Asymmetric Cultural Proximity and Greenfield FDI

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GTDW, Geneva

Santiago 2012

Notes: Fans at a pop concert in Santiago March 9, 2012. Photo from REUTERS.

Santiago 2012

Notes: K-Pop group JYJ perform in Santiago March 9, 2012. Photo from REUTERS.

Motivation

- **Asymmetric** and **time-dependent** dimensions in bilateral cultural relationship: e.g. trust, preferences for cultural systems ...

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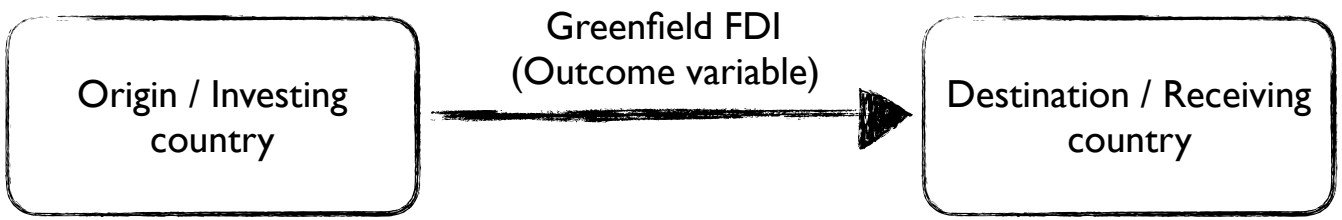
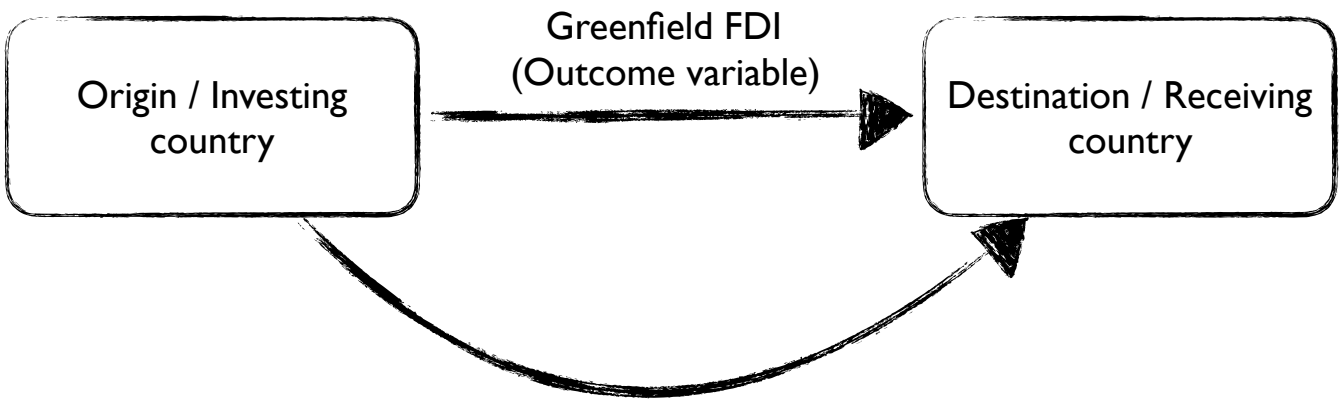
- **Background question**: what role for bilateral economic interactions?
- **This paper**: how cultural proximity affects greenfield FDI accounting for asymmetric cultural preferences

Research question in a diagram

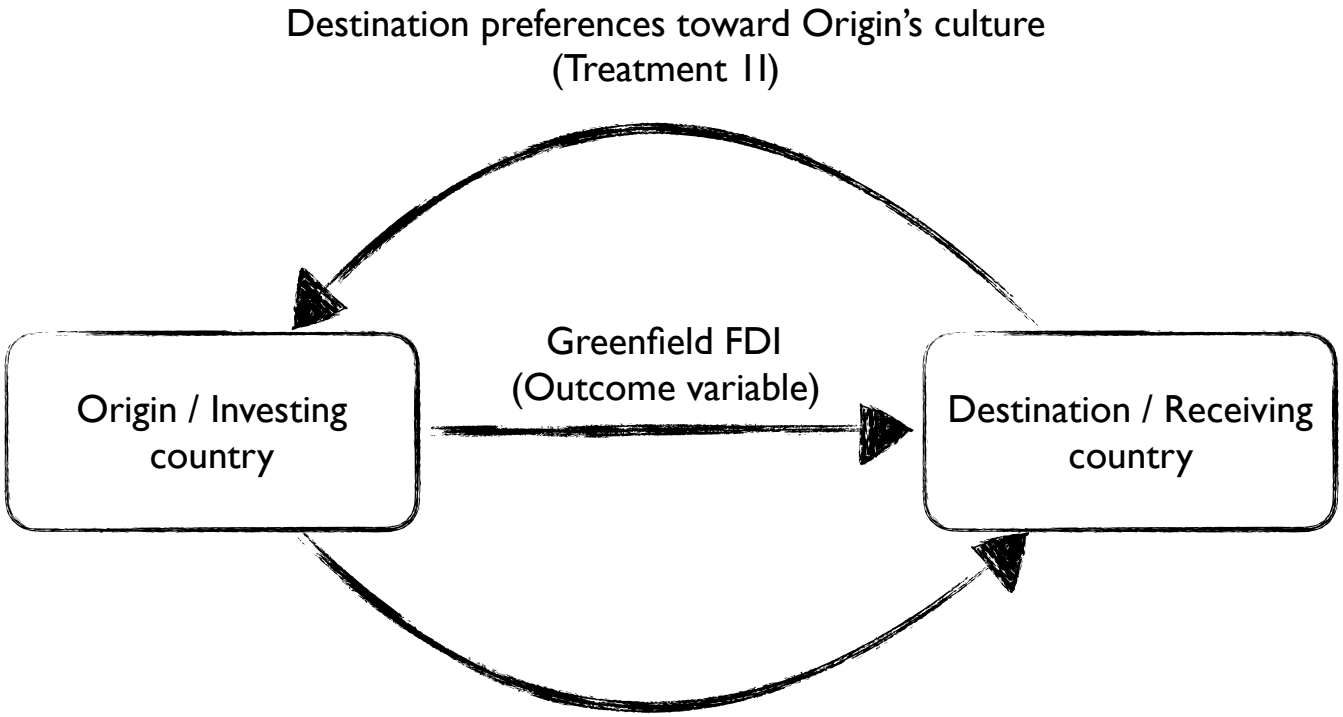


Research question in a diagram



Origin preferences toward Destination's culture
(Treatment 1)

Research question in a diagram



What we do, what we get

- Main **ingredients** of the paper
  - definition and empirical proxies for asymmetric cultural proximity (CP)
  - conceptual framework for asymmetric CP in structural gravity equation of FDI
  - empirical estimation

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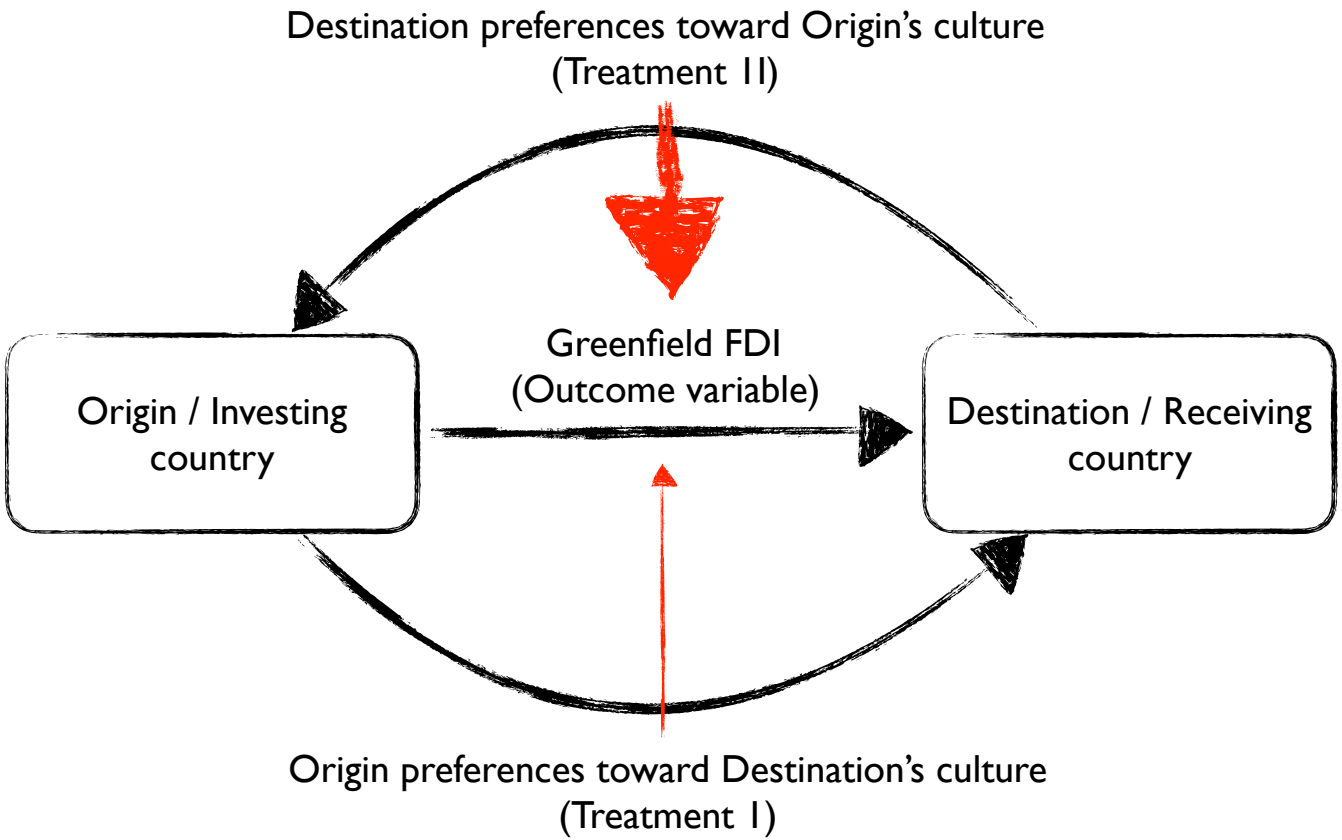
- Preview of **results**
  1. general positive role of CP as a determinant of Greenfield FDI
  2. driven by Destination preferences toward Origin's culture

Our results in a nutshell



We contribute to

- existing theories of bilateral FDI
  - Head and Ries (2008)
  - de Sousa and Lochard (2011)

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- existing critique of symmetric and time invariant CP [diagram]
  - Guiso et al. (2009)
  - Disdier et al. (2010)
  - Felbermayr and Toubal (2010)
  - International business literature (Shenkar, 2001; Tung and Verbeke, 2010; Li et al., 2017)

Definitions

- **Culture**: system of ideas (values, beliefs, norms) and practices (behavioral patterns) prevailing among groups of agents (Leung et al., 2005)

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- **Cultural proximity** b/w 'target' n and 'observer' i:

$$CP_{ni,t} = f(\mathrm{S}_{ni} \ ; \ \mathrm{A}_{ni,t}) \tag{1}$$

  - $\mathrm{S}_{ni} = \mathrm{S}_{in}$ similarity
  - $\mathrm{A}_{ni,t}$ attractiveness of n's culture for individuals in i
  - f strictly increasing in both arguments

Measurament (Disdier et al., 2010)

- $CP_{ni,t}$ proxied by i's IMPORTS of cultural goods from n ($\mathrm{CulIMP}_{ni,t}$)

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- trade data from BACI (CEPII) and UNCTAD classification of cultural goods

  173 countries, 2003-2014, 2.7% of total trade, top 5 exp (CHN, DEU, USA, ITA, FRA) 55%

Core Cultural Goods	**Optional Cultural Goods**
Arts (Performing and Visual)	*Heritage (Arts Crafts)*
Music (CD, Tapes), Printed Music, Painting, Photography, Sculpture and Antiques	Carpets, Celebration, Paperware, Wickerware, Yarn and Other
Media (Publishing and Audio-Visual)	*Functional Creations (Design and New-Media)*
Books, Newspaper, Other Printed Matter, Film	Architecture, Fashion, Interior, Glassware, Jewellery, Toys, Recorded Media and Video Games

- direct correspondence b/w cultural imports and cultural preferences, i.e. $\mathrm{CulIMP}_{ni,t}$ and $\mathrm{A}_{ni,t}$

- correlation b/w $\mathrm{CulIMP}_{ni,t}$ and S_{ni} [table]

A descriptive detour on asymmetry

- Measure of asymmetry in cultural preferences
  - $\mathrm{CulIMP}_{ni,t} = \delta_{i,t} + \gamma_{ni} + \varepsilon_{ni,t}$
  - Cultural asymmetry as $\mathrm{CA}_{ni} = |\hat{\gamma}_{ni} - \hat{\gamma}_{in}|$
  - Estimate CA for 4137 pairs (56% cultural trade)
  - mean 2.932 and median 2.614

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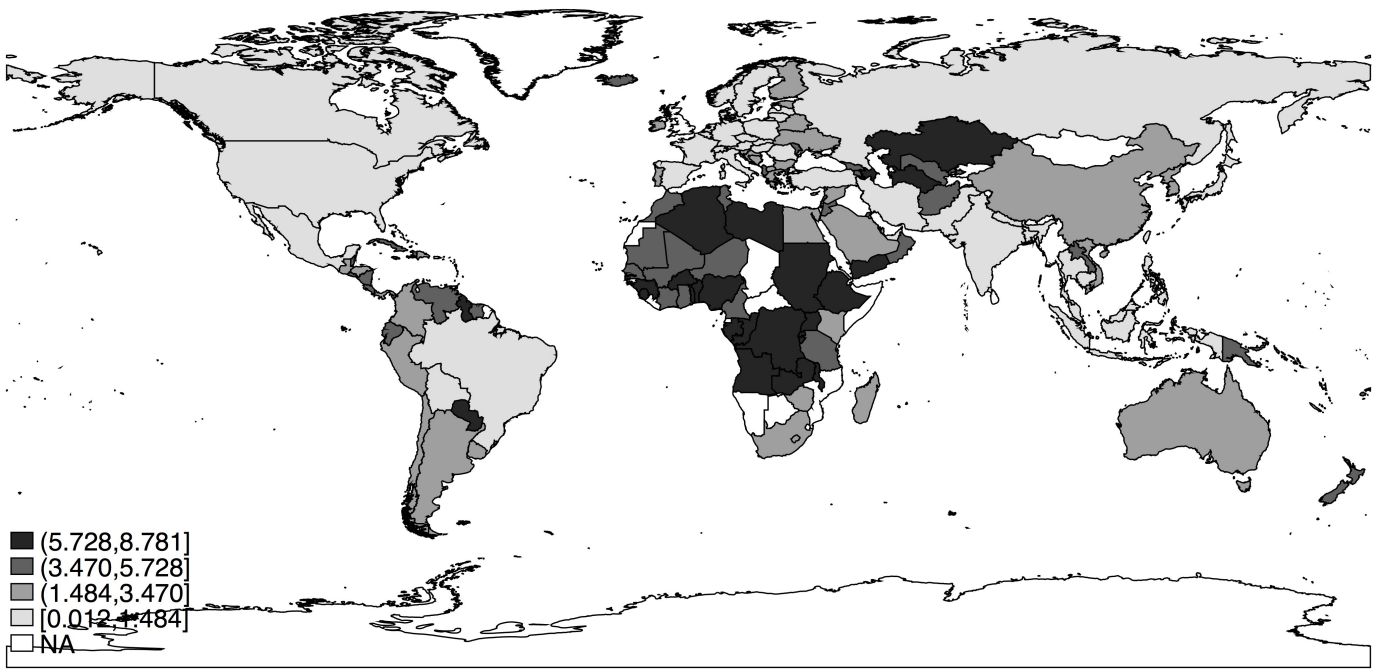
Country n	Country i	Attractiveness premium of i for n ($\hat{\gamma}_{ni}$)	Attractiveness premium of n for i ($\hat{\gamma}_{in}$)	Asymmetry ($\lvert\hat{\gamma}_{ni} - \hat{\gamma}_{in}\rvert$)
China	Paraguay	7.211	-3.686	10.897
Morocco	Singapore	0.047	0.046	0.001
South Korea	Chile	2.470	-2.212	4.682
South Korea	Peru	3.312	-1.189	4.502

- Time average $\overline{\text{CulIMP}}_{\text{CHN PRY}}$: USD 273,137,000 (131 times the average value across cultural exporters to PRY).

- $\overline{\text{CulIMP}}_{\text{PRY CHN}}$: USD 23,000 (0.08% of the average value across cultural exporters to CHN)

CA between UK and the world



de Sousa and Lochard (2011) framework (I)

- partial equilibrium (origin-side), multilateral frictions in investment decisions
- Greenfield FDI project as inspection game b/w MM and Sub
- MM payoff decreasing in
  - inspection costs c
  - transaction costs τ: e.g. currency risks, differentials of taxation/accounting/legal standards ...
- c and τ functions of formal investment policies, geographic and cultural proximity

de Sousa and Lochard (2011) framework (II)

- multi country framework and stochastic MNE's payoff functions

$\Rightarrow$ MM invests where the highest payoff (value of a project) is higher than the highest value of projects elsewhere

$\Rightarrow$ number of greenfield projects from i to n as

$$\text{FDI}_{ni} = K_i Z_i^{-1} M_n T_{ni} \tag{2}$$

- K_i embeds origin country specific parameters (e.g. capital stock)
- Z_i^{-1} multilateral resistance component (attractiveness of alternative locations for MM)
- M_n destination specific parameters (e.g. number of potential projects)
- T_{ni} function of c and τ

T_{ni} and asymmetric CP

ASS0: c and τ decrease with S_{ni}

Standard mechanisms: easier to monitor with same language; lower differentials in accounting/legal standards

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Standard mechanisms: easier to monitor with same language; lower differentials in accounting/legal standards

ASS1: c and τ decrease with $A_{ni,t}$

Mechanism: higher utility from operating in environment whose cultural system is more appreciated

ASS2: c and τ decrease with $A_{in,t}$

Mechanism: higher utility from operating in environment where your cultural system is more appreciated

ASS3: $A_{in,t}$ increases T_{ni} beyond its effect on c and τ

Mechanisms: destination consumers demand & destination political economy

Destination consumers demand

- if project in destination (n) serves the domestic n market

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- this value positively affected by cultural preferences toward i - conditionally on cultural preferences toward other countries

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Destination political economy

- if political pressures in the destination (n) affect the value of investment and ...
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FDI_{ni} and asymmetric CP

- 'destination-side' mechanisms imply multilateral resistance for destination

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- positive effect of $CP_{ni,t}$ and $CP_{in,t}$ on greenfield FDI from i to n
- no theoretical ambiguity on the sign of the effect
- relative strength an empirical question

Empirical model (I)

- PPML regression from $\mathrm{FDI}_{ni,t} = K_{i,t} Z_{i,t}^{-1} M_{n,t} B_{n,t}^{-1} T_{ni,t}$
- $\mathrm{FDI}_{ni,t}$ number of greenfield project from i to n at t from fDiMarket
- origin×time and destination×time fixed effects

Empirical model (II)

- CP elements of bilateral component $T_{ni,t}$
  1. $A_{ni,t}$: $\mathrm{CulIMP}_{ni,t}$
  2. $A_{in,t}$: $\mathrm{CulEXP}_{ni,t}$
  3. former colony dummy: colony_{ni}
  4. linguistic proximity: lang_{ni}
  5. religious proximity: $\mathrm{comrelig}_{ni}$
  6. institutional proximity: comleg_{ni}

- other elements of bilateral component $T_{ni,t}$
  1. log of the distance: $\ln \mathrm{dist}_{ni}$
  2. dummy for geographical contiguity: contig_{ni}
  3. FTAs involving i and n in force at t: $\mathrm{FTA}_{ni,t}$
  4. BITs involving i and n in force at t: $\mathrm{BIT}_{ni,t}$

- Sources: UNCTAD and CEPII (*geodist* and *gravdata*)

Main endogeneity issues

- Unobserved confounding heterogeneity
  - with ni variability (e.g. bilateral initial conditions) $\Rightarrow$ origin$\times$destination FE
  - with nit variability $\Rightarrow$ control for non-cultural trade and migration

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- Reverse causality
  - 2 and 5 years lagged $\mathrm{CulIMP}_{ni,t}$ and $\mathrm{CulEXP}_{ni,t}$
  - IV with 12 years lagged $\mathrm{CulIMP}_{ni,t}$ and $\mathrm{CulEXP}_{ni,t}$ as excludable instruments (Combes et al., 2005; Briant et al., 2014; Felbermayr and Toubal, 2010)

Estimation sample

- 144 origins and 178 destinations, 2003-2014: 87,448 obs

Variable	Mean	Median	sd	Min	Max
$\text{FDI}_{ni,t}$	1.551	0	8.897	0	400
$\ln \text{dist}_{ni}$	8.482	8.747	0.910	4.107	9.892
colony_{ni}	0.032	0	0.177	0	1
lang_{ni}	0.157	0	0.364	0	1
comrelig_{ni}	0.173	0.033	0.266	0	0.989
contig_{ni}	0.038	0	0.190	0	1
comleg_{ni}	0.293	0	0.455	0	1
$\text{FTA}_{ni,t}$	0.269	0	0.444	0	1
$\text{BIT}_{ni,t}$	0.393	0	0.488	0	1
$\ln \text{CultIMP}_{ni,t}$	-0.454	-0.429	3.273	-6.908	10.644
$\ln \text{CultEXP}_{ni,t}$	-0.145	-0.086	3.114	-6.908	10.644

Baseline $\mathrm{FDI}_{ni,t}$ model (I)

	(1)	(2)	(3)
$\ln \mathrm{CultIMP}_{ni,t}$	0.165***		0.0690***
	(11.87)		(5.90)
$\ln \mathrm{CultEXP}_{ni,t}$		0.330***	0.305***
		(23.71)	(21.91)
colony_{ni}	0.478***	0.387***	0.366***
	(7.89)	(6.95)	(6.85)
lang_{ni}	0.254***	0.189***	0.181**
	(4.20)	(3.73)	(3.53)
$\mathrm{comrelig}_{ni}$	1.002***	0.893***	0.883***
	(9.47)	(9.51)	(9.21)
comleg_{ni}	0.253***	0.170***	0.153***
	(6.01)	(4.59)	(4.06)
$\ln \mathrm{dist}_{ni}$	-0.407***	-0.214***	-0.179***
	(-11.60)	(-6.19)	(-5.13)
contig_{ni}	-0.114	0.0752	-0.0977
	(-1.71)	(-1.21)	(-1.61)
$\mathrm{FTA}_{ni,t}$	0.172**	0.135*	0.118*
	(3.02)	(2.49)	(2.19)
$\mathrm{BIT}_{ni,t}$	0.0398	0.0119	0.0115
	(0.93)	(0.29)	(0.29)
Imp×Year FE	√	√	√
Exp×Year FE	√	√	√
Obs	87448	87448	87448
% Zeros	0.749	0.749	0.749
R^2	0.9056	0.9216	0.9221
Estimator	PPML	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

Adding country pair FE

	(1)	(2)	(3)	(4)
$\ln \mathrm{CultIMP}_{ni,t}$	0.145***		0.0522***	0.00677
	(10.35)		(4.43)	(0.78)
$\ln \mathrm{CultEXP}_{ni,t}$		0.314***	0.295***	0.0499***
		(22.57)	(21.04)	(3.72)
Imp×Year FE	√	√	√	√
Exp×Year FE	√	√	√	√
Country Pair FE				√
Obs	49702	49702	49702	49027
% Zeros	55.99	55.99	55.99	55.99
R^2	0.9053	0.9222	0.9224	0.9686
Estimator	PPML	PPML	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

Controlling for bilateral migration

	(1)	(2)	(3)
$\ln \text{CultIMP}_{ni,t}$	0.0507**	0.0368	0.0204
	(3.27)	(1.90)	(0.93)
$\ln \text{CultEXP}_{ni,t}$	0.290***	0.296***	0.290***
	(15.12)	(12.94)	(11.37)
$\ln \text{migstock}_{ni,t}$	0.0810***		0.0579**
	(5.13)		(2.63)
$\ln \text{migstock}_{in,t}$		0.0788***	0.0293
		(4.29)	(1.33)
Imp×Year FE	√	√	√
Exp×year FE	√	√	√
Obs	9619	8756	5853
% Zeros	67%	67%	60%
R^2	0.91	0.92	0.92
Estimator	PPML	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

The reduced number of observations is due to the availability of the migration data that allow to use only two points in time (2010 and 2013) for the period covered in the analysis (Source: The World Bank).

Controlling for non-cultural trade

	(1)	(2)
$\ln \text{CultIMP}_{ni,t}$	0.0690***	0.0838***
	(5.90)	(6.01)
$\ln \text{CultEXP}_{ni,t}$	0.305***	0.324***
	(21.91)	(14.64)
$\ln \text{bil\_trade\_NC}_{ni,t}$		-0.0352
		(-1.24)
Imp×Year FE	√	√
Exp×year FE	√	√
Obs	87448	87448
% Zeros	0.749	0.749
R^2	0.9221	0.9221
Estimator	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

Lags and IV

	2 year lag	5 year lag	Baseline	IV
	(1)	(2)	(3)	(4)
$\ln \text{CultIMP}_{ni,t}$			0.0658**	0.0736
			(2.96)	(1.35)
$\ln \text{CultEXP}_{ni,t}$			0.247***	0.619***
			(9.43)	(6.54)
$\ln$ lagged $\text{CultIMP}_{ni,t-2}$	0.0740***			
	(6.32)			
$\ln$ lagged $\text{CultEXP}_{ni,t-2}$	0.296***			
	(21.27)			
$\ln$ lagged $\text{CultIMP}_{ni,t-5}$		0.0784***		
		(6.59)		
$\ln$ lagged $\text{CultEXP}_{ni,t-5}$		0.286***		
		(19.51)		
Imp×Year FE	√	√	√	√
Exp×Year FE	√	√	√	√
Obs	84568	80057	10596	10040
Estimator	PPML	PPML	PPML	IV PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z statistics in parentheses. Standard errors are clustered by trading pair.
To reach convergence the sample in columns (3) and (4) is reduced to the subset of importing and exporting countries as in Felbermayr and Toubal (2010).

Further robustness tests

- Alternative dependent variables
  - FDI total value [table]
  - FDI average value (intensive margins) [table]

- Core VS Optional cultural trade [table]

Destination-side channels

- Focus on relative strength of $A_{in,t}$ with respect to $A_{ni,t}$

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- Destination consumers demand channel: relative strength of $A_{in,t}$ higher when FDI targets consumers demand in destination n
  $\Rightarrow$ test heterogeneity across sectors:
  1. MORE likely to target consumers: beverages, consumer electronics, consumer product, financial services, food and tobacco, leisure and entertainment, software and ICT devices, and transportation
  2. LESS likely to target consumers: automotive components, biotech, building and construction material, ceramics, glasses, chemical, coal, oil gas, electronic component, engines and turbines, industrial machinery, metals, minerals, plastic, rubber, semiconductors

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- Destination political economy channel: relative strength of $A_{in,t}$ higher under political accountability
  - $\Rightarrow$ test heterogeneity across destinations: below (above) sample median of accountability index (Source: World Bank CPIA indicators on Corruption, Accountability and Transparency perception).

Destination consumers demand

FDI targeting consumers in n	Less likely	More likely
	(1)	(2)
$\ln \mathrm{CultIMP}_{ni,t}$	0.0731***	0.0768***
	(4.12)	(5.85)
$\ln \mathrm{CultEXP}_{ni,t}$	0.255***	0.317***
	(14.70)	(20.12)
Imp×Year FE	√	√
Exp×Year FE	√	√
Obs	62989	78697
% Zeros	0.83	0.82
R^2	0.88	0.90
Estimator	PPML	PPML
Ratio	3.488	4.128

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

Destination political economy

Accountability in n	Low	High
	(1)	(2)
$\ln \mathrm{CultIMP}_{ni,t}$	0.107***	0.0526
	(6.03)	(1.36)
$\ln \mathrm{CultEXP}_{ni,t}$	0.294***	0.498***
	(13.91)	(9.35)
Imp×Year FE	√	√
Exp×Year FE	√	√
Obs	9817	2376
% Zeros	0.76	0.68
R^2	0.85	0.99
Estimator	PPML	PPML
Ratio	2.748	9.467

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

$(A_{in,t}, A_{ni,t})$ and S_{ni}: cmpl or subst?

- **Question**: how asymmetric and time-dependent dimensions of CP affect FDI at different levels of the symmetric and time-invariant CP?

- Test heterogeneity of ni-FE model across ni pairs: below (above) sample median of symmetric and time-invariant CP
  - religious proximity
  - linguistic proximity I: Melitz and Toubal (2014) CSL
  - linguistic proximity II: Adsera and Pytlikova (2015) (AP) index

Higher effect of $A_{in,t}$ at low $S_{ni,t}$

	Religion		CSL		AP index	
	(1-50 pct)	(51-100 pct)	(1-50 pct)	(51-100 pct)	(1-50 pct)	(51-100 pct)
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln \mathrm{CultIMP}_{ni,t}$	0.00639	-0.000994	0.00920	-0.0151	-0.00908	-0.0434
	(0.53)	(-0.07)	(0.82)	(-1.03)	(-0.57)	(-0.92)
$\ln \mathrm{CultEXP}_{ni,t}$	0.0554***	0.0122	0.0604***	0.00995	0.0713***	-0.0779
	(3.34)	(0.75)	(3.59)	(0.66)	(3.51)	(-1.26)
Imp×Year FE	√	√	√	√	√	√
Exp×year FE	√	√	√	√	√	√
Country Pair FE	√	√	√	√	√	√
Obs	23209	23916	22657	23465	12487	23465
% Zeros	59.78%	55.25%	64.04%	51.00%	45.77%	4.47%
R^2	0.9687	0.9770	0.9721	0.9791	0.9730	0.9895
Estimator	PPML	PPML	PPML	PPML	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair. All models include $\mathrm{FTA}_{ni,t}$ and $\mathrm{BIT}_{ni,t}$.

Conclusions

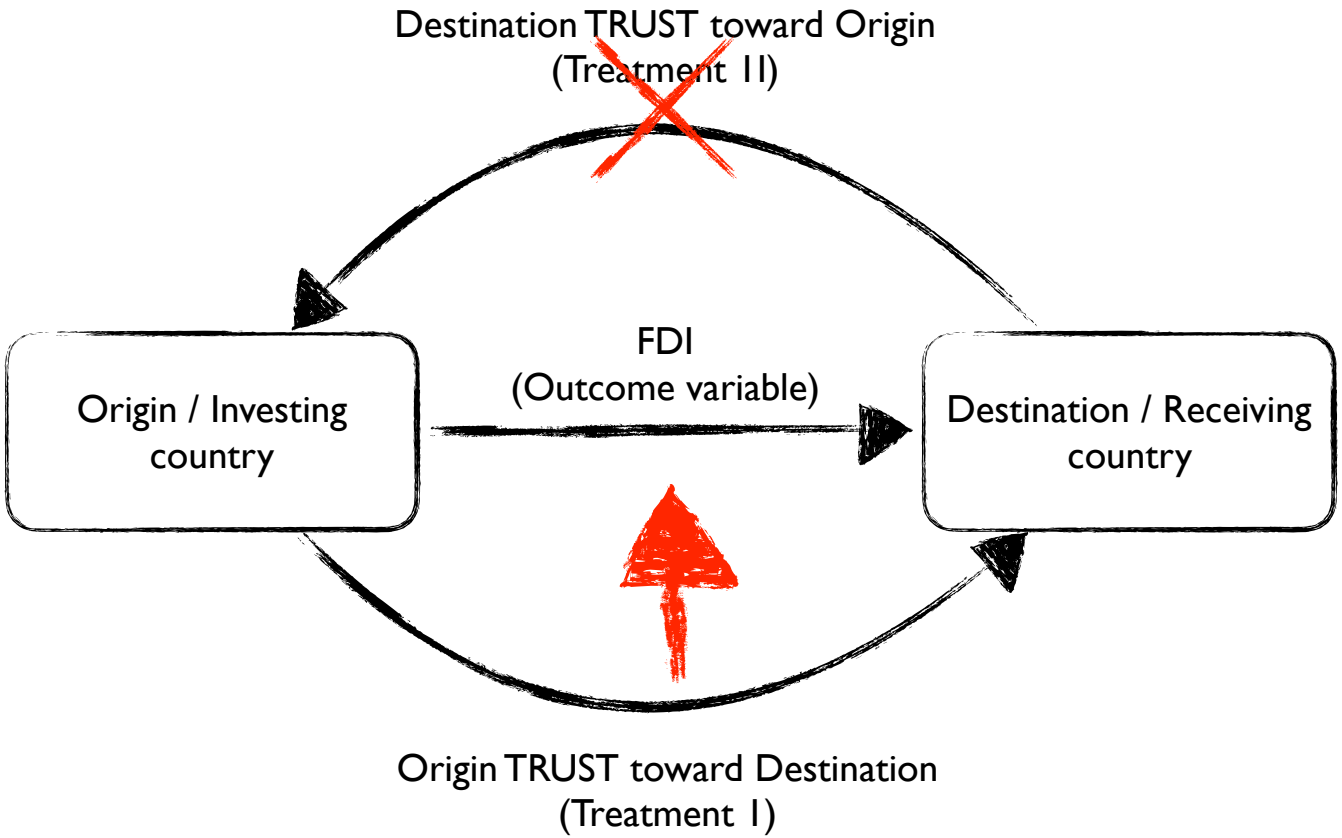
- **Recap**: assess the link b/w CP and FDI explicitly accounting for asymmetric and time-dependent dimension of CP
- **Novel contribution**: identify stronger predictor in the Destination's preferences toward Origin's culture
- **Policy implication**: soft power / cultural tools in investment promotion

Welcoming foreign investment or . . .
. . . making Chinese investment be welcome?

Notes: Beijing 2008. Photo from olympic ceremony database.

Thank You.

Guiso et al. (2009)



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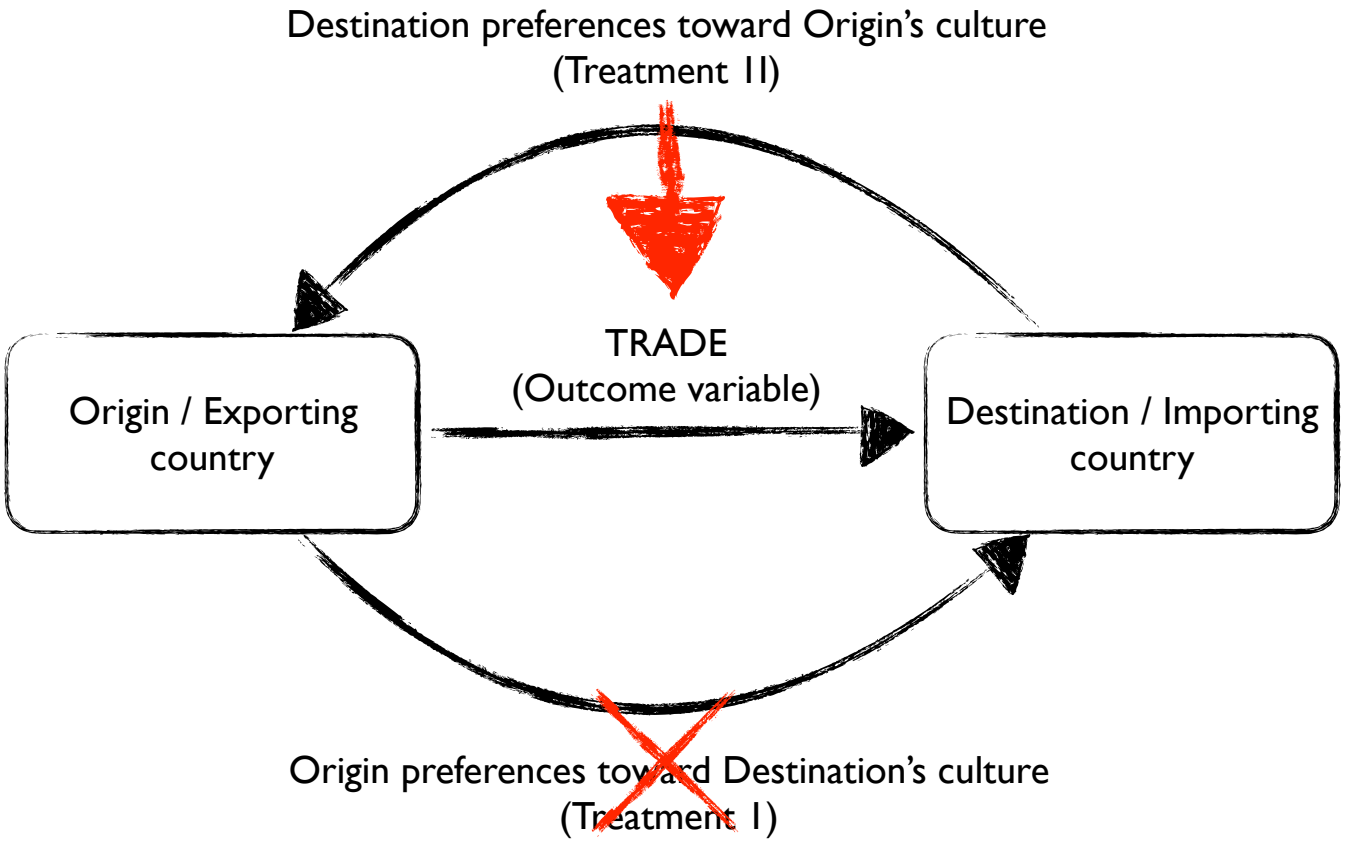

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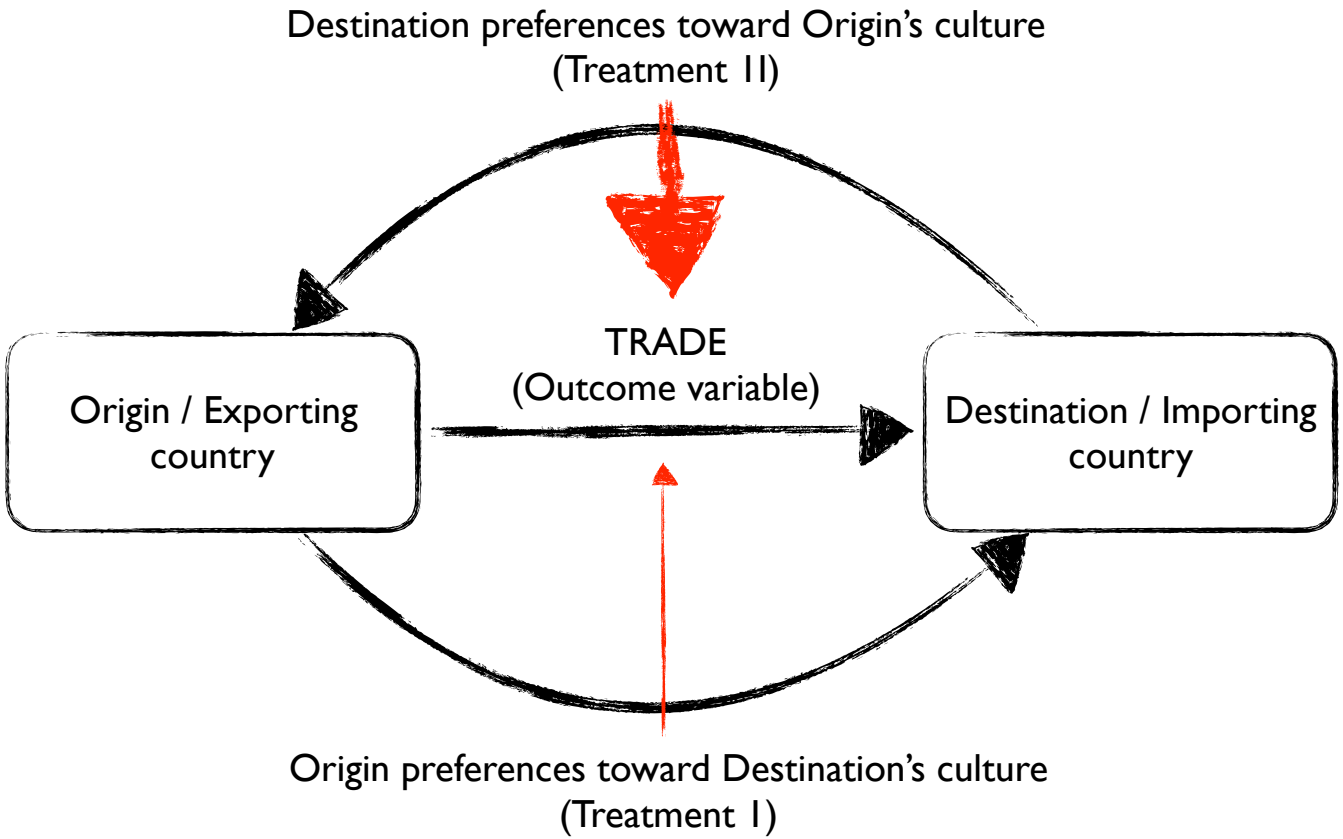
Felbermayr and Toubal (2010)



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$\text{CulIMP}_{ni,t}$ and $\text{S}_{ni,t}$

Dep. Var.	$\ln \text{CultIMP}_{ni,t}$	$\ln \text{CultIMP}_{ni,t}$	$\ln \text{CultIMP}_{ni,t}$
	(1)	(2)	(3)
comrelig_{ni}	0.236***	0.440*	0.235
	(3.55)	(2.28)	(1.26)
comleg_{ni}	0.281***	0.303***	0.411**
	(8.66)	(4.43)	(2.68)
colony_{ni}	0.500***	0.383***	0.763***
	(5.67)	(3.65)	(3.45)
COL_{ni}	0.374***	0.0786	-0.0000199
	(6.13)	(0.55)	(-0.00)
CSL_{ni}	0.683***	-0.350	-0.394
	(6.52)	(-1.45)	(-0.74)
CNL_{ni}	0.0691	0.209	-0.402
	(0.48)	(0.71)	(-0.92)
Hofstede_{ni}			-1.034***
			(-4.01)
Imp×Year FE	√	√	√
Exp×year FE	√	√	√
Obs	24620	54525	684
% Zeros	-	0.5485	-
R^2	0.7476	0.8993	0.9118
Estimator	OLS	PPML	OLS

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. t (z) -statistics in parentheses. Standard errors are clustered by trading-pair.
The model includes $\ln \text{mig}_{ni,t}$, $\ln \text{dist}_{ni}$, contig_{ni} and $\text{FTA}_{ni,t}$. The sample size in this table reflect the way the different estimators deal with null flows as well as the sample size.
The sample in the third column is reduced due to those countries for which the Hofstede Index of Cultural Proximity is available (see Belot and Ederveen, 2012).

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Total value of FDI

Dep. Var.	Value $\mathrm{V}_{ni,t}$		
	(1)	(2)	(3)
$\ln \mathrm{CultIMP}_{ni,t}$	0.0984***		0.0221
	(4.82)		(1.07)
$\ln \mathrm{CultEXP}_{ni,t}$		0.277***	0.269***
		(13.28)	(11.44)
Imp×Year FE	√	√	√
Exp×Year FE	√	√	√
Obs	87448	87448	87448
% Zeros	0.749	0.749	0.749
R^2	0.9056	0.9216	0.9221
Estimator	PPML	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

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Average value (intensive margins) FDI

Dep. Var.	Average Value $\bar{V}_{ni,t}$		
	(1)	(2)	(3)
$\ln \mathrm{CultIMP}_{ni,t}$	0.0705***		0.0390*
	(3.96)		(2.11)
$\ln \mathrm{CultEXP}_{ni,t}$		0.147***	0.137***
		(6.99)	(6.11)
Imp×Year FE	√	√	√
Exp×Year FE	√	√	√
Obs	87448	87448	87448
% Zeros	0.749	0.749	0.749
R^2	0.4555	0.5016	0.4961
Estimator	PPML	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

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Core VS Optional cultural goods

	Total cultural trade	Core cultural trade	Optional cultural trade
	(1)	(2)	(3)
$\ln \mathrm{CultIMP}_{ni,t}$	0.0690***	0.0925***	0.0525***
	(5.90)	(8.22)	(4.34)
$\ln \mathrm{CultEXP}_{ni,t}$	0.305***	0.285***	0.249***
	(21.91)	(20.18)	(19.43)
Imp×Year FE	√	√	√
Exp×Year FE	√	√	√
Obs	87448	67192	76951
% Zeros	75%	69%	71%
R^2	0.91	0.92	0.91
Estimator	PPML	PPML	PPML

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. z-statistics in parentheses. Standard errors are clustered by trading-pair.

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Wald test

- Wald test: $\ln \mathrm{CultIMP}_{ni,t} - \ln \mathrm{CultEXP}_{ni,t} = 0$
- $\chi^2_{(1)} = 141.82$
- p$= 0.0000$

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