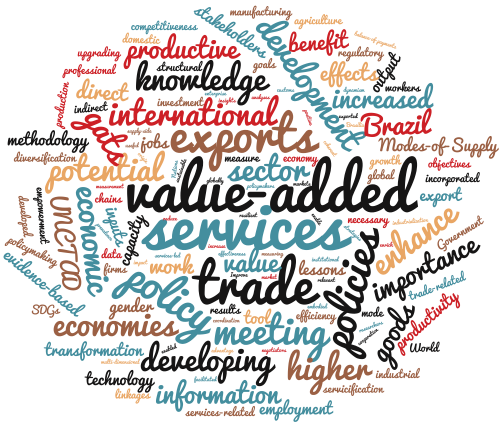


INTERNATIONAL MEETING ON SERVICES VALUE-ADDED IN EXPORTS

Services and trade policies for diversification and upgrading

Brasilia, Brazil, 22-23 October 2019

APPLICATION OF METHODOLOGY: MEASURING SERVICES VALUE-ADDED IN BRAZIL

Presentation by

Professor Eduardo Amaral Haddad
Consultant
United Nations Conference on Trade and Development (UNCTAD)

MINISTÉRIO DA ECONOMIA

PÁTRIA AMADA BRASIL GOVERNO FEDERAL

UNITED NATIONS UNCTAD

EUROPEAN UNION

BRASIL INTERNATIONAL CHAMBER OF COMMERCE
The world business organization

NEREUS
Núcleo de Economia Regional e Urbana da Universidade de São Paulo
The University of São Paulo Regional and Urban Economics Lab

UNITED NATIONS
UNCTAD

POLICY CENTER FOR THE NEW SOUTH
THINK • STIMULATE • BRIDGE

Application of Methodology: Measuring Services Value-Added in Brazil

International meeting on services value-added in exports: Services and trade policies for diversification and upgrading
Brasília, 22-23 October 2019

Prof. Eduardo A. Haddad

Professor of Economics, University of São Paulo, Brazil

Consultant, UNCTAD

Senior Fellow at the Policy Center for the New South, Morocco

Objectives

Propose (and document) a methodology to measure services value added in Brazilian exports, which can be replicate to other countries

Apply the proposed framework to characterize exports of services value added in Brazil, concerning partner countries, for both goods and services

Overview of the results, highlighting some of the findings for Brazil and potential extensions

Data sources

National input-output matrix ("anchor")

- Published by IBGE
- Base year: 2015
- Products: 127 (goods and services)
- Sectors: 67 (non-services and services)

International trade flows

- COMEX STAT (goods)
- SISCOSERV (services)

Employment data by gender

- *Pesquisa Nacional por Amostra de Domicílios – PNAD* (IBGE)

List of countries/groups of countries

África do Sul	South Africa
Resto da América Latina	Rest of Latin America
Argentina	Argentina
Chile	Chile
China	China
Colômbia	Colombia
Estados Unidos	USA
Índia	India
México	Mexico
Peru	Peru
Resto do Mundo	Rest of the World
Rússia	Russia
União Europeia	European Union

Excel file

Metadata and outputs regarding the measurement of services value added in exports of all economic sectors in Brazil, and regarding its combination with trade and employment data

Whenever pertinent, cross-reference between the contents of the Excel file and the documentation is provided in "boxes" throughout the text, so that the reader can follow the technical report looking at numerical examples taken from the actual data for Brazil

Focus on total and initial "impacts" provides the opportunity to derive different multipliers

Dimensions: products (127), sectors (67), foreign destinations (13), outcome variables (3 – value added, total employment and female employment)

Excel file – table of contents

	A	B
1	T1. Leontief Inverse Matrix, Brazil, 2015	
2	T2. Matrix of sectoral share in domestic product output - D Matrix - Market Share - 2015	
3	T3. Exports of goods, by region, 2015 (in BRL million)	
4	T4. Exports of services by region, 2015 (in BRL million)	
5	T5. Exports of goods and services, by region, 2015 (in BRL million)	
9	T6. Total value added embedded in exports of goods, by region (in BRL million)	
10	T7. Total value added embedded in exports of services, by region (in BRL million)	
11	T8. Total value added embedded in exports of goods and services by region (in BRL million)	
12	T9. Total employment embedded in exports of goods, by region (in persons)	
13	T10. Total employment embedded in exports of services, by region (in persons)	
14	T11. Total employment embedded in exports of goods and services by region (in persons)	
15	T12. Total female employment embedded in exports of goods, by region (in persons)	
16	T13. Total female employment embedded in exports of services, by region (in persons)	
17	T14. Total female employment embedded in exports of goods and services by region (in persons)	
18	T15. Summary of results (1)	
19	T16. Initial value added embedded in exports of goods, by region (in BRL million)	
20	T17. Initial value added embedded in exports of services, by region (in BRL million)	
21	T18. Initial value added embedded in exports of goods and services by region (in BRL million)	
22	T19. Initial employment embedded in exports of goods, by region (in persons)	
23	T20. Initial employment embedded in exports of services, by region (in persons)	
24	T21. Initial employment embedded in exports of goods and services by region (in persons)	
25	T22. Initial female employment embedded in exports of goods, by region (in persons)	
26	T23. Initial female employment embedded in exports of services, by region (in persons)	
27	T24. Initial female employment embedded in exports of goods and services, by region (in persons)	
28	T25. Total value added embedded in exports of goods and services by product (in BRL million)	
29	T26. Total employment embedded in exports of goods and services by product (in persons)	
30	T27. Total female employment embedded in exports of goods and services by product (in persons)	
31	T28. Initial value added embedded in exports of goods and services by product (in BRL million)	
32	T29. Initial employment embedded in exports of goods and services by product (in persons)	
33	T30. Initial female employment embedded in exports of goods and services by product (in persons)	
34	T31. Total "imported" value added embedded in exports of goods and services by product (in BRL million)	
35	T32. Summary of results (2)	
36	T33. Initial value added embedded in exports , by sectors (in BRL million)	
37	T34. Total value added embedded in exports , by sectors (in BRL million)	
38	T35. Initial employment embedded in exports , by sectors (in persons)	
39	T36. Total employment embedded in exports , by sectors (in persons)	
40	T37. Initial female employment embedded in exports , by sectors (in persons)	
41	T38. Total female employment embedded in exports , by sectors (in persons)	
42	T39. Initial "imported" value added embedded in exports , by sectors (in BRL million)	
43	T39A. Initial "imported" value added embedded in exports , by sectors and by origin (in BRL million)	
44	T40. Total "imported" value added embedded in exports , by sectors (in BRL million)	
45	T40A. Total "imported" value added embedded in exports , by sectors and by origin (in BRL million)	
46	T41. Matrix of imported input coefficients, Brazil, 2015	
47	T42. Coefficients of value added, total employment and female employment	

Sectoral aggregation

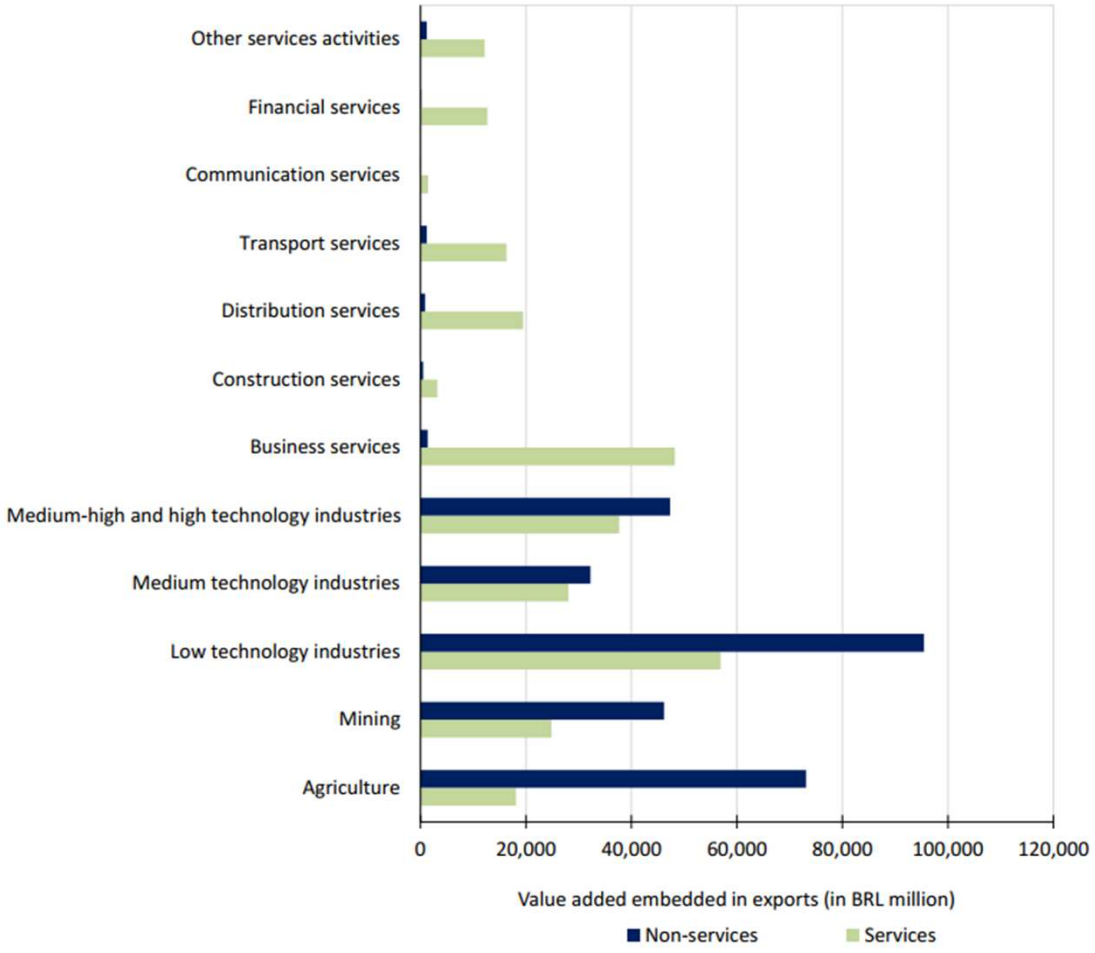
For presentation purposes, we have aggregated the 67 sectors into 12 groups: manufacturing sectors by technological intensity (ISIC Revision 4); services classified following WTO

Classification	*Code*
Agriculture	1
Mining	2
Low technology industries	3
Medium technology industries	4
Medium-high and high technology industries	5
Business services	6
Construction services	7
Distribution services	8
Transport services	9
Communication services	10
Financial services	11
Other services activities	12

Summary: trade in value added – Brazil, 2015

		Exports		
		Goods	Services	Total
Domestic value added embedded in exports	Services	170,876	108,353	279,229
	Non-services	294,072	5,600	299,672
	Total	*464,948*	*113,953*	578,901
Share in total domestic value added	Services	36.75	95.09	48.23
	Non-services	63.25	4.91	51.77
	Total	*100.00*	*100.00*	*100.00*
Shares in total gross exports	Services	27.0	81.2	36.4
	Non-services	46.4	4.2	39.1
	Total	*73.4*	*85.4*	*75.5*
Gross exports	*Total*	*633,603*	*133,429*	*767,032*

Contribution of sectoral exports to domestic value added in services and non-services activities (in BRL million)

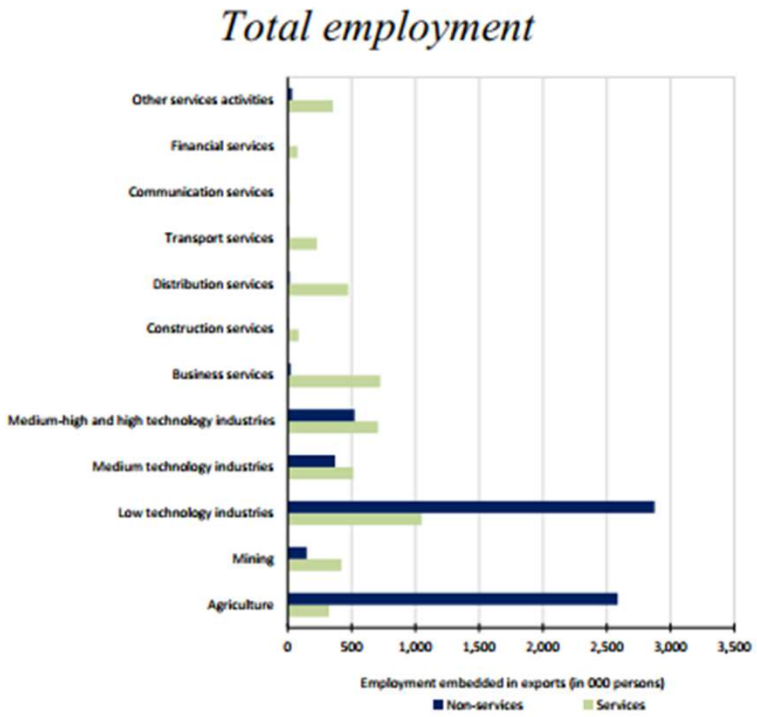


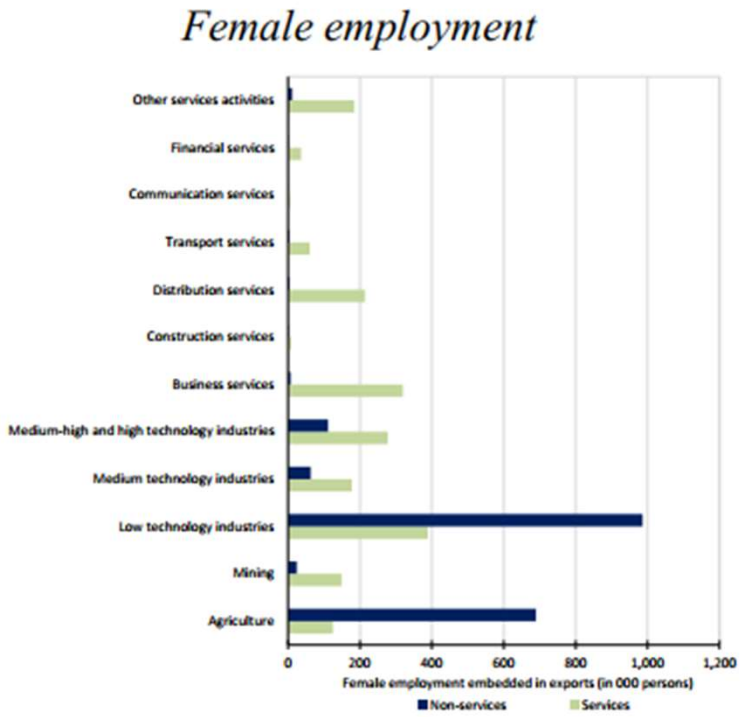
Among services sectors, business services exports contribute more for domestic value added exports, mainly concentrated in services activities. It is noticeable that indirect services demand associated with the domestic value chain of exports of goods may be more relevant for generating value added in services. For example, exports of low technology industries are responsible for the higher share of total domestic value added embedded in Brazilian exports.

What are the goods whose exports contribute with more services value added to the economy?

		BRL million	*% of total*
1	Iron ore	12,227	7.2
2	Soybeans	10,818	6.3
3	Oil and natural gas	9,758	5.7
4	Semi-finished iron products, flat rolled and steel pipes	9,348	5.5
5	Vegetable and animal oils and fats	8,778	5.1
6	Non-ferrous metallurgy products	8,475	5.0
7	Poultry meat	8,154	4.8
8	Beef and other products of meat	7,571	4.4
9	Sugar	6,518	3.8
10	Aircraft; ships and boats; other transport equipment	5,920	3.5
11	Cellulose	5,762	3.4
12	Parts and accessories for motor vehicles	4,626	2.7
13	Motor vehicles	4,462	2.6
14	Other mechanical machinery and equipment	4,417	2.6
15	Commercial vehicles; buses; bodies (coachwork) for moto	3,656	2.1
16	Pig iron and ferroalloys	3,487	2.0
17	Processing and preserving of fruit and vegetables	2,983	1.7
18	Coffee beans	2,952	1.7
19	Leather and related products	2,928	1.7
20	Non-ferrous metal minerals	2,737	1.6
Accumulated		***125,577***	***73.5***
TOTAL		***170,876***	***100.0***

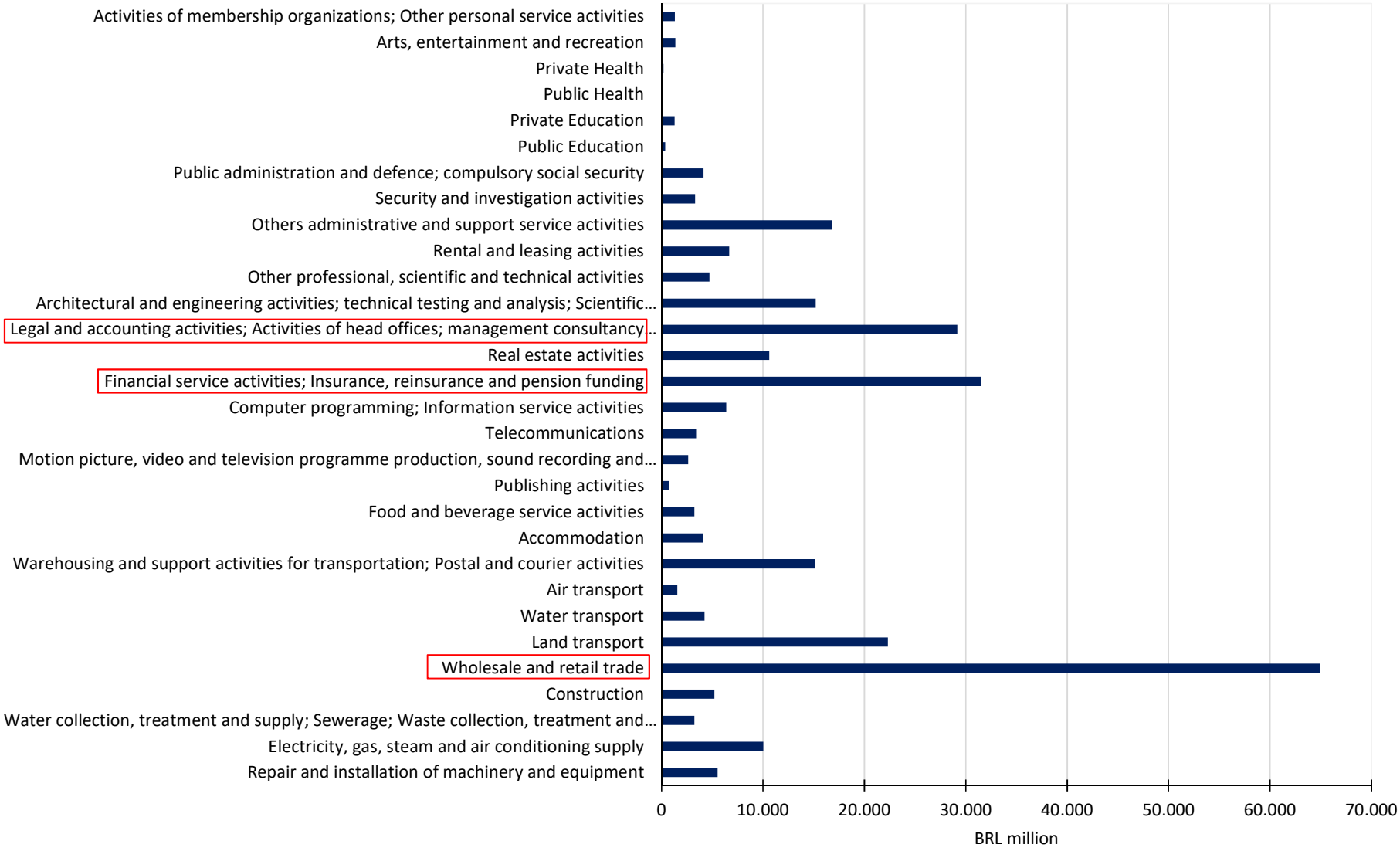
Contribution of sectoral exports to total and female employment in services and non-services activities (in 000 persons)





In terms of employment, there seems to be a strong demand for labor services to support exports of medium, and medium-high and high technology industries. Overall, 60.6% of employment in services are related to direct exports of goods. Services employment embedded in direct exports of services concentrate in services activities. However, female shares vary across sectors. While female shares in services employment associated with exports from some sectors are above 45% (other services activities, 52.1%; financial services, 46.9%, and distribution services, 45.2%), from other sectors it does not even reach 10% of total employment (construction services, 9.9%)

Total domestic services value added embedded in total exports, by sector (in BRL million)



Measuring the "error"

Inter-country *versus* National input-output matrix

By precluding feedback effects via trade linkages, our estimates will underestimate domestic value added in exports.

		Country 1		Country 2		Country 1	Country 2
		Industry 1	Industry 2	Industry 1	Industry 2	Domestic Final Demand	Domestic Final Demand
Country 1	Industry 1	A_{11}	A_{12}	M^2_{11}	M^2_{12}	D_1	MD_1
	Industry 2	A_{21}	A_{22}	M^2_{21}	M^2_{22}	D_2	MD_2
Country 2	Industry 1	M_{11}	M_{12}	A^2_{11}	A^2_{12}	MD_1	D^2_1
	Industry 2	M_{21}	M_{22}	A^2_{21}	A^2_{22}	MD_2	D^2_2
Taxes less subsidies on products		TP_1	TP_2	TP^2_1	TP^2_2	DTP	D^2TP
Value-Added at basic prices		V_1	V_2	V^2_1	V^2_2		
Output		O_1	O_2	O^2_1	O^2_2		

Measuring the "error" (cont.)

Using the OECD database, we have computed domestic value added in Brazilian gross exports, using both methodologies:

(i) the OECD TIVA methodology that takes into account inter-country linkages

(ii) the proposed methodology, that relies only on the national input-output database embedded in the ICIO table.

Results suggest that **inter-country feedbacks represented 8.5% of domestic value added** in Brazil, in 2015, associated with the country's gross exports

Comparing estimates of domestic value added in Brazilian exports

	Inter-country model (A)	*Single-country (B)*	*Difference (C)=(B)-(A)*	*"Error" (D)=(C)/(A)*
Gross exports *(USD million)*	227,260	227,260	-	-
Domestic value added *(USD million)*	198,810	181,913	-16,897	-8.5%
Domestic value added share of gross exports *(%)*	87.48	80.05	-7.43	-8.5%

Our estimate with the IBGE data = 75.5

Measuring the "error": policy consequence

Not using an inter-country model not only underestimates the true share of domestic value added but also ignores the importance of regional value chains

For regional economic blocks such as MERCOSUR, SADC and AfCFTA, a regional perspective can be important to properly asses member states' benefits from these regional trade flows as imported goods from neighbors include some domestic value added as well

Moreover, to properly asses "rules of origin" in trade negotiations, the regional aspect of domestic value addition needs to be correctly measured

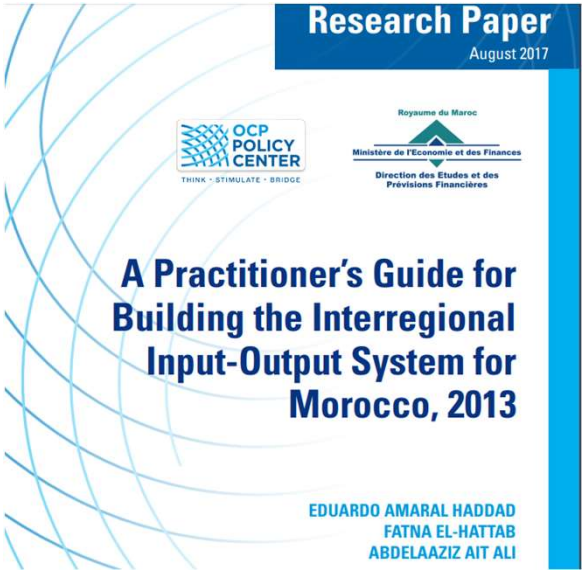
Negotiating as a group instead of a country have these advantages, internalizing some of these external effects

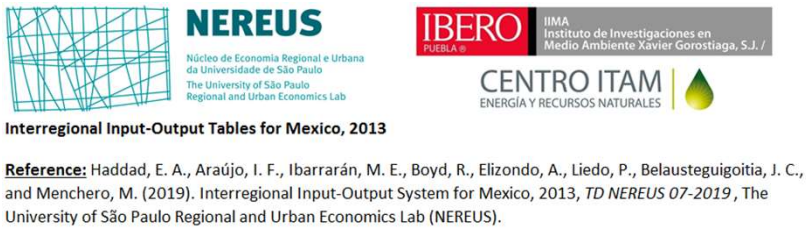
Spatial domestic value chains

The proposed methodology can be **extended** to multi-regional input-output tables

	Buying Sectors Region L	Buying Sectors Region M			
Selling sectors **Region L**	Interindustry Inputs LL	Interindustry Inputs LM	FD LL	FD LM	TO L
Selling sectors **Region M**	Interindustry Inputs ML	Interindustry Inputs MM	FD ML	FD MM	TO M
	Imports from the World	Imports from the World	M	M	M
	Sales Taxes	Sales Taxes	T	T	T
	Value Added	Value Added			
	Total Output L	Total Output M			

Examples include Angola, Brazil, Chile, Colombia, Ecuador, Egypt, Lebanon, Mexico, Morocco...





Inter-regional IO tables

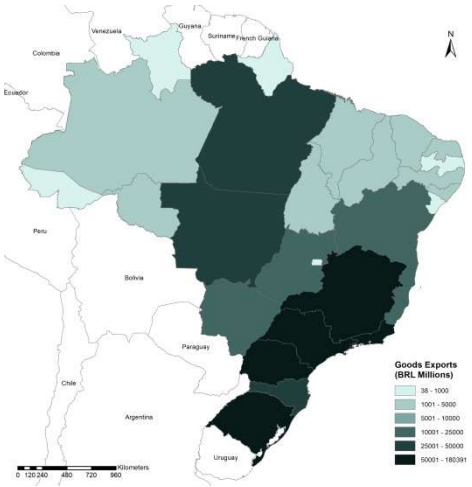
Brazil:

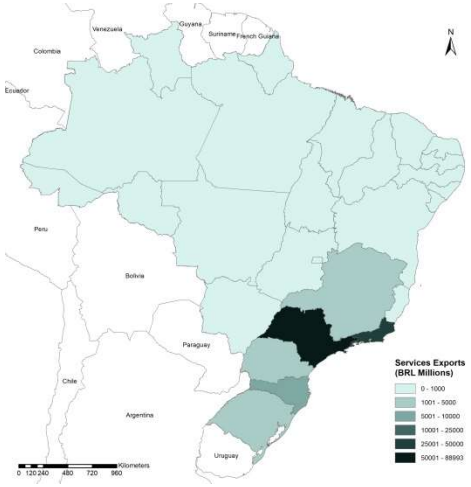
- (To be) published by FIPE
- Base year: 2015
- Sectors: 67 (non-services and services)
- Regions: 27

Other (recent) LA countries:

- Chile (2013): 12 sectors, 15 regions
- Colombia (2015): 54 sectors, 33 regions
- Mexico (2013): 32 sectors, 32 regions

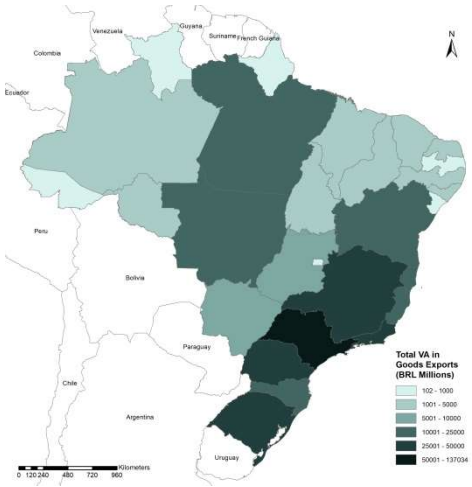
Gross exports – Brazil, 2015

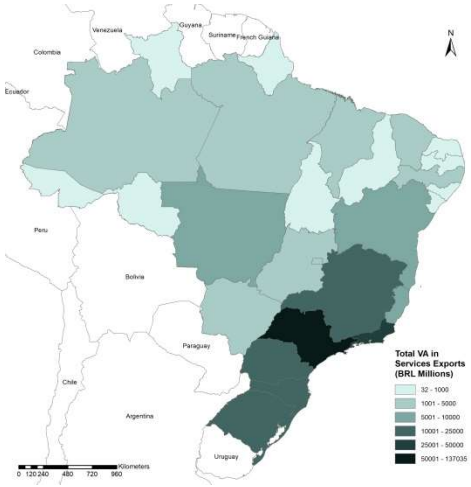


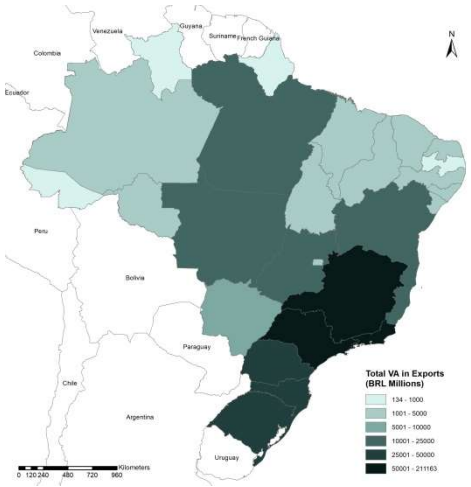


Exports		
Goods	Services	Total
633,603	*133,429*	*767,032*

Total value added in exports – Brazil, 2015

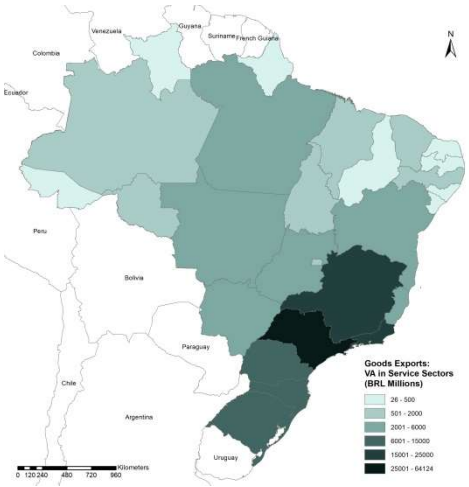


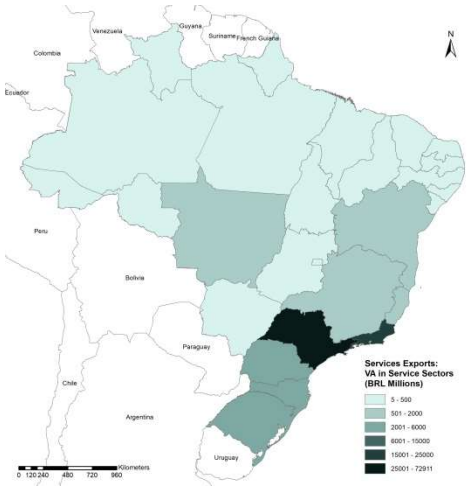




Exports		
Goods	Services	Total
464,948	*113,953*	*578,901*

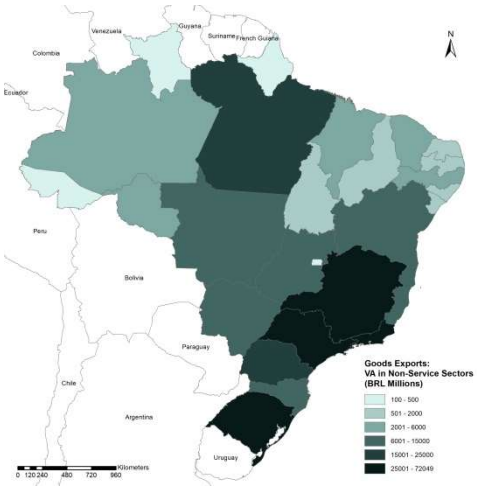
Total services value added in exports – Brazil, 2015

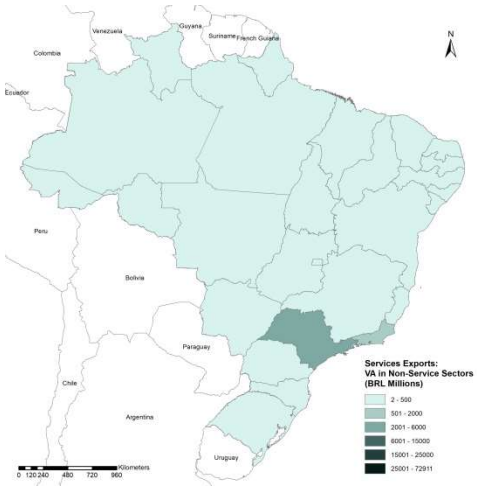




Exports		
Goods	Services	Total
170,876	108,353	279,229

Total non-services value added in exports – Brazil, 2015





Exports		
Goods	Services	Total
294,072	5,600	299,672

Thank you!

ehaddad@usp.br

www.usp.br/nereus

NEREUS
Núcleo de Economia Regional e Urbana da Universidade de São Paulo
The University of São Paulo Regional and Urban Economics Lab

UNITED NATIONS
UNCTAD

POLICY CENTER FOR THE NEW SOUTH
THINK • STIMULATE • BRIDGE