

Can HSR services increase regional economic integration? Evidences from the Italian case

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Structure

- Introduction and motivation of the work
- Literature review
- Data and methodology
- Results
- Conclusion and future developments

Framework and motivation

- ❖ HSR investments have been analyzed in terms of their impacts on regional and local growth
- ❖ But less attention has been devoted to their effect on pairwise regional economic integration
- ❖ The research question is: if and to what extent does the implementation of HSR services affect trade flows between regions
We use Italian regions as case studies in the period 2008-2019 (pre-covid)

Literature review

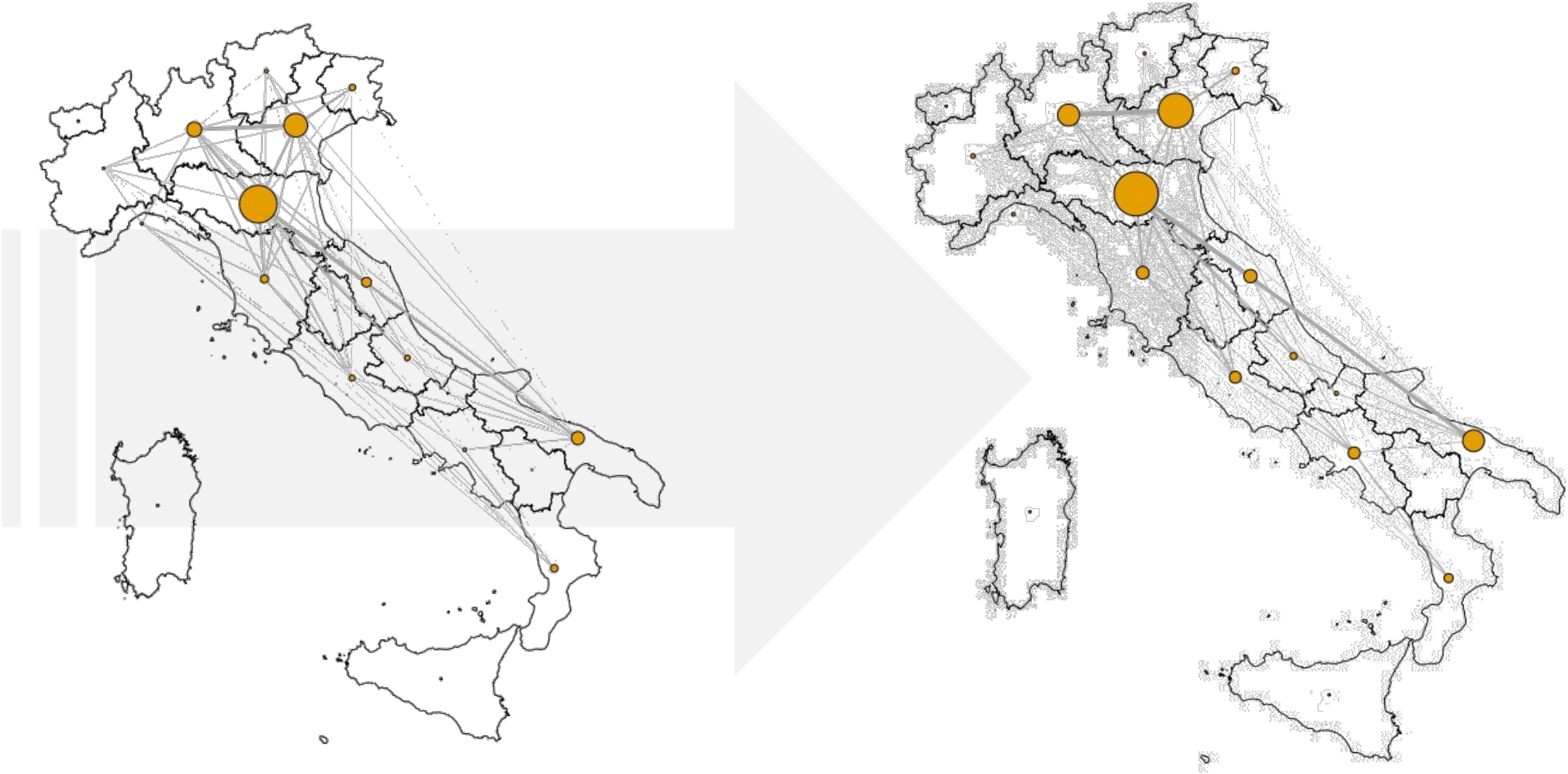
- ❖ While extensive studies have provided a wide range of evaluations of HSR on the socioeconomic impact, primarily from an ex-post perspective, it remains unclear how reliable the evaluation outcomes were, given the variety of data, method and research framework being adopted (Cheng & Chen, 2021)
- ❖ Contrary to the expectations, ex-post and ex-ante cost-benefit analyses for major existing and planned high-speed rail (HSR) lines in Europe show that most of the lines underperform socioeconomically due to cost overruns as well as demand overestimations (Meyer de Freitas & Blum, 2023)
- ❖ In Italy, the success of HSR has increased the inequalities between the areas benefitting from it and other areas of the country excluded (Cascetta et al. 2020).

Data & methodology

- ❖ HSR services: O/D Matrix with information on distance, time number of services (both direct and with connection) between HSR stations in Italy (2008 and 2019). Source: FS Group
- ❖ Economic integration: Multi Regional Input Output table for the Italian regions (20 regions, 43 sectors) developed by IRPET
- ❖ Methodology: gravity model which includes HSR connections

$$T_{ij} = f(\text{GDPI} + \text{POPj} + \text{dist}_{ij} + \text{HSRconn}_{ij})$$
- ❖ We use 2 different specifications of HSRconn_{ij} (direct connections and with change) and three different settings (Trade 2012 and connections 2008, Trade 2019 and connections 2008, Trade 2019 and connections var. 2019/2008)

Evolution of AV services in Italy

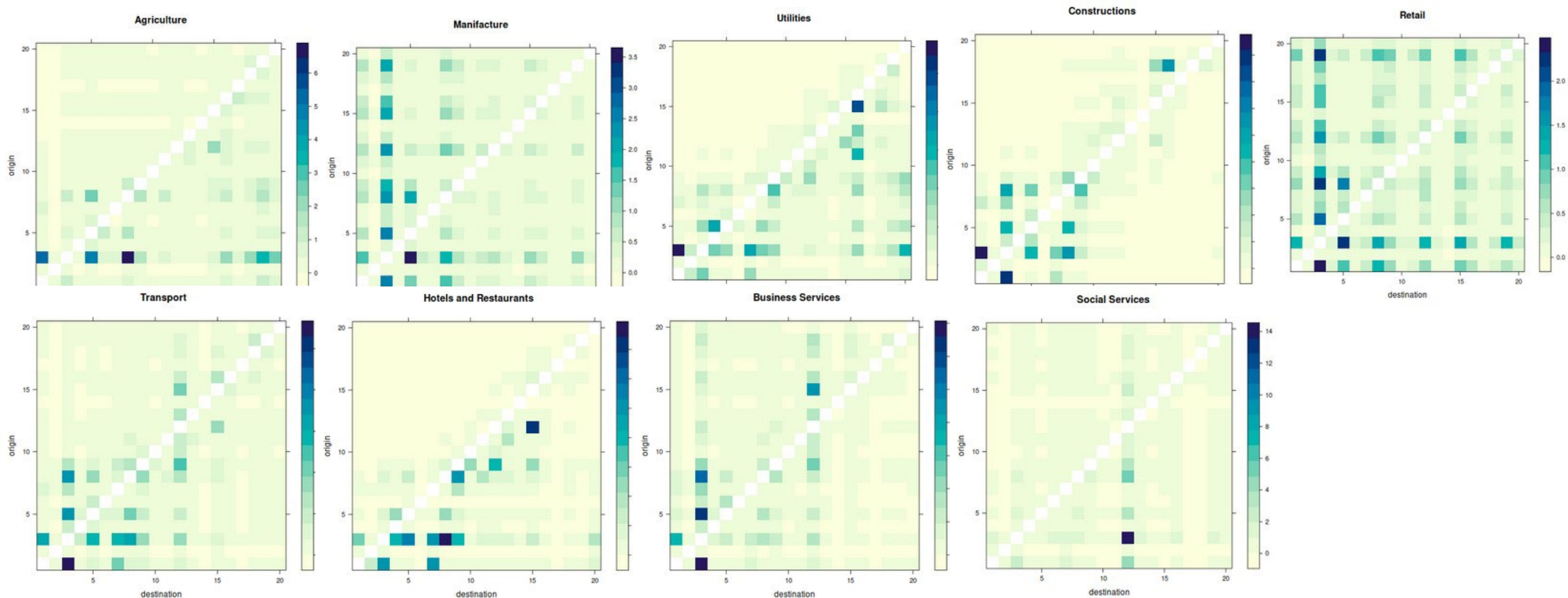


Results (I)

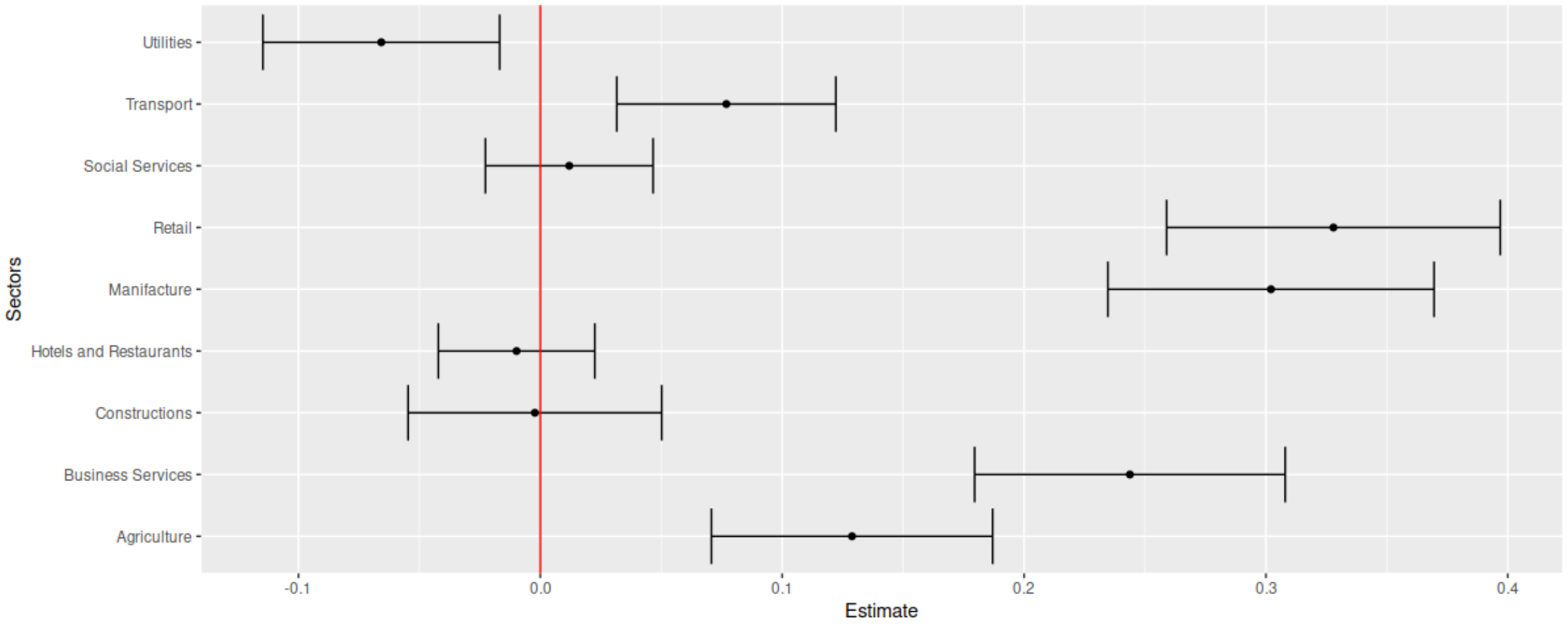
Variable	Model 1 Connections 2008 / trade 2012				Model 2 Connections 2008 / trade 2019				Model 3 Connections var 2008/2019 / trade 2019			
	Estimate	Std. Error	t-value	signif. Lvl.	Estimate	Std. Error	t-value	signif. Lvl.	Estimate	Std. Error	t-value	signif. Lvl.
(Intercept)	2,39E+02	3,00E+02	0,796		1,33E+02	2,74E+02	0,486		4,23E+02	2,72E+02	1,559	
GDP origin	2,07E-03	1,32E-03	1,567	*	2,47E-03	1,15E-03	2,153	*	2,42E-03	1,16E-03	2,08	*
POP destination	3,76E-04	4,66E-05	8,065	***	3,59E-04	4,22E-05	8,489	***	3,47E-04	4,32E-05	8,022	***
Distance (road)	-7,17E-04	3,37E-04	-2,127		-3,84E-04	3,09E-04	-1,241		-6,41E-04	3,07E-04	-2,089	*
Direct connections	3,25E+01	3,23E+00	10,049	***	2,80E+01	2,97E+00	9,442	***	5,25E+01	5,93E+00	8,846	***

	Estimate	Std. Error	t-value	signif. Lvl.	Estimate	Std. Error	t-value	signif. Lvl.	Estimate	Std. Error	t-value	signif. Lvl.
(Intercept)	3,52E+02	3,09E+02	1,14		1,96E+02	2,78E+02	0,705		4,04E+02	2,61E+02	1,546	
GDP origin	1,76E-03	1,36E-03	1,292		2,13E-03	1,17E-03	1,826	.	2,52E-03	1,12E-03	2,253	*
POP destination	3,84E-04	4,82E-05	7,971	***	3,60E-04	4,30E-05	8,375	***	3,00E-04	4,24E-05	7,078	***
Distance (road)	-1,09E-03	3,41E-04	-3,2	**	-6,69E-04	3,08E-04	-2,173	*	-7,25E-04	2,92E-04	-2,482	*
Indirect connections	1,09E+01	1,29E+00	8,464	***	1,01E+01	1,17E+00	8,643	***	3,94E+01	3,70E+00	10,657	***

Trade flows by sector



Results (II)



Conclusions

- ✓ Growth of HSR connections between regions led to an increase in connectivity between Italian regions over the last decade
- ✓ Positive effect of HSR connections on overall inter regional trade, robust over different model specifications
- ✓ If we look at macro-sectors, positive effect is more relevant in more “tradable” sectors (manufacture, business services, retail, agriculture), while local services (social services, constructions, accommodation) are not affected

Future developments

- ❖ Analyse economic integration in a multidimensional framework (es. tourist flows, investments, labour migration, etc)
- ❖ Extend the analysis to EU regions (NUTS 2 level). Problem: lack of reliable interregional trade data
- ❖ Insert more pairwise control variables as determinants of bilaterale trade flows
- ❖ Treat the problem in a counterfactual setting (e.g. diff in diff)

Thanks for your attention!

Any questions?

