

# The Effects of Tradable Services on Non-tradable Services in India

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- Structural transformation, especially toward tradable services, has strongly contributed to growth in India and beyond.
- Women's labor force participation has especially benefited from overall services growth.
- However, can tradable services boost non-traded services and, if so, through which channels?
- The literature has largely discussed services-manufacturing links.
- We focus on tradable services spillovers onto non-tradable services.

- Main Source:
  - Firm data from the Indian Economic Census, 1990, 1998, 2005, 2013
  - Districts based on 1990 boundaries – 433 unique districts
- Secondary Sources:
  - Global trade from WIOD
  - Household expenditures from NSS CES
  - Industry linkages from Indian Input-Output (IOT) Tables

## Classifying Tradability

- Use average trade costs as a ratio of intra-national to international trade flows (Head & Ries, 2001; Chen & Novy, 2011; WTO, 2018)
- Set a threshold equal to the highest cost for (Indian) manufacturing (Frocrain & Giraud, 2017; Eliasson et al., 2012)
- Non-tradable services are those less tradable (with higher implied trade costs) than manufacturing
- Tradable services are at least as tradable as manufacturing
- Total of 35 broad service sectors, of which 17 are non-tradable
- Classification comparable to others, e.g., Frocrain & Giraud (2017)

- Main equation:  $\ln NT_{rt} = \beta \ln T_{rt} + X_{rt} + \epsilon_{rt}$
- IV approach using a shift-share “Bartik-type” instrument
- Shift: World service import demand, excl. India
  - Foreign demand shock correlated with tradables employment
  - Does not directly affect non-tradables
- Share: Employment share of lagged tradable service industries by district
- IV consists of region-specific Bartik shocks that reflect exposure to world import demand (e.g., Hummels et al., 2014)

# Baseline Results – Positive effects of tradable service growth on non-tradables

Table 1: Impact of tradable services on non-tradable services

	(1)	(2)	(3)	(4)	(5)	(6)
	Employment			No. of Firms		
	OLS	IV	IV	OLS	IV	IV
Log tradable services	0.098*** (0.017)	0.423** (0.190)	0.418** (0.203)	0.079*** (0.017)	0.285* (0.170)	0.279 (0.181)
Education			0.001 (0.007)			0.001 (0.005)
Observations	1,173	1,173	1,173	1,173	1,173	1,173
District FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Notes: Standard errors (in parentheses) are clustered at the district level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

# Heterogenous Effects – Effects are larger for women and sectors with more women

Table 2: Impact of tradable services on non-tradable services: Men Vs. Women

	(1)	(2)	(3)	(4)
	Employment		No. of Firms	
	Women	Men	Women	Men
Log tradable services	0.910** (0.411)	0.425** (0.206)	1.376* (0.709)	0.160 (0.193)
Education	0.012 (0.013)	0.001 (0.007)	0.027 (0.019)	0.001 (0.006)
Observations	1,173	1,173	1,173	1,173
District FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes

Notes: Standard errors (in parentheses) are clustered at the district level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## Mechanisms – The relevant sectors have low intersectoral linkages

Table 3: Interlinkages between non-tradable services and tradables

S.no	Sector	Tradable services	
		Input to	Input from
1	Wholesale and retail trade	0.484	0.426
2	Land Transportation	0.626	0.327
3	Accommodation and food service	0.139	0.147
4	Financial and insurance activities	4.662	0.255
5	Real estate activities	7.660	0.034
6	Legal and accounting activities	0.411	0.042
7	Rental and leasing activities	6.868	0.000
8	Education	0.000	0.076
9	Health	0.000	0.206
10	Renting of machinery & equipment	9.720	0.309
11	Community, social & personal services	0.218	2.660
12	Other services	0.772	0.250
Average of (1-12)		2.630	0.394

Source: IOT Tables for India, 2006-7. Notes: Share of total input to / input from all the sector in the economy.



# Mechanisms – Effects mainly among consumer services, i.e. driven by final demand

Table 4: Impact of tradable service on (non-tradable) consumer services

	(1)	(2)	(3)	(4)
VARIABLES	Consumer services		Non-consumer services	
	Employment	No. of Firms	Employment	No. of Firms
Log tradable services	0.511** (0.250)	0.386* (0.215)	0.340 (0.221)	0.103 (0.204)
Education	-0.003 (0.009)	0.003 (0.007)	0.011 (0.009)	0.005 (0.006)
Observations	1,173	1,173	1,173	1,173
District FE	yes	yes	yes	yes
Year FE	yes	yes	yes	yes

Notes: Standard errors (in parentheses) are clustered at the district level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . Consumer services are (i) retail trade, except of motor vehicles and motorcycles, (ii) personal services, (iii) human health, (iv) residential care, and (v) accommodation and food services, which were largely drivers of the baseline results. Non-consumer services are all other non-tradable services.

# Mechanisms – Consumption expenditures increased among sectors driving our results

Table 5: Impact of tradable services on consumption expenditure

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Education	Medical	Entertainment	Consumer	Total Services	MPCE
Log of tradable services	0.360*** (0.0793)	0.114 (0.105)	0.532*** (0.107)	0.257*** (0.0859)	0.287*** (0.0764)	0.149*** (0.0300)
Education	0.0268*** (0.00605)	0.00712 (0.00808)	-0.00774 (0.00742)	0.0115* (0.00631)	0.0173*** (0.00561)	0.00469** (0.00213)
Observations	330,915	330,915	330,915	330,915	330,915	330,915
State FE	yes	yes	yes	yes	yes	yes
Year FE	yes	yes	yes	yes	yes	yes

Notes: Standard errors (in parentheses) are clustered at the district level. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

# Conclusion

- Tradable services have positive spillovers on non-tradable services
- In India, a 10% increase in tradable service employment increases non-tradable service employment by 4.2% and the number of firms by 2.8%
- Effects are larger for women, likely due to their larger presence in benefiting sectors
- Effects are likely due to an increase in final consumer demand through increased income from tradables and not through sector linkages