompatible with the identification of the log-linear models.

Thereafter, we need to address the inconsistency in the presence of heteroscedasticity in this model form. So Silva and Tenreyro (2006) proposes an estimation model with Poisson Pseudo Maximum Likelihood (PPML) and Hering and Paillacar (2015) also addresses the problem of unobserved flows by running this model. We have made additional regressions with the PPML model and then with fixed effects. In this case, we can estimate efficient parameters with characteristics asymptotically also efficient. These problems arise in logarithmic transformation due to heteroscedasticity usually present in migration data. And as pointed by Silva and Tenreyro (2006), this practice of log linearizing the gravity equation results in error values depending on the covariates of the regression, resulting hence in inconsistent estimation even then all obser-

vations of the dependent variables are strictly positive like in our case. We construct a database without zeros. Consequently, due to Jansen inequality doesn't apply, the error term is not equal to the log of the error term as the error terms in the log-linear specification of the gravity equation are not statistically independent from the regressors but are rather heteroskedastic, leading to inconsistent estimates of the elasticity coefficients.

Given this Jansen inequality, Silva and Tenreyro (2006) argues that the log-linear transformation of the gravity model is intrinsic to heteroscedasticity and applying OLS results in biased and inefficient estimates. However, the PPML estimates the gravity equation in levels instead of taking its logarithms. This is said to avoid the problem posed by using OLS under logarithm transformation. According to the same authors, this model is appropriate thanks to firstly, the Poisson model takes account of the observed heterogeneity; secondly, the fixed effects PPML estimation technique gives a natural way to deal with zero-valued trade flows due to its multiplicative form. Thirdly, the method also avoids the under-prediction of large trade volumes and flows because it generates estimates of trade flows - and not the log of the trade flows.

They suggest it therefore as the new workhorse for the estimation of the constant elasticity models, such as the migration gravity model (Silva and Tenreyro 2006, 2011), find that PPML is consistent and generally well-behaved even in the presence of over-dispersion in the dependent variable.

(Baghdadi *et al.* 2013; Head and Mayer 2014) have shown that the choice of the best estimator is dependent on the specific dataset, and there is not a generally best estimator for these three datasets; thus the appropriate estimator for any application is thus data specific - which could be determined using a number of model selection tests. Our dataset, for construction, does not contain a zero migration flow. We have selected only the cities with individuals with prior movement based on the place of birth.

Returning to the fixed effect, Silva and Tenreyro (2006) and Silva and Tenreyro (2011) consider that the unobserved heterogeneity is correlated with the error term. Usually, the model proposed by Anderson and Van Wincoop (2003) is estimated by a fixed-effects PPML approach with these concerns. There are, however, some drawbacks in the fixed effect model in the sense that all time-invariant explanatory variables like the perfect collinearity with the fixed effects would be dropped from the model. Consequently, the fixed effect model eliminates some important theoretically relevant variables from the gravity equation: common language, common borders and the effects of these variables that cannot be established. So, we do not include these variables to the our estimations. The above considerations suggest the necessity to include the fixed effect in our empirical analysis of the PPML model. By the same token, we estimate the fixed-effects models, include the PPML and report White heteroscedasticity-consistent standard errors as our basic principle for estimating the gravity model of migration influx. Since we apply the fixed effects to the PPML method the GDP cannot be estimated. This occur because of the lack of within-group variation in the migration influx variables makes impossible to identify them.

3 Data

The dataset assembled for the present study is essentially composed of four sources: the Brazilian Censo, the Brazilian Institute of Geography and Statistics (IBGE), the Departamento de Informatica do Sistema Unico de Saude (DATASUS), and the Latin American Public Opinion (LAPOP). It is worthwhile mentioning that the tool Google Maps measures the geographical distance of pairs of cities in time. LAPOP employs an innovative method to carry out targeted national surveys. It should be kept in mind that, given the low number of observations, the World Value Survey (WVS) was not deployed to account for differences between inter- and intra-local applications of the model. In migration studies, Brazilian Censo and other datasets from IBGE and DATASUS are commonly adopted. Therefrom we use a full list of 50 counties listed on table A.4. Another concern about the datasets mainly the LAPOP one is that we need to have caution in over interpreting findings based upon a survey question that could be interpreted of different ways by different persons as pointed by (Alesina and La Ferrara 2002; Glaeser and Vigdor 2001).

To explain the composition of the sample at hand, we firstly define migrants as those dwelling in one county in the last ten years having been born in another county, thereby leading to a selection of 450 ?counties pairs? randomly selected on a set of 50 counties. It is a sound approach, for our sample entails solely migrants and a migrant normally chooses between two destinations to where he considers going to Molloy *et al.* (2011). As of the geographic unit of measurement, county was selected due to its specificity and broader data availability, notwithstanding the use of datasets at ?state? level being more frequent in national studies. Further, for construction, we do not include counties with zero migrant influx because we exclude them from our migration database. We also exclude from the dataset the counties with the outliers as one migrant.

In any case, both suffer the problem of misclassification as warned by Molloy *et al.* (2011). It occurs on account of some between-county movers that remain within the same local labor market. In other words, that is the case of someone that resides in one county or state and works in another county or state being the local labor market the same. The variables to measure the migration effect merits some considerations. Several studies have adopted different variables as birthplace, last residence, reasons for migration and duration of residency. The UN Report (2013) elucidates that international migrant is the person staying abroad for one year or longer, so our understanding is in line with the UN definition, namely of migration based on where people are born. Another concern is the kind of data that means the movement of people. We use the variations at the migration stocks as Bertoli and Moraga (2015).

The datasets are from 2010. Here the data limitations of a one-year time series cannot report for a temporal order of preferences, but it can offer a hint on the general tendency measured in absolute levels, which is, in its turn, a matter of further consideration. Individuals who have moved several times during 2010 are indistinguishable from individuals who have only moved only once. This may potentially affect the measurement of migrants because some movers have returned to their birth county after residing elsewhere Molloy *et al.* (2011). Eventually, the data may thus not reflect recent migration decisions. Molloy *et al.* (2011).

We follow Kogut and Singh (1988) on social distance variables, thereby assuming that the more

culturally distant from the origin county, the lower the migrant influx to the destination county. The distance variables were calculated by the Euclidean distance definition between origin and destiny as follows:

$$D_{ij} = sum((I_{ci} - I_{cj})^2)/var$$

Where D_{ij} is the distance variable, I_{ci} and I_{ci} represent the values at the origin and the destiny of the cultural, institutional and religion variables. And finally var represent the variance of the variables.

The list of variables chosen via the principal component analysis in the LAPOP questionnaire is at A.1 in the appendix section. In this sense, it was obtained as cultural variables: proud of being Brazilian and life satisfaction, as institutional: political freedom and tolerance to corruption and as religious: evangelical church trust and religious diversity.

We have opted to employ time to travel (time in minute) instead of distance in kilometers because the former incorporates more appropriately the effective distance since it accounts for the (lack of) infrastructure between the cities. To apply this variable we use a Google Map Application Programming Interface (API) to calculate the time to travel as developed by Weber and Péclat (2017).

We assume that the set of CIR factors in the birthplace is paramount to define the destination county of a migrant, particularly when dealing with migrants from small towns to large urban agglomerations. This confirms the effects of the dynamic advantages such as learning, sharing and matching associated with large agglomerations. It is relevant to account for the effects of urban agglomeration in large cites. Recent empirical research has shown the benefits of workforce stemming from migration to the local market (Combes *et al.* 2010; Combes and Gobillon 2015; Glaeser and Mare 2001; Roca and Puga 2017). Another effect is that brought by other studies, particularly Chetty and Hendren (2018a, b) that explains the effects of a child?s place of origin on his future earnings. In the same line, we deem that the place a person resides may shape lifelong choices.

Geographic values, on their turn, could represent the trade-off between income and distance Ritchey (1976). But we work with migrants influx rather than income, including the unemployment rate and population density both in the origin and destination as complementary variables to the gravitational model. Sahota (1968) point out that density may attract migrants and even serve as a push factor. So we consider that this could intervene both at the origin and at the destination region. And with time to travel rather than geographic distance. The larger the distance measure, in our case the time to travel, the lower the migrant influx between county i and county j. We include the unemployment rate as an indicator of the better adjustment of the labor market. So, in this sense, the greater the unemployment rate is in origin county, the bigger the rate of outbound migration and smaller the rate of migration flow into the destiny county.

These variables may, however, underrepresent immaterial costs. In the literature, there is a distinction between structural and sociopsychological attributes. Ritchey (1976) have concluded that more extroverted, less agreeable, fewer conscientious, or more open-minded persons report

stronger intention to migrate. These factors reflect personal traits. On general cultural aspects, we utilize two variables: proud of being Brazilian and life satisfaction.

We incorporate religious variables as tolerance to the evangelical church and religious diversity. As stated by Cadge and Howard Ecklund (2007) religion may influence the process of adaptation at the host city. Beyond that, there is more religious diversity when a county is the destiny of migration. We believe that this variable could represent a way to explain similarities between the cities. And we represent this situation by religion diversity distance. About the trust in evangelical church, Alesina and La Ferrara (2002) point out that living at a community that everyone is transitory can to make the people do not trust in each other. So when we face a religious affiliation that have the same beliefs then the trust could improve the social interaction and movement of people between cities. In the same sensen, we incorporate institutional variables as tolerance to corruption and political freedom. Alesina and La Ferrara (2002) argument that institutions may affect trust. And this is a cultural feature. Our institutional variables are perceptions and feelings about our government as stated by political freedom. So we include this variables to see the effect of this kind of heterogeneity at the regression model. If the distance measurement does not have significance, it is as a result irrelevant to explain the migrant's dynamics. Normally studies contemplate the trade-off in income for distance. But we defend another stance, for we repute the trade-off as an attraction and repulsion system between the people and the time to travel. Our outcomes see eye to eye with the arguments of the migration gravity model, by corroborating that large distance - standing for higher transaction costs and unfamiliarity effects - may attenuate the internal migration influx. In our case, time to travel is the choice to account for the geographic distance. Mobility usually is pro-cyclical, so the economic contraction would be expected to reduce mover?s intentions as cited by Molloy *et al.* (2011).

We argue that the individual's cultural identity is mainly tied to their religion, institutions and the set of cultural values and beliefs.

Individual characteristics such as age, gender, race, level and type of education and variables that represent moral and cultural attitudes are strongly related, so, in this turn, we do not include in our analysis at the same sense of Alesina and La Ferrara (2002). Ritchey (1976) explain that both structural and social-psychological attributes contribute to the migration flow. Socialpsychological attributes are motives, aspirations, values, perceptions and modes of orientation. Structural attributes indicate the individual's status in society as a lifecycle position. Ritchey (1976) points out that few studies examine variables that could be used as community ties in the context of migration. The international literature on migration (Alesina and Giuliano 2015; Collier *et al.* 2014) provides relevant insights on that. But at the national level, specifically with Brazilian data, it remains an unexplored issue.

Appendix table A.1 provides an overview of the descriptions and sources of the variables of this study. Table A.2 depicts the respective summary statistics as mean, standard deviation, minimum and maximum value of each variable. The table A.4 with complete data used in the present analysis.

4 Results

4.1 Baseline results

In this section, we provide estimations on migration gravity models accounting for several issues as heterogeneity and fixed effects. We have applied the distance proxied by the time to travel as introduced by Weber and Péclat (2017) in the gravity model approach. In this same context, we have included origin and destination population densities as well as home and host unemployment rate to account for structural attributes. In respect to the baseline results, they are in line with the traditional gravity model by reason of the negative relation between the migration influx and the time to travel between the cities. So we append other variables that are equally key to explain the influx of migrants between Brazilians counties.

Our empirical models hold good fitness to the data and explain a a substantial proportion of variation in unconditional correlations. The adjusted R-square is relatively high across specifications, generally between 70 percent. We have considered more appropriate to the nature of our problem the PPML with fixed effects, but first we regress the model without this feature. At this point, we have based our analysis on the Alesina *et al.* (2016) with respect to the PPML model. We believe that our approach is well accepted to measure the linkage CIR factors and migration between counties. Our results suggest that if two counties share the same degree of respect to religious diversity and have a smaller magnitude of CIR distances, they tend to have higher levels of migrants. This general result is consistent with our prediction that similarities with respect to CIR factors lead migrants the converge in the choice of destination. Another consequence is the improvement of the agglomeration process in the cities.

Culture may be defined by social norms and values, religious beliefs, family structures. We selected these variables based on this concept. And with this first result, we can note that life satisfaction, for instance, is a manner to induce some movement of people. Our regression results indicate that migration flux is negatively related to proud of being Brazilian, life satisfaction, political freedom, tolerance to corruption, trust in the evangelical church and religious diversity. This suggests that the smaller the cultural distance between two counties, the higher the probability of a person chooses a specific city to migrate to the detriment of another city due to the attraction factors such as life satisfaction. This means that the migrant's movement is influenced by the similarities between origin and destiny. The expected result of this question is negative because we presume that people are attracted to cities with similar life satisfaction that they had at the origin.

Consider two pairs of counties: one has the largest cultural distance and the other has the smallest cultural distance - defined by KS measure; a disparity of 0.52 in correlation is discerned between the two pairs in case of political freedom. The cultural effect is statistically and economically significant only for life satisfaction. And not significant by proud of being Brazilian.

Yap (1977) found that population density in the destination is positively correlated with interstate migration. And our results are in line with these outcomes at the Euclidean distance values of cultural, institutional and religion effects. While Yap (1977) found out that large distances

between new and old location reduces the chance for frequent visits back and considers this as psychic costs. So when we perceive the role of trust in the evangelical church as a manner of identifying this behavior in the destination city. Another interpretation is a consequence of the diaspora effect points that people are more likely to migrate to places where there are more people known from their hometown at their destination. Epstein (2008) mark that the effect of networking is a type of signal for a potential migrant. So one consequence is the diaspora effect since one tends to go to the places that others go to.

Table A.5 presents the OLS estimation results and we use it only as an extended model in the appendix section.

Our baseline model is in the basic specification of column (1), on table 1. The dependent variable is the log of the influx of migrants and the time to reach the destination city is the main explanatory variable. According to the previous theoretical considerations, the coefficient of time is negative and significant, confirming our expectations about this relation.

We test whether six CIR variables are helpful to influence the variations in the migrant flux in Brazilian cities. We believe these variables could affect an individual?s behavior, attitudes and thoughts. It is useful to explain that we include these variables through the principal component analysis as explained in the Empirical Strategy section. Further, we consider that these different variables act in others ways and this might shape people's behavior and patterns within a country such as Brazil. We assume that the farther culturally the destination municipality is from the city of origin, the smaller the chance of a migrant to choose it as a destination.

Table 1 begins at column (1) with the specification as the basic migration gravity models with fixed effects. And then we add Euclidean distances to explain the contribution of CIR factors at the decision in which city the mover prefers to stay. Since we are using only migrants data, we are concerned about the choice of the people. More specifically, why city x and not city y. First, we include the cultural distances, then the institutional distances and, at last, religion distances. About the importance of the variables included in the present model, we note that the last model explains better with lower pseudo loglikelihood statistics. The significant distances found were: life satisfaction, political freedom and religion diversity. Our expected signs about the distances are all negative. At this point, we have found these variables are characteristics that obey the intuitive relation beyond the migration gravity model.

And with variables as trust evangelical church and religious diversity distances we found a negative relation. Both in line with the international literature and with our expected sign.

We consider the PPML results with fixed effects the most robust model. Silva and Tenreyro (2006) postulate that estimating migration gravity equations in their additive form by OLS leads to inconsistency in the presence of heteroskedastic and advice to estimate migration gravity models in their multiplicative form. In this sense, we use this model to provide an extended model in the Appendix section. For more details check the A.5. As we could detect from the previous results, at this estimation there is considerable heterogeneity in cultural values and beliefs between the home and host cities. So we believe that PPML results are the most reliable. There are unobserved effects that may affect the results presented in the previous regression tables. We have inserted PPML regressions with fixed effects for the municipalities of origin

and destination to mitigate this problem. Literature also appoints the existence of endogenous locational choices for both residents and local migrants. As an illustration, Card *et al.* (2008) indicates support to the preference of neighborhoods for race-based tipping. In the same line, Damm (2009) argues that the ability to classify enclaves by exploring a Danish policy of space dispersal under which refugees are placed at random. The author finds empirical evidence that refugees with unobserved unfavorable characteristics self-select ethnic enclaves.

(Chetty and Hendren 2018a, b). In this case, we believe that these concerns deserve attention and we thus regress a model with fixed effects to address these issues. We do this because we understand that the OLS estimates of migration influx are likely to be downward biased and inconsistent and PPML do not account for the fixed effects. At this level of analysis, we could see the effect of a bad equilibrium as stated by Alesina and La Ferrara (2002). We believe that this could occur at Brazilian cities because the migrants move, in general, to bigger cities. So the people go to a more heterogeneous communities. And then the behavior of accept a bribe is more easy to see when the people are in bigger cities then when they live in smaller one. Spagnolo (1999) pointed out this behavior in small communities, with multidimensional interactions. In these places, people may trust more on others for fear of being excluded by the community.

Furthering our analysis and by the same token of Collier and Hoeffler (2018), we spot the results with a view of the origin and destination effects of CIR factors separately at 3. This is interesting because thereby we can observe the effect of each CIR variable on the origin county as well as destiny county. This analysis is related to the push-pull effects on the influx of people. We adopt this kind of analysis in the same sense of Piras (2017), which analyzed the internal migration process in Italy. We found relevance at the origin city of almost all variables (life satisfaction, political freedom and tolerance to corruption) with the exception of proud of being Brazilian, evangelical church trust and religious diversity. All these variables play a role in the migration flow. With a positive contribution, we have some variables in this context as political freedom and tolerance to corruption. On the other side, we have negative effects on life satisfaction variable. We have identified in our analyses that the effect of variables related to the county of destination was not significant. This means that the features at the origin are more relevant to the choice to be made by a migrant. At this level of analysis, we may note that characteristics as tolerance to corruption distance are related to the origin city. With this variable, we can evaluate the propensity to tolerate the payment of bribes. So in this sense, a greater of this the value indicates that people tolerate more corruption in the city of origin than in the destination city. We can interpret this in agglomeration terms. We consider that people do not change when are migrating. So this behavior is more easily manifested when that person is in a bigger city in contrast to a small one. This may be explained because there are more people that know each other in a small city being, therefore, more difficult to express this sort of predilection. In contrast, at destiny, we have more populated cities and because of the actions of the people are not so closely perceived as in the origin city. So we can infer that these values are attraction elements to the movement of the people to a determined level. These are intuitive situations to determine the push factors of the internal migration in Brazil. In the case of life satisfaction, because people can leave at your county at a certain level owing

to dissatisfaction. But not always. Common sense may expect that people are prone to leave always in existing dissatisfaction, but the economic outcomes may induce individuals to stay in the origin city. Opportunities may equally shape these movements. We may notice that people with life satisfaction at the origin city move to another place. In line with this analysis, other variable at this model that deserves some consideration is the unemployment rate. We can see that is relevant to explain the migration flux at the origin and destiny. So we can infer that the decision to migrate is influenced by the economic opportunities at the origin and destiny. This feature may be seen as a consequence of the individual choice to migrate. So the person tends to see his own opportunities and amenities at the destination place. In conjunction with life satisfaction, it is observed that people migrate because they can reach a more satisfying life with own opportunities and not in absolute terms. It is a subjective well-being aspect of life.

In the same sense of Schwartz (1973), without origin values, since all are migrants and since we are considering only people who actually move, their only decision problem is the choice of a location among the alternative destinations. At the destiny, we found that people are attracted by any specific characteristics at the destiny place.

5 Conclusion

The present paper provides robust evidence that people choose between the options a city that is in CIR terms, meaning that migrants prefer residing in places with lower distances (to the city of origin) in terms of life satisfaction, tolerance to corruption, political freedom, trust in the evangelical church and have more religious diversity.

In the migration process, if the labor market has lower friction, it may lead to higher levels of migration, potentially impairing the provision of local public services in the county of destination. In this sense, Molloy *et al.* (2011) advocates that lower mobility could eventually raise aggregate well-being and economic output. That would be the case of a small county that is overburden by the sudden influx of migrants and would need to rewire its infrastructure to accommodate them.

The incorporation of CIR factors adds value to a model that already considers the role of population density and unemployment rate, providing more robust evidence on the determinants of inter-county migration in 2010. Then we could perceive that geographic proximity does not necessarily mean cultural neighborhood in an ample way.

The effect of the variables included in the gravitational model - with the novelty of the PPML regression accounting for the fixed effects - were capable to capture the effect of local attractiveness related to cultural, institutional or religious factors. From a policy perspective, we stress a positive externality of social interaction by migration, i.e. a reciprocal benefit of people's movement by renewing the local social tissue as point out Akerlof (1997). In general, we contribute with the literature when we state that in studied Brazilian cities we found similarities between the home and host cities. This means that the results are in line with Alesina *et al.* (1999) among others when they point out that the public policies are more efficient with more homogeneus localities. Public policies may deter migration with excluding policies favorable to

locals. However, it is noteworthy that free movement of people yields a more efficient allocation of human resources, thereby reducing the national unemployment rate aside from increasing life satisfaction. Brazilian Constitution, in Article 5, sets forth the equality principle: people from different places have the same rights. But, as a matter of fact, it is known that attitudes and social norms favor locals in detriment to a migrant. We suggest therefore that the public administration and the private sector, at a cultural level, strike a balance between preserving local principles but equally fostering national values - which are more neutral and hence less restrictive on migrants. Future research may support to unravel other economic, sociological, and psychological issues by using LAPOP data. In this scenario, our findings have key implications for the incipient debate about culture, institutions and religion on internal migration. And could be interesting to study this kind of movement over time to study the evolution path for cultural development, for example.

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Table 1: PPML Regressions with cultural, institutional and religion Euclidean distances

	(1)	(2)	(3)	(4)
var.dep.	lnM	lnM	lnM	lnM
time to travel	-0.09***	-0.08***	-0.09***	-0.09***
	[0.02]	[0.02]	[0.02]	[0.02]
origin population	0.03***	0.03***	0.04***	0.04***
	[0.01]	[0.01]	[0.01]	[0.01]
destiny population	0.07***	0.07***	0.07***	0.07***
	[0.01]	[0.01]	[0.01]	[0.01]
origin unemployment	-0.01	-0.05	-0.05	-0.05
	[0.05]	[0.05]	[0.04]	[0.05]
destiny unemployment	0.06	0.00	0.01	0.00
	[0.04]	[0.04]	[0.04]	[0.04]
proud of being Brazilian		-0.00	-0.00	-0.00
		[0.00]	[0.00]	[0.00]
life satisfaction		-0.03***	-0.03***	-0.03***
		[0.01]	[0.01]	[0.01]
political freedom			-0.01***	-0.01***
			[0.00]	[0.00]
tolerance to corruption			-0.00	0.00
			[0.00]	[0.00]
evangelical church trust				-0.00
				[0.00]
religious diversity				-0.37**
				[0.18]
Observations	450	450	450	450
R2	0.25	0.29	0.31	0.31
pseudo lik	-818.98	-813.93	-812.02	-810.89

Robust standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Notes: The table Robust standard errors in brackets and the variables migration flux, time to travel, density population and unemployment rate are in logarithm. The dependent variable is migration flux. Cultural, institutional and religions variables are measured in distance terms as specified by Euclidean. In all equations, standard deviations are robust to heteroskedastic by the white method. We add at the first column the cultural variables; then we add the institutional one and finally the religion variables.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 2: Fixed Effects PPML Regressions with cultural, institutional and religion Euclidean distances

	(1)	(2)	(3)	(4)
var.dep.	lnM	lnM	lnM	lnM
time to travel	-0.20***	-0.20***	-0.20***	-0.20***
	[0.01]	[0.01]	[0.01]	[0.01]
origin population	0.04**	0.04**	0.04**	0.04*
	[0.02]	[0.02]	[0.02]	[0.02]
destiny population	0.13***	0.13***	0.13***	0.13***
	[0.03]	[0.02]	[0.03]	[0.03]
origin unemployment	0.08	0.07	0.08	0.09
	[0.18]	[0.18]	[0.19]	[0.18]
destiny unemployment	-0.38	-0.38*	-0.37	-0.37
	[0.23]	[0.23]	[0.24]	[0.24]
proud of being Brazilian		0.00	0.00	0.00
		[0.01]	[0.01]	[0.01]
life satisfaction		-0.01**	-0.01**	-0.01**
		[0.01]	[0.01]	[0.00]
political freedom			-0.00	-0.00
			[0.01]	[0.01]
tolerance to corruption			-0.02***	-0.02***
			[0.01]	[0.01]
evangelical trust church				-0.01*
				[0.01]
religious diversity				-0.45**
				[0.18]
Observations	450	450	450	450
Wald stat	2833.87	2495.69	2817.14	4589.71
Pseudo-R2	0.11	0.11	0.11	0.11
Log pseudolik	-750.49	-750.21	-749.47	-748.75

Robust standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Notes: The table Robust standard errors in brackets and the variables migration flux, time to travel, density population and unemployment rate are in logarithm. The dependent variable is migration flux. Cultural, institutional and religions variables are measured in distance terms as specified by Euclidean. In all equations, standard deviations are robust to heteroskedastic by the white method. We add at the first column the cultural variables; then we add the institutional one and finally the religion variables. All regressions have fixed effects to home and host counties.
* $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 3: PPML Regressions with destiny and cultural, institutional and religion values

	(1)	(2)	(3)	(4)
var.dep.	lnM	lnM	lnM	lnM
time to travel	-0.09***	-0.09***	-0.09***	-0.10***
	[0.02]	[0.02]	[0.02]	[0.02]
destiny population	0.07***	0.07***	0.07***	0.07***
	[0.01]	[0.01]	[0.01]	[0.01]
origin population	0.03***	0.03***	0.03***	0.03***
	[0.01]	[0.01]	[0.01]	[0.01]
destiny unemployment	0.06	0.05	0.02	0.01
	[0.04]	[0.04]	[0.04]	[0.05]
origin unemployment	-0.01	-0.02	-0.05	-0.07
	[0.05]	[0.05]	[0.05]	[0.05]
o.proud of being Brazilian		-0.00	-0.04	-0.05
		[0.04]	[0.04]	[0.04]
o.life satisfaction		-0.13	-0.14*	-0.15*
		[0.09]	[0.08]	[0.09]
o.political freedom			0.52***	0.52***
			[0.15]	[0.15]
o.tolerance to corruption			0.58***	0.61***
			[0.20]	[0.20]
o.evangelical trust church				0.03
				[0.03]
d.proud of being Brazilian		0.01	-0.00	-0.00
		[0.04]	[0.04]	[0.04]
d.life satisfaction		-0.03	-0.00	-0.01
		[0.08]	[0.08]	[0.08]
d.political freedom			0.05	0.06
			[0.18]	[0.18]
d.tolerance to corruption			0.31	0.32
			[0.23]	[0.23]
d.evangelical trust church				0.01
				[0.03]
Obs	450	450	450	450
R2	0.25	0.25	0.28	0.28
Pseudo loglik	-818.98	-818.45	-815.13	-814.94

Robust standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Notes: The table Robust standard errors in brackets and the variables migration flux, time to travel, density population and unemployment rate are in logarithm. The dependent variable is migration flux. Cultural, institutional and religions variables are measured in absolute values. In all equations, standard deviations are robust to heteroskedastic by the white method. We add at the first column the cultural variables; then we add the institutional one and finally the religion variables.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

A Appendix – additional figures and tables

Table A.1: Data Description

	Variable
migration flux	value of flow of migrants in logarithm
time to travel	bilateral Google Maps time in logarithm
origin population	density population of origin's county in logarithm
destiny population	density population of destiny's county in logarithm
origin unemployment	percentage of the population aged 16 and over, economically active, unemployed of origin's county
destiny unemployment	percentage of the population aged 16 and over, economically active, unemployed of destiny's county
proud of being Brazilian	How far have you been Are you proud to be Brazilian? 1-7 higher, better.
life satisfaction	In general, to what extent do you Are you satisfied with your life? (1) Very satisfied (2) Unsatisfied (3) Little dissatisfied (4) Very dissatisfied
political freedom	Do you believe that when the country is facing difficulties is it justifiable that the president of the republic dissolves the Supreme Federal Court? (1) Yes, justified.(2) No, not justified
tolerance to corruption	Do you think that, as things stand sometimes it is justifiable to pay a bribe? (0)No;(1)Sim.
religious diversity	What is your religion if you have? Catholic, Evangelical Protestant, Other non-Christian, None, Pentecostal Evangelical, Mormon or Church of Jesus Christ of Latter-day Saints, Traditional or Native Religions, Kardecist Spiritist, Jewish, Are you an atheist / Don't believe in God, Jehovah's Witness.
evangelical church trust	To what extent do you have confidence in the Evangelical Church? 1-7 higher, better

Table A.2: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
migration influx	3.96	1.55	0.75	8.79	450
Google Maps time	6.88	1.03	3.35	8.49	450
origin population	6.21	2.16	0.64	8.99	450
destiny population	5.84	2.10	1.89	8.96	450
origin unemployment	1.96	0.32	0.89	2.94	450
destiny unemployment	1.88	0.37	0.89	2.65	450
Euclidean proud of being Brazilian distance	1.89	3.45	0	27.56	450
Euclidean personal colletivism distance	1.77	2.52	0	14.19	450
Euclidean politic freedom distance	2.23	5.84	0.00	50.47	450
Euclidean corruption tolerance distance	1.91	3.28	0.00	21.19	450
Euclidean religious distance	0.14	0.09	0.01	0.56	450
Euclidean religious orientation distance	1.94	3.01	0.00	30.46	450
o.community trust	2.2	0.26	1.53	2.88	450
d.community trust	2.18	0.24	1.40	2.88	450
o.proud of being Brazilian	6.48	0.35	4.97	7.00	450
d.proud of being Brazilian	6.44	0.38	4.97	7.00	450
o.satisfaction with life	1.54	0.18	1.17	2.05	450
d.satisfaction with life	1.56	0.19	1.17	2.05	450
o.politic freedom	1.88	0.09	1.42	2	450
d.politic freedom	1.87	0.08	1.42	2	450
o.corruption tolerance	0.08	0.07	0	0.36	450
d.corruption tolerance	0.08	0.07	0	0.36	450
o.evangelic trust	4.74	0.59	1.50	6.04	450
d.evangelic trust	4.73	0.60	2.93	6.04	450

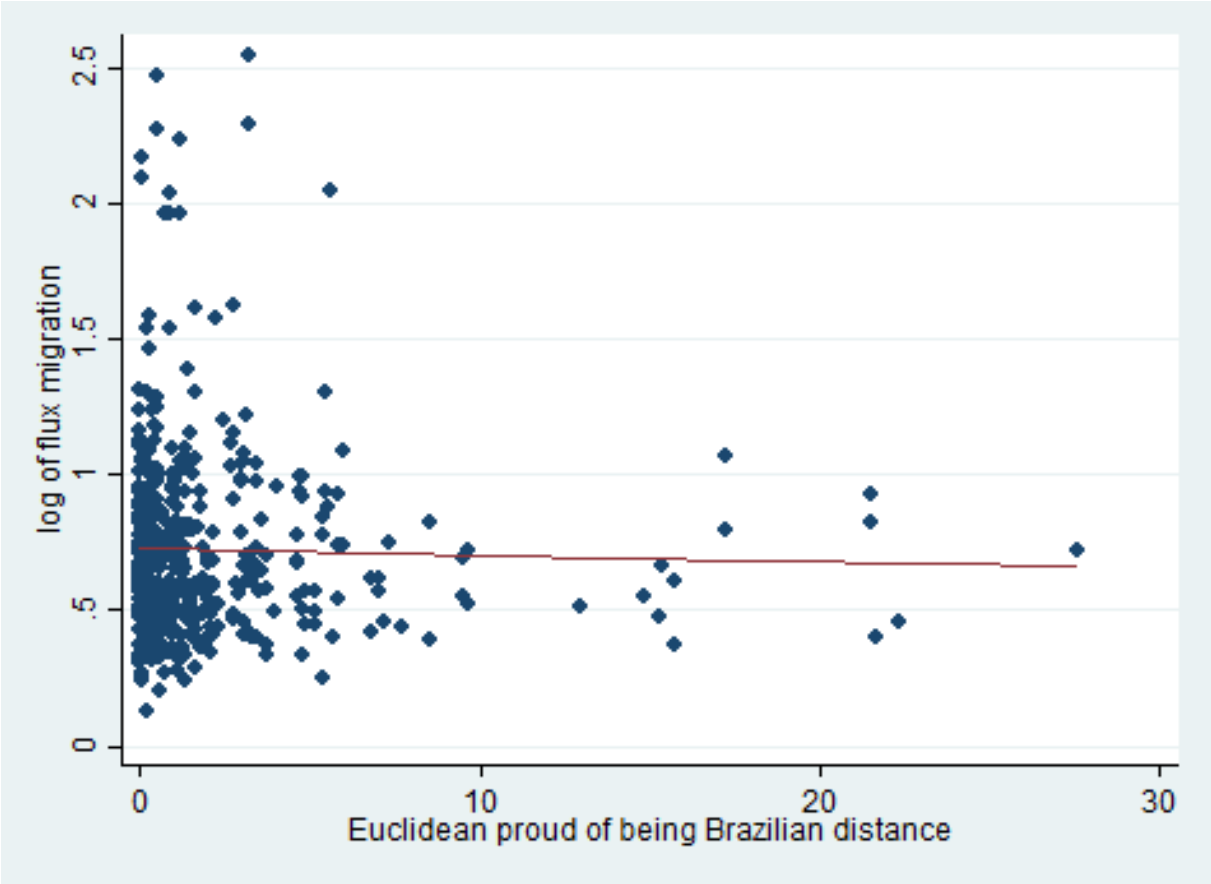
Table A.3: Summary Expected Signs

Variable	Expected Sign
time to travel	-
origin population	+
destiny population	+
origin unemployment	+
destiny unemployment	-
Euclidean proud of being Brazilian distance	-
Euclidean life satisfaction	-
Euclidean political freedom distance	-
Euclidean tolerance to corruption distance	-
Euclidean trust in evangelical church distance	-
Euclidean religious diversity distance	-
o.proud of being Brazilian	-
o.life satisfaction	-
o.political freedom	+
o.tolerance to corruption	+
o.trust evangelical church	+
d.proud of being Brazilian	-
d.life satisfaction	-
d.political freedom	+
d.tolerance to corruption	+
d.trust evangelical church	+

Table A.4: List of the 50 counties included in this study

Aloandia	Goiania	Mogi das Cruzes	Sao Lourenco
Belem	Itagiba	Passos	Senador Guiomard
Belo Horizonte	Itaguaje	Possoes	Sao Jose dos Campos
Brasi?lia	Itumbiara	Ponta Grossa	Sao Paulo
Blumenau	Itupeva	Porecatu	Timbauba
Branquinha	Jaboatao dos Guararapes	Porto Espiridiao	Uaua
Capela	Jaciara	Porto Velho	Vilhena
Coronel Ezequiel	Ji Parana	Pelotas	Vera Cruz
Cuiaba	Jijoca de Jericoacoara	Progresso	
Curitibanos	Juazeiro	Redencao	
Duque de Caxias	Jaragua do Sul	Rio Bonito	
Embu-Guacu	Minacu	Rio Branco	
Fortaleza	Mossoro	Rio de Janeiro	
Franca	Marilia	Sao Jose del Rei	

Figure A.1: Migration influx and proud of being Brazilian



Notes: The graph displays how migration influx and proud of being Brazilian.

Table A.5: OLS with fixed effects Regressions with cultural, institutional and religion Euclidean distances

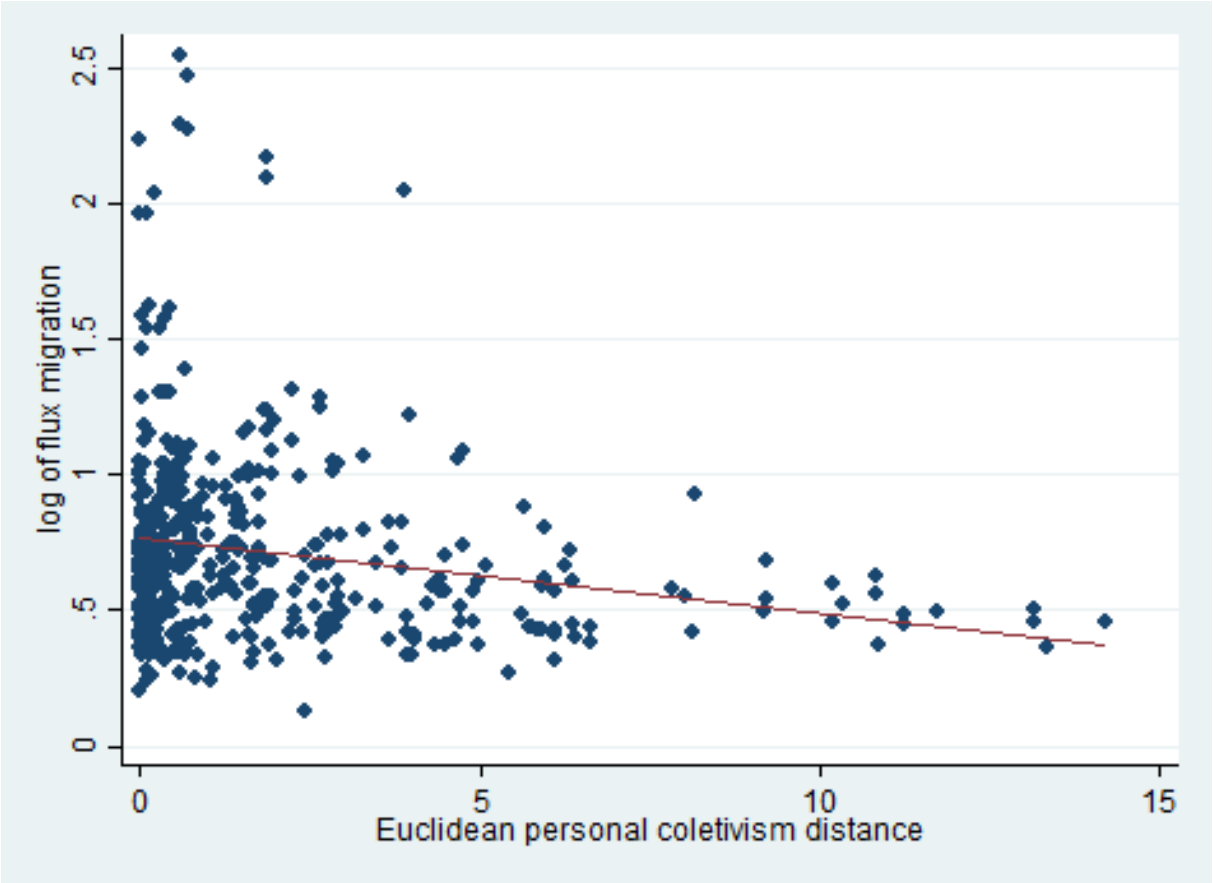
	(1)	(2)	(3)	(4)
var.dep.	lnM	lnM	lnM	lnM
time to travel	-0.84***	-0.83***	-0.83***	-0.80***
	[0.06]	[0.06]	[0.06]	[0.06]
origin population	0.17*	0.17*	0.16	0.14
	[0.10]	[0.10]	[0.10]	[0.10]
destiny population	0.58***	0.58***	0.58***	0.56***
	[0.12]	[0.12]	[0.12]	[0.12]
origin unemployment	0.50	0.58	0.62	0.72
	[0.87]	[0.90]	[0.89]	[0.86]
destiny unemployment	-1.61	-1.56	-1.48	-1.41
	[1.04]	[1.04]	[1.10]	[1.10]
proud of being Brazilian		-0.00	-0.01	-0.00
		[0.02]	[0.03]	[0.03]
life satisfaction		-0.04	-0.04	-0.04*
		[0.02]	[0.02]	[0.02]
political freedom			-0.02	-0.01
			[0.03]	[0.03]
tolerance to corruption			-0.06**	-0.06**
			[0.03]	[0.03]
evangelical trust church				-0.03
				[0.02]
religious diversity				-2.08***
				[0.79]
Observations	450	450	450	450
R2	0.72	0.72	0.73	0.74

Robust standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Notes: The table Robust standard errors in brackets and the variables migration flux, time to travel, density population and unemployment rate are in logarithm. The dependent variable is migration flux. Cultural, institutional and religions variables are measured in distance terms as specified by Euclidean. In all equations, standard deviations are robust to heteroskedastic by the white method. We add at the first column the cultural variables; then we add the institutional one and finally the religion variables.

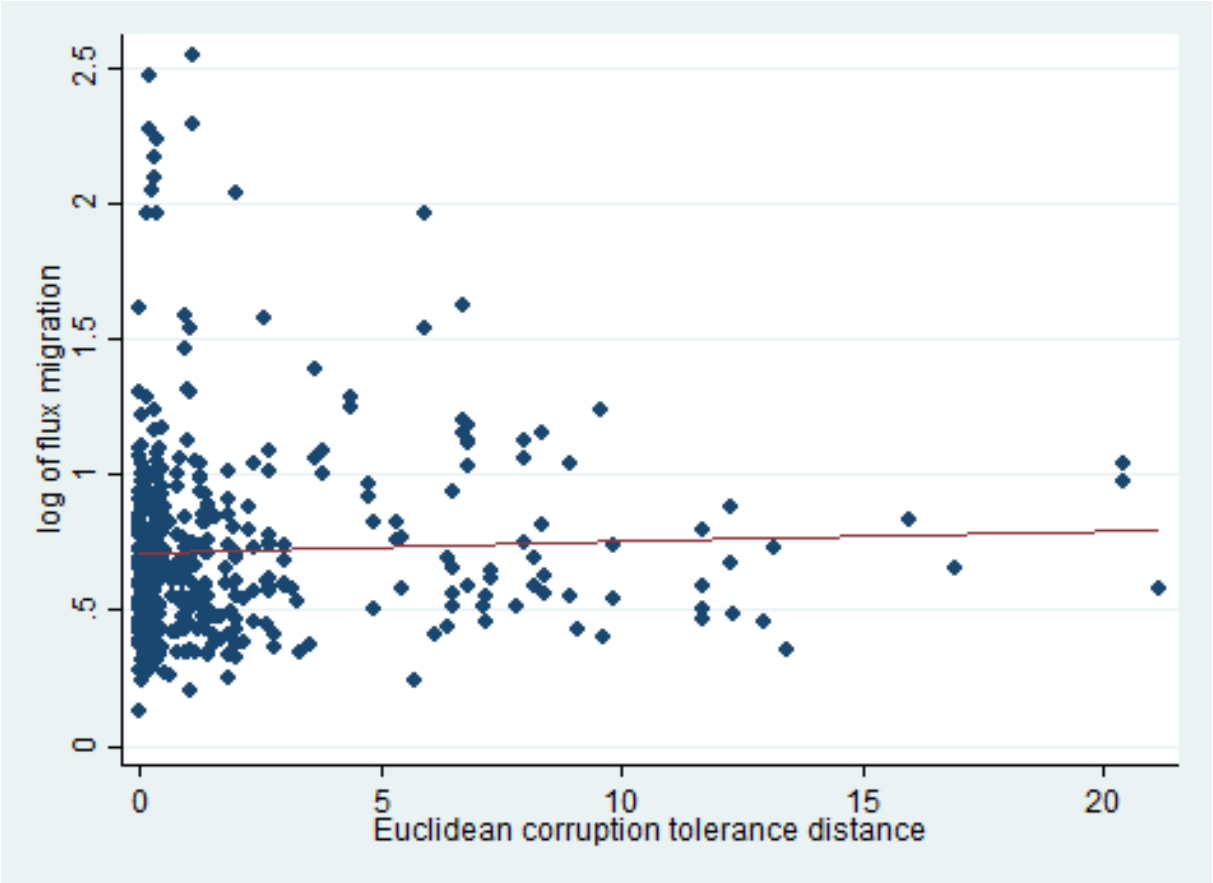
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure A.2: Migration influx and life satisfaction



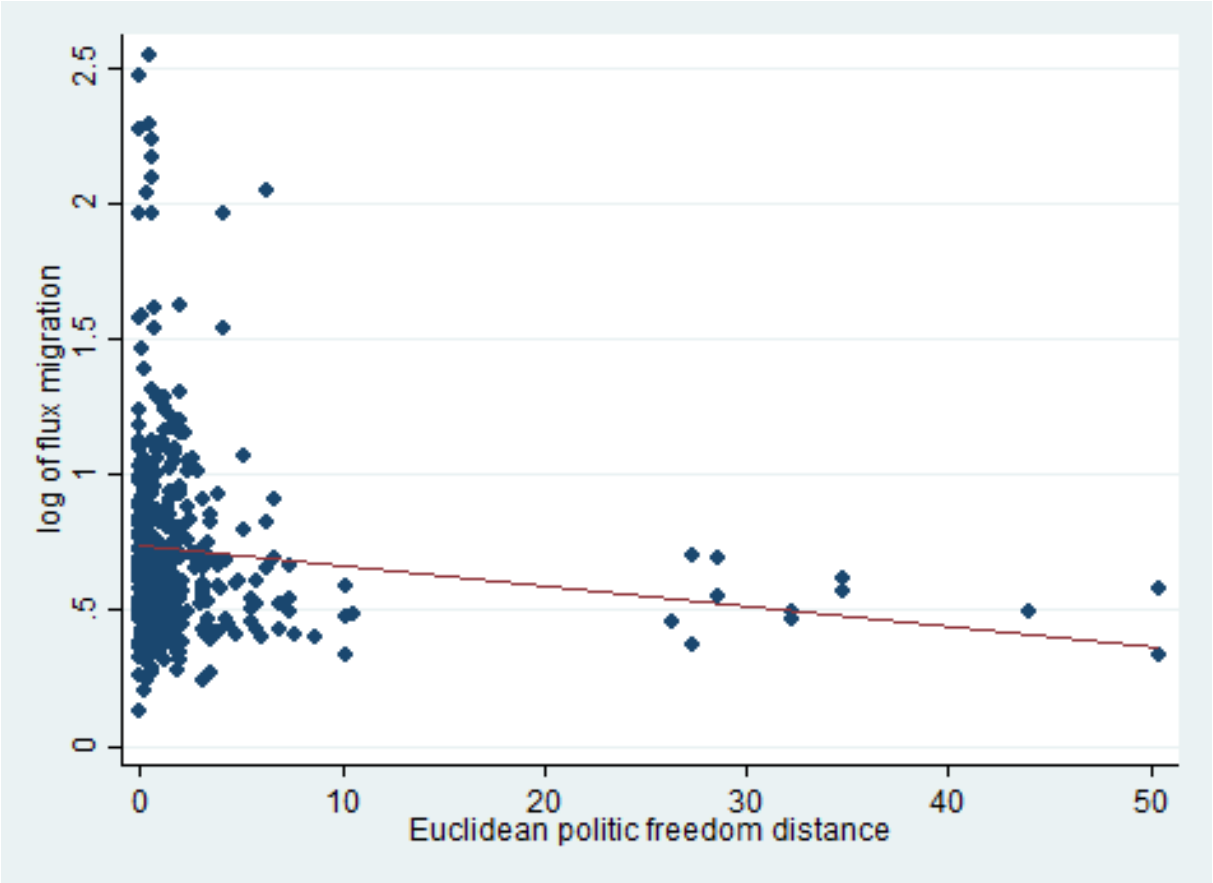
Notes: The graph displays how migration influx and life satisfaction.

Figure A.3: Migration influx and tolerance to corruption



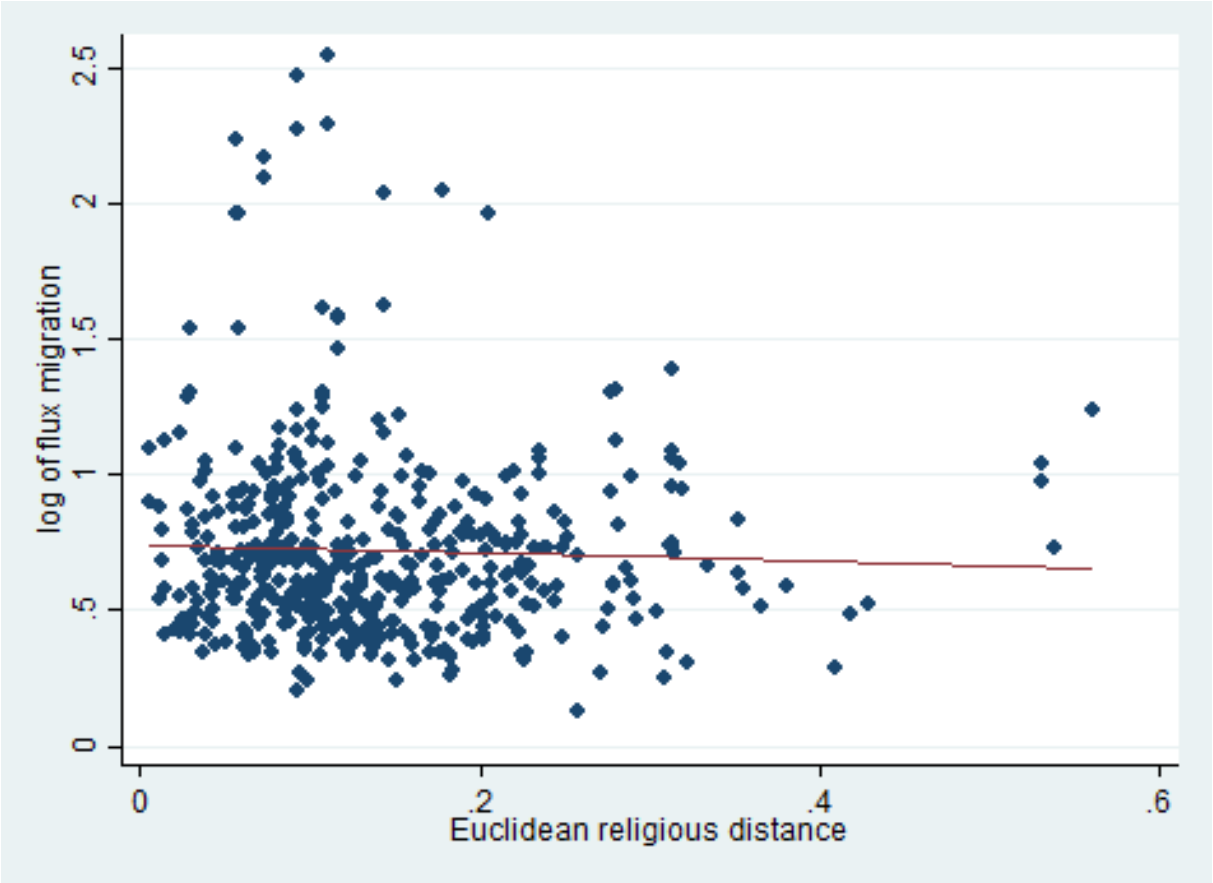
Notes: The graph displays how migration influx and tolerance to corruption.

Figure A.4: Migration influx and political freedom



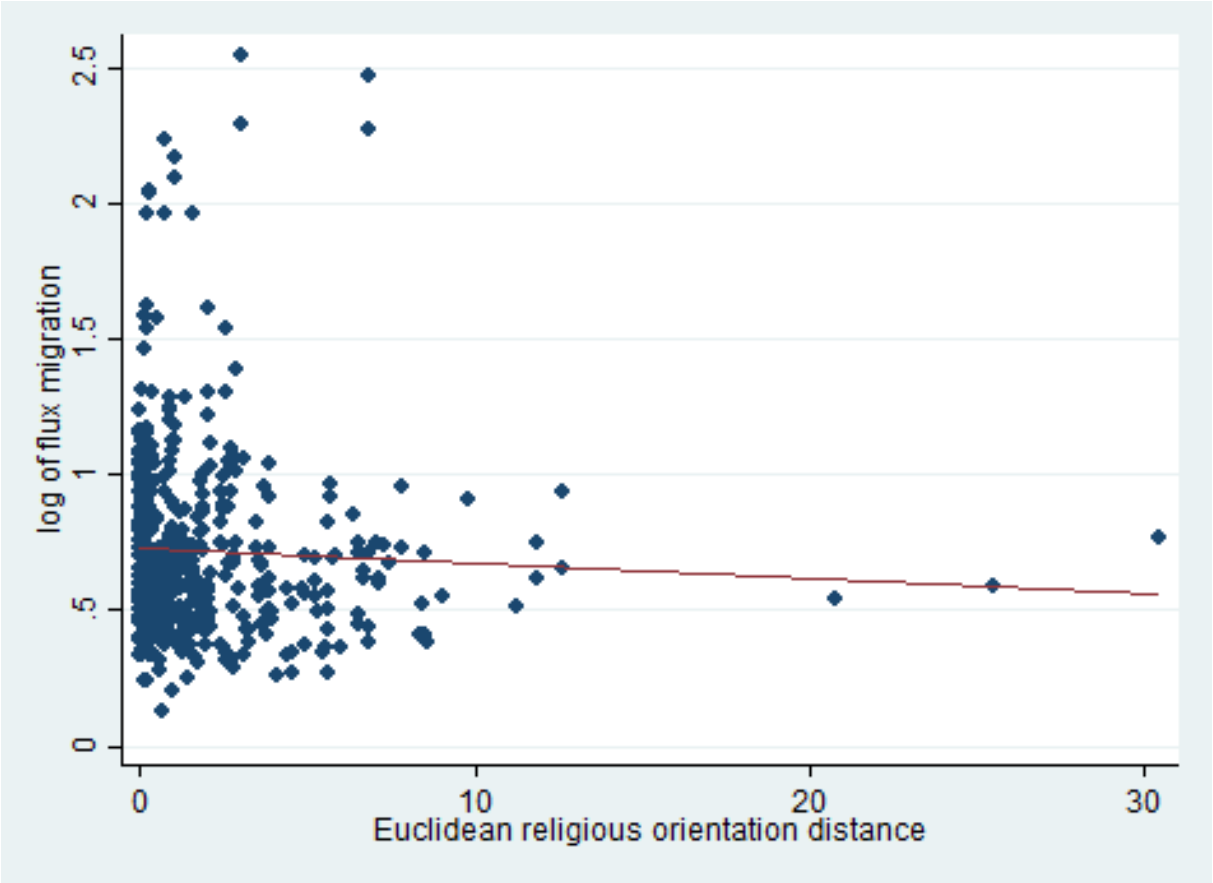
Notes: The graph displays how migration influx and political freedom.

Figure A.5: Migration influx and religious diversity



Notes: The graph displays how migration influx and religious diversity.

Figure A.6: Migration influx and trust evangelical church



Notes: The graph displays how migration influx and trust evangelical church.