GRAVITATIONAL EFFECTS OF CULTURE ON INTERNAL MIGRATION IN BRAZIL

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SUMMARY

GRAVITATIONAL EFFECTS OF CULTURE ON INTERNAL MIGRATION IN BRAZIL

RESEARCH QUESTION AND HYPOTHESIS

DATASETS AND METHODS

BACKGROUND LITERATURE

RESULTS AND CONCLUSION

MAIN CONTRIBUTIONS

First article on the topic in Brazil, expanding the field of research on internal migration.
Most recent empirical strategy available: PPMLFE.
New database for exploring internal migration in Brazil.
Use of travel time instead of geographical distance.

RESEARCH QUESTION

Do cultural, institutional and religious factors interfere in the migrant's choice for municipalities in Brazil?

Cultural transmission channel

HOW?

Gravitational Theory

HYPOTHESIS

Cultural, institutional and religious factors may interfere in the decision of the municipality where a migrant will choose to go.

SUMMARY

Background Literature

Datasets and Methods

Results

Gravitational Theory and Internal Migration

Internal Migration in Brazil
Da Mata et al. (2007);
De Lima et. Al (2019).
Migration and Culture at international literature
Molloy et al. (2011);
Collier and Hoeffler (2018);
Alesina, A., Harnoss, J., e Rapoport, H. (2016);
Collier et al. (2014);
Falck et al. (2018).

Theory

Gravitational Theory

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

$$M_{ij} = exp(C_{ij}\beta + \pi_i + \chi_j).\epsilon_{ij}$$
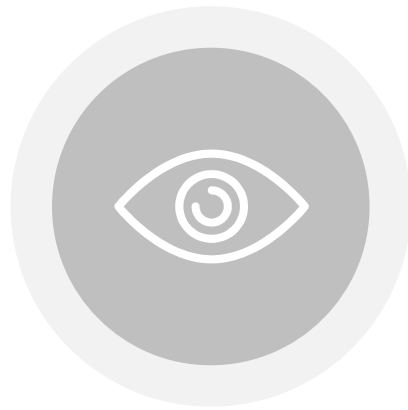
Theory

Gravitational Theory

The gravitational models used in the context of migration, since Ravenstein (1889), are based on two statements.

- First, the migration flow is positively proportional to the economic size of the destination.
- Second, the negative relationship between distance and migratory flow.

SUMMARY

Background Literature

Dataset and Methods

Results

GRAVITATIONAL EFFECTS OF CULTURE ON INTERNAL MIGRATION IN BRAZIL

Datasets

Brazilian Censo of 2010

Migrants in the last five years

Lapop – Latin Public Opinion Project

Perceptions about politics, trust and culture in general.

We consider that culture, institutions and religion are relevant for a city to be chosen as a destiny.

GRAVITATIONAL EFFECTS OF CULTURE ON INTERNAL MIGRATION IN BRAZIL
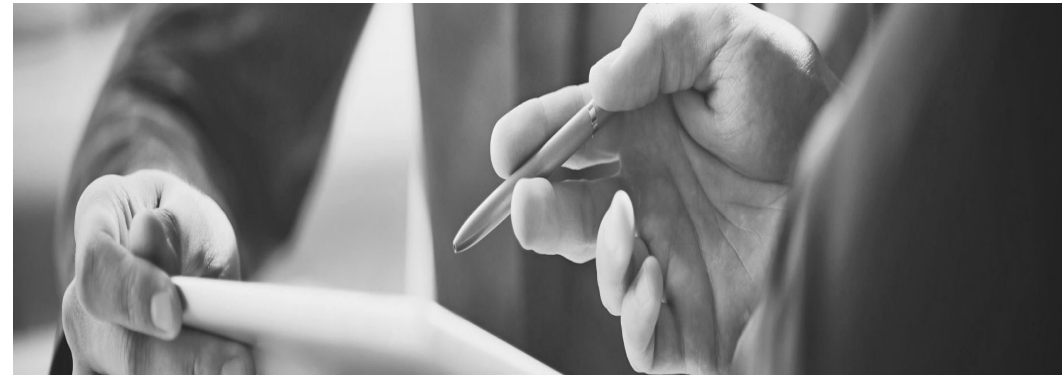
Datasets

Brazilian Censo of 2010

Migrants in the last five years

Lapop – Latin Public Opinion Project

Perceptions about politics, trust and culture in general.

Table A.5: List of the 50 municipalities included in this study

Aloandia	Goiania	Mogi das Cruzes	Sao Lourenco
Belem	Itagiba	Passos	Senador Guiomard
Belo Horizonte	Itaguaje	Possoes	Sao Jose dos Campos
Brasília	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	

We consider that culture, institutions and religion are relevant for a city to be chosen as a destiny.

Datasets

Brazilian Censo of 2010

Migrants in the last five years

Lapop – Latin Public Opinion Project of 2010

Perceptions about politics, trust and culture in general.

Construction of the dataset:

1) Selection of the variables in the Lapop dataset through PCA routine.

2) We selected the variables with higher values at the PCA routine according with each cultural, institutional and religion aspects.

We consider that culture, institutions and religion are relevant for a city to be chosen as a destiny.

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METHODS

Cultural Variables

Cultural distances: national pride, satisfaction with life and trust in the community;

Institutional distances: authoritarianism, corruption, public policy orientation and confidence in the Supreme Court.

Religious distances: religious diversity, trust in the evangelical church;

Distances of personality traits: being a disciplined person and being a critical person.

METHODS

**PPMLFE:
Poisson-Pseudo
-Maximum
Likelihood with
fixed effects**

Silva and Tenreyro (2006): the presence of these three factors in an exponential multiplicative model biases the estimation of the coefficients of the gravitational equation using ordinary least squares (OLS).

SOLUTION: the adoption of the non-linear PPMLFE estimator.

·**Different cities – fixed effects.**

$$M_{ij} = exp(C_{ij}\beta + \pi_i + \chi_j).\epsilon_{ij}$$

METHODS

PPMLFE: Poisson–Pseudo–Maximum Likelihood with fixed effects

$$C_{ij} = \sum_{ij}((I_{ci} - I_{cj})^2)/var_{C_{ij}}$$

Problem:
Controlling for potential confounding factors.
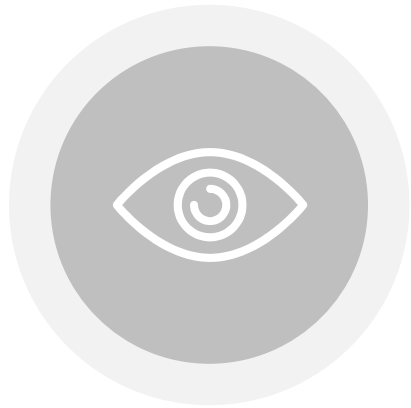Solution: isolating the effect of culture, institutions and religion on the migrants' influx.

HOW?

LAPOP Database variables + calculate the distances vis-à-vis Kogut and Singh (1988).

This method is more suitable because consider that the unobserved heterogeneity is correlated with the error term.

SUMMARY

Background
Literature

Datasets and
Methods

Results

RESULTS

In few words, the main idea is:

Expected SIGNS: <u>NEGATIVE</u> because we use the same definition of KOGUT AND SINGH (1988).

- The larger the cultural distance, the smaller the migrant's influx.

- According to the <u>gravitational theory</u>, one tends to opt for municipalities with a higher degree of proximity in terms of in culture, institutions and religion.

- We also suppose that an "early" migrant paves the way for other migrants from the municipality he originally comes from.

RESULTS

Other (structural) variables: (Silva and Tenreyro 2006; 2011)

- time to travel –

- origin population +

- destiny population +

- origin unemployment +

- destiny unemployment –

- origin GDP –

- destiny GDP +

REGRESSIONS WITH PPML

	(1)	(2)	(3)	(4)	(5)	(6)
			dependent variable: migration flux			
time to travel	-0.41***	-0.38***	-0.44***	-0.42***	-0.40***	-0.42***
	[0.08]	[0.08]	[0.08]	[0.08]	[0.08]	[0.07]
destiny GDP	0.91***	0.81***	0.84***	0.86***	0.95***	0.71***
	[0.18]	[0.16]	[0.20]	[0.17]	[0.18]	[0.19]
origin GDP	0.57***	0.49***	0.48***	0.48***	0.62***	0.35*
	[0.18]	[0.16]	[0.18]	[0.18]	[0.18]	[0.19]
origin population	0.34***	0.35***	0.36***	0.35***	0.35***	0.38***
	[0.07]	[0.06]	[0.06]	[0.07]	[0.07]	[0.07]
destiny population	0.35***	0.36***	0.37***	0.34***	0.36***	0.38***
	[0.06]	[0.06]	[0.07]	[0.06]	[0.07]	[0.07]
origin unemployment	0.17	-0.07	0.19	0.17	0.17	-0.10
	[0.22]	[0.25]	[0.20]	[0.22]	[0.22]	[0.22]
destiny unemployment	0.49**	0.29	0.51**	0.45**	0.51**	0.25
	[0.21]	[0.24]	[0.21]	[0.20]	[0.21]	[0.24]
authoritarianism			-0.11**			-0.08**
			[0.04]			[0.04]
life satisfaction		-0.21***				-0.20***
		[0.04]				[0.03]
religious diversity				-0.01		-0.01**
				[0.00]		[0.00]
disciplined person					-0.01	0.04***
					[0.03]	[0.01]
Observations	450	450	450	450	450	450
Pseudo-R2	0.56	0.61	0.62	0.58	0.57	0.67
LL	-68020.30	-62381.88	-62485.17	-67072.13	-67469.99	-57049.33
AIC	136056.6	124785.8	124994.3	134164.3	134960	114136.7

There is a greater migratory influx between cities where people are similar in terms of:

authoritarian behavior;

satisfaction with life;

religious diversity.

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REGRESSIONS WITH PPML AND FIXED EFFECTS

	(1)	(2)	(3)	(4)	(5)
		dependent variable: migration flux			
time to travel	-0.97***	-0.95***	-0.99***	-0.97***	-0.94***
	[0.06]	[0.06]	[0.06]	[0.06]	[0.06]
authoritarianism		-0.11**			-0.09**
		[0.05]			[0.04]
corruption		-0.06*			-0.06**
		[0.03]			[0.03]
rule of law		-0.04*			-0.05*
		[0.03]			[0.03]
community trust	0.09***				0.09***
	[0.02]				[0.02]
national pride	-0.04				-0.05*
	[0.03]				[0.03]
life satisfaction	-0.05				-0.06*
	[0.04]				[0.03]
religious diversity			-0.02**		-0.01
			[0.01]		[0.01]
critical person				0.08	0.09*
				[0.05]	[0.05]
Fixed Effects (fe)					
Origin/Destiny					
Observations	450	450	450	450	450
Wald stat	454.69	351.52	286.09	303.70	461.71
Pseudo-R2	0.89	0.89	0.88	0.89	0.90
LL	-16096.19	-16203.06	-16633.28	-16771.67	-15150.44
AIC	32202.39	32418.12	33274.57	33551.34	30326.89

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RESULTS

There is a greater migratory influx between cities where people are similar in terms of:

- authoritarian behavior;
- tolerance to corruption;
- satisfaction with life;
- trust in people in the community;
- confidence in the STF.

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Heterogeneities effects

dep.var.:	(1) core model	(2) white	(3) non-white	(4) high school	(5) prim.school	(6) age:16-40	(7) age: more 40	(8) male	(9) female	(10) 40hrs	(11) 40 hrs+	(12) self-employed	(13) employed
time to travel	-0.94***	-0.91***	-0.95***	-0.93***	-0.89***	-0.94***	-0.96***	-0.94***	-0.95***	-0.82***	-0.96***	-0.90***	-0.95***
	[0.06]	[0.06]	[0.07]	[0.07]	[0.07]	[0.06]	[0.07]	[0.06]	[0.07]	[0.07]	[0.06]	[0.07]	[0.07]
community trust	0.09***	0.10***	0.07**	0.08***	0.11***	0.09***	0.08***	0.09***	0.09***	0.10***	0.09***	0.09***	0.09***
	[0.02]	[0.02]	[0.03]	[0.03]	[0.03]	[0.02]	[0.02]	[0.03]	[0.02]	[0.04]	[0.02]	[0.03]	[0.02]
national pride	-0.05*	-0.04	-0.07*	-0.05	-0.05	-0.07**	-0.02	-0.05	-0.07**	-0.03	-0.06*	-0.09**	-0.04
	[0.03]	[0.03]	[0.04]	[0.04]	[0.04]	[0.03]	[0.04]	[0.03]	[0.03]	[0.05]	[0.03]	[0.04]	[0.03]
life satisfaction	-0.06*	-0.07*	-0.05	-0.06	-0.05	-0.08**	-0.01	-0.06	-0.07*	-0.03	-0.06*	0.03	-0.08**
	[0.03]	[0.04]	[0.05]	[0.04]	[0.05]	[0.03]	[0.04]	[0.04]	[0.04]	[0.06]	[0.03]	[0.06]	[0.03]
authoritarianism	-0.09**	-0.07*	-0.15***	-0.11**	-0.14***	-0.06	-0.17***	-0.10**	-0.08*	-0.04	-0.10**	-0.16***	-0.07*
	[0.04]	[0.04]	[0.05]	[0.06]	[0.05]	[0.04]	[0.04]	[0.04]	[0.05]	[0.06]	[0.04]	[0.05]	[0.04]
corruption	-0.06**	-0.06**	-0.06**	-0.05*	-0.08***	-0.05	-0.09***	-0.06**	-0.06*	-0.02	-0.07***	-0.03	-0.07**
	[0.03]	[0.03]	[0.03]	[0.03]	[0.02]	[0.03]	[0.03]	[0.03]	[0.03]	[0.05]	[0.03]	[0.04]	[0.03]
policy orientation	-0.00	-0.02	0.02	0.00	-0.01	-0.00	0.00	0.00	-0.01	0.03	-0.01	0.06	-0.03
	[0.05]	[0.04]	[0.05]	[0.05]	[0.05]	[0.05]	[0.05]	[0.05]	[0.05]	[0.06]	[0.04]	[0.05]	[0.05]
role of law	-0.05**	-0.05**	-0.05	-0.05	-0.04	-0.04	-0.07**	-0.07***	-0.01	-0.06	-0.05*	-0.04	-0.05**
	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.03]	[0.04]	[0.03]	[0.03]	[0.03]
trust in evangelical trust	0.04	0.01	0.07	0.02	0.04	0.02	0.07*	0.04	0.04	0.04	0.04	0.03	0.04
	[0.03]	[0.03]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.03]	[0.04]	[0.04]
religious diversity	-0.01	-0.01	0.00	-0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.02	-0.01	-0.00	-0.01
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
disciplined person	0.02	0.05	-0.01	-0.00	-0.01	0.01	0.06	0.03	-0.01	0.00	0.02	0.03	0.02
	[0.03]	[0.03]	[0.04]	[0.04]	[0.04]	[0.04]	[0.04]	[0.03]	[0.04]	[0.05]	[0.03]	[0.04]	[0.04]
critical person	0.10*	0.11*	0.08	0.07	0.09	0.07	0.14***	0.09*	0.09	0.13*	0.09*	0.17***	0.06
	[0.05]	[0.06]	[0.06]	[0.06]	[0.06]	[0.06]	[0.05]	[0.05]	[0.07]	[0.07]	[0.05]	[0.05]	[0.06]
Observations	447	443	447	445	447	447	439	445	443	424	447	420	447
fixed effects													
Orig./dest.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wald stat	460.01	378.75	380.16	352.29	286.55	420.41	394.54	447.39	340.44	228.13	466.66	396.48	397.78
Pseudo-R2	0.89	0.89	0.84	0.83	0.81	0.87	0.87	0.88	0.86	0.79	0.89	0.82	0.89
LL	-15081.56	-9364.94	-10068.54	-8678.88	-10028.07	-12612.23	-5613.79	-11545.83	-7404.56	-5250.20	-12931.81	-5663.26	-12750.86
AIC	30189.12	18755.9	20163.1	17383.76	20082.15	25250.46	11253.58	23117.67	14835.13	10526.42	25889.63	11352.53	25527.73

Heterogeneities effects

For example, migrants aged 16-40:

- they trust people in the community;
- have satisfaction with life;
- they do not tolerate authoritarian behavior;
- they do not tolerate corruption; and
- do not trust the STF.

The profile of the migrant who cares about national pride is a unique feature present in non-whites, 16-40 years old, women, who work more than 40 hours a week and are self-employed.

Conclusion

We chose to migrate to a municipality where we can find people who are closest to us in the following aspects:

- authoritarian behavior;
- tolerance to corruption;
- satisfaction with life;
- confidence in the STF.

Unexpected results: more culturally distant, greater migratory flow to:

- trust in people in the community;
- be a critical person.

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Conclusion

Through the incorporation of variables of **culture, institutions and religion that naturally affect the well-being of people** in a model that considers the role of geographical distance (measured in time) etc., this work sought to provide evidence on the **determinants of inter-county migration** in Brazil in 2010.

We believe that our findings have important implications for the incipient debate about internal migration in Brazil.

Conclusion

Culture, institutions and religion matter for internal migration in Brazil.

Thank you!

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