Free Trade Agreements, the Customs Unions in Disguise?

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Detour: Rules of Origin (RoO)

Why are RoO necessary?

- PTA $\Leftrightarrow$ CU: not the same external tariff
- Tariff differences $\rightarrow$ trade deflection More
- RoO prohibit trade deflection and make PTAs preferential

Example (EU-Korea: HS heading 7408 *Copper Wire*)

Manufacture: from materials of any heading, except that of the product, and in which the value of all the materials used does not exceed 50% of the ex-works price of the product

RoO are costly

- High costs (high bureaucratic costs, no blueprint)
- Hidden protectionism
- Change in global value chains

$\Rightarrow$ **Costs are only justified when external tariffs differ**

Summary (I)

Research Question I

How big is the difference in external tariffs $\Delta\tau^{a}_{ijkt}$?

Research Question II

Do country-pairs with a PTA have systematically lower differences in external tariffs $\Delta\tau^{a}_{ijkt}$?

Research Question III

If country-pairs with a PTA have systematically lower differences what drives this result?

Summary (II)

Preview of Results

- Tariff differences are small: for more than 60% of the products the differences equals at most 5 pp.
- 25% of all imports are products where the tariff difference is 0, for 81% it equals at most 5 pp.
- For country-pairs with a deep PTA the differences are even lower: pairs with a deep PTA have on avg. a lower $\Delta\tau^{a}_{ijkt}$ by 4.10 pp., for shallow PTAs a small positive difference is apparent
- Most of the difference can be attributed to positive (negative) selection for deep (shallow) PTAs
- The PTA seems to cause 0.58 lower tariff differences, this effect is stronger for deep PTAs than for shallow PTAs

Related Literature

- The theoretical literature points out the protective effects of RoO on intermediates (Krishna 2006; Krishna and Krueger 1995; Krueger 1993)
- Consensus in the literature that RoO lower utilization rates of tariff preferences (e.g. Anson et al. 2005)
- Empirical evidence shows negative effect of RoO on trade in general and in intermediates in particular (e.g. Augier et al. 2005; Bombarda et al. 2013; Carrere et al. 2006; Conconi et al. 2016)
- Literature suggests a negative effect of PTAs on external tariffs (Bagwell et al. 1999; Estevadeordal et al. 2008; Richardson 1993)
- So far, nobody has questioned the necessity of RoO
  $\Rightarrow$ important policy implications

Data

Tariff Data

- $\Delta\tau^{a}_{ijkt} = |t_{ikt} - t_{jkt}|$
- t is a weighted average of MFN and preferential tariffs More

PTA Data

- The Design of International Trade Agreements Database (DESTA) (Dür et al. 2014)
- Most comprehensive database in terms of items coded and number of agreements included
- Distinguish between deep and shallow PTAs

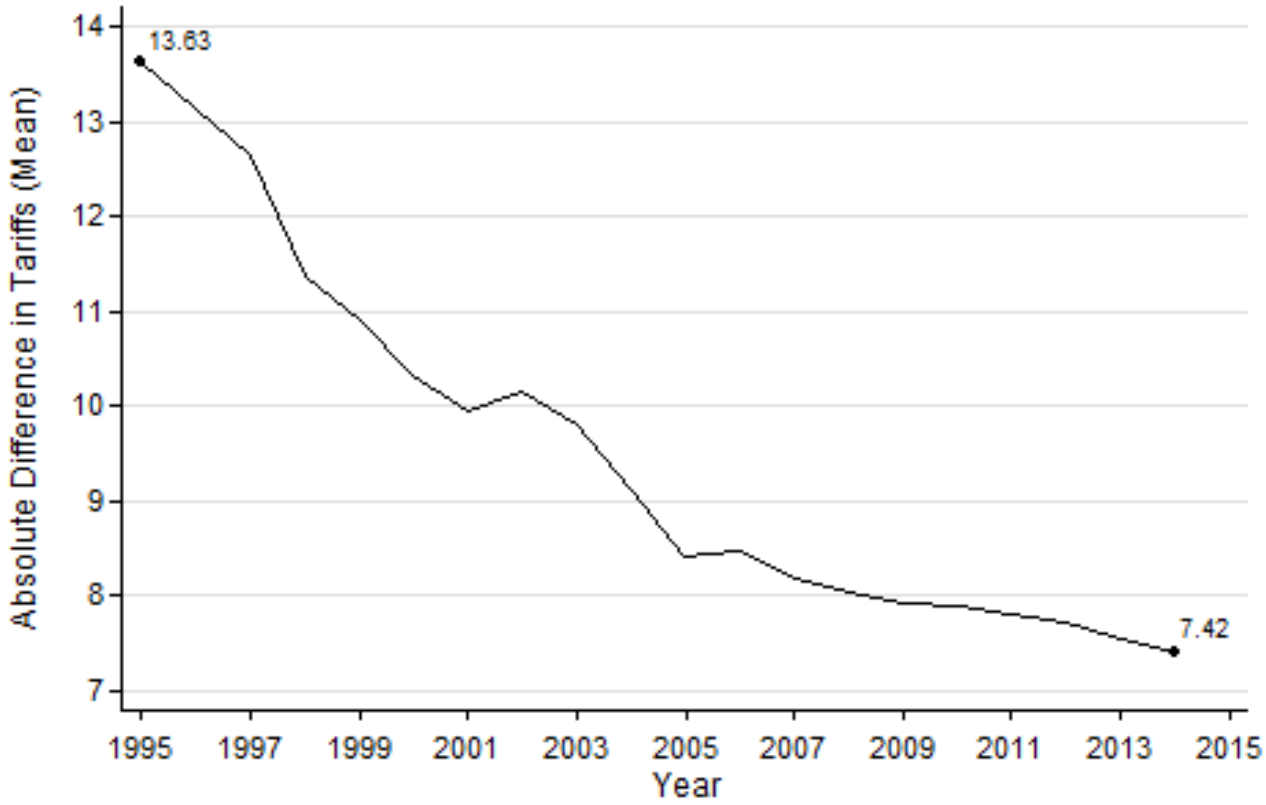
Control Variables

- CEPII and World Development Indicators

$\Rightarrow$ Sample consists of 119 countries, 7,021 pairs, 2 years (1996 and 2014) and over 33 Mio. observations

Differences in External Tariffs decrease over Time

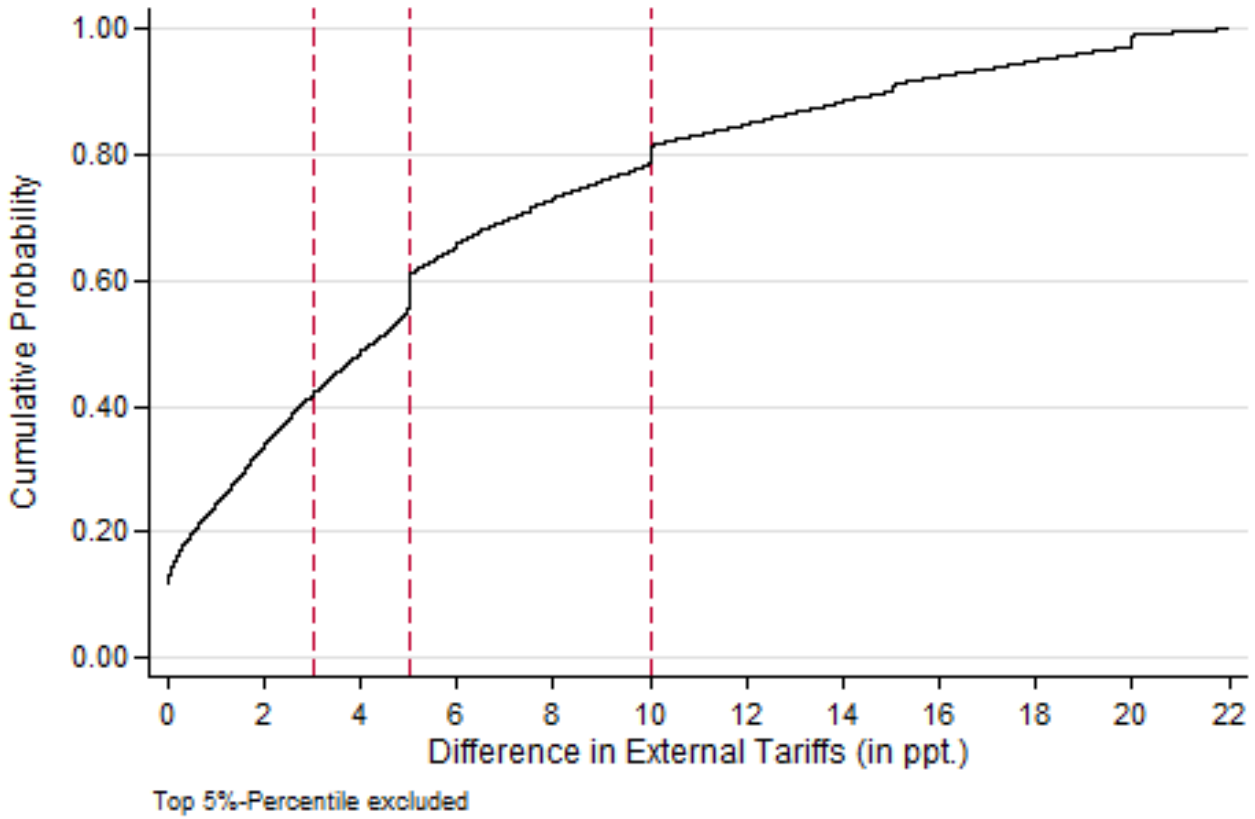
Figure 1: Absolute Difference in External Tariffs $\Delta\tau^a_{ijkt}$ over Time



$\Delta\tau^a_{ijkt} = |t_{ikt} - t_{jkt}|$ with country i, country j and product k at year t.

Most Differences in External Tariffs are Small

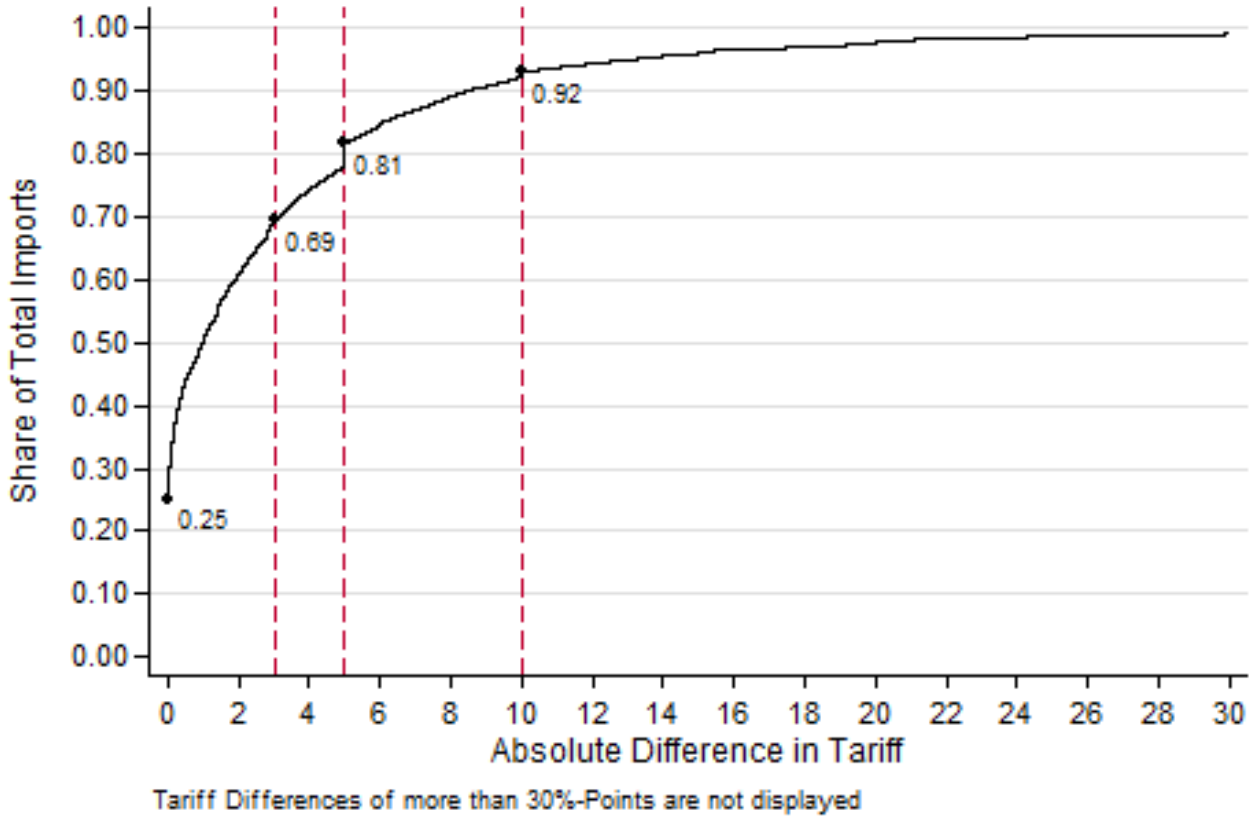
Figure 2: Cumulative Distribution Function of $\Delta\tau^a_{ijkt}$



$\Delta\tau^a_{ijkt} = |t_{ikt} - t_{jkt}|$ with country i, country j and product k at year t. The data is for the year 2014.

Tariff Differences are Low for most of the Imports

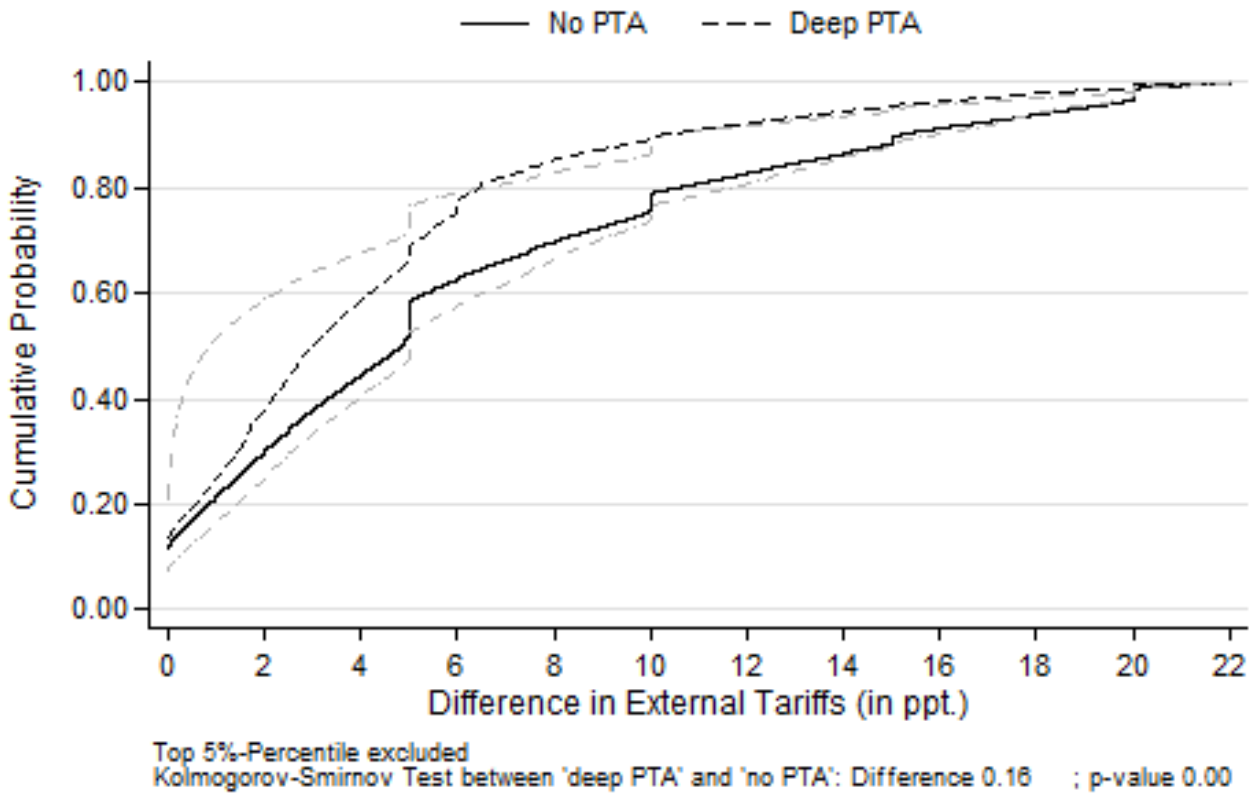
Figure 3: Cumulative Import-share as a Function of $\Delta\tau^a_{ijkt}$



$\Delta\tau^a_{ijkt} = |t_{ikt} - t_{jkt}|$ with country i, country j and product k at year t. The import-shares are calculated using BACI data. The data is for the year 2014.

Cumulative Distribution Function of $\Delta\tau^a_{ijkt}$ by Type of RTA

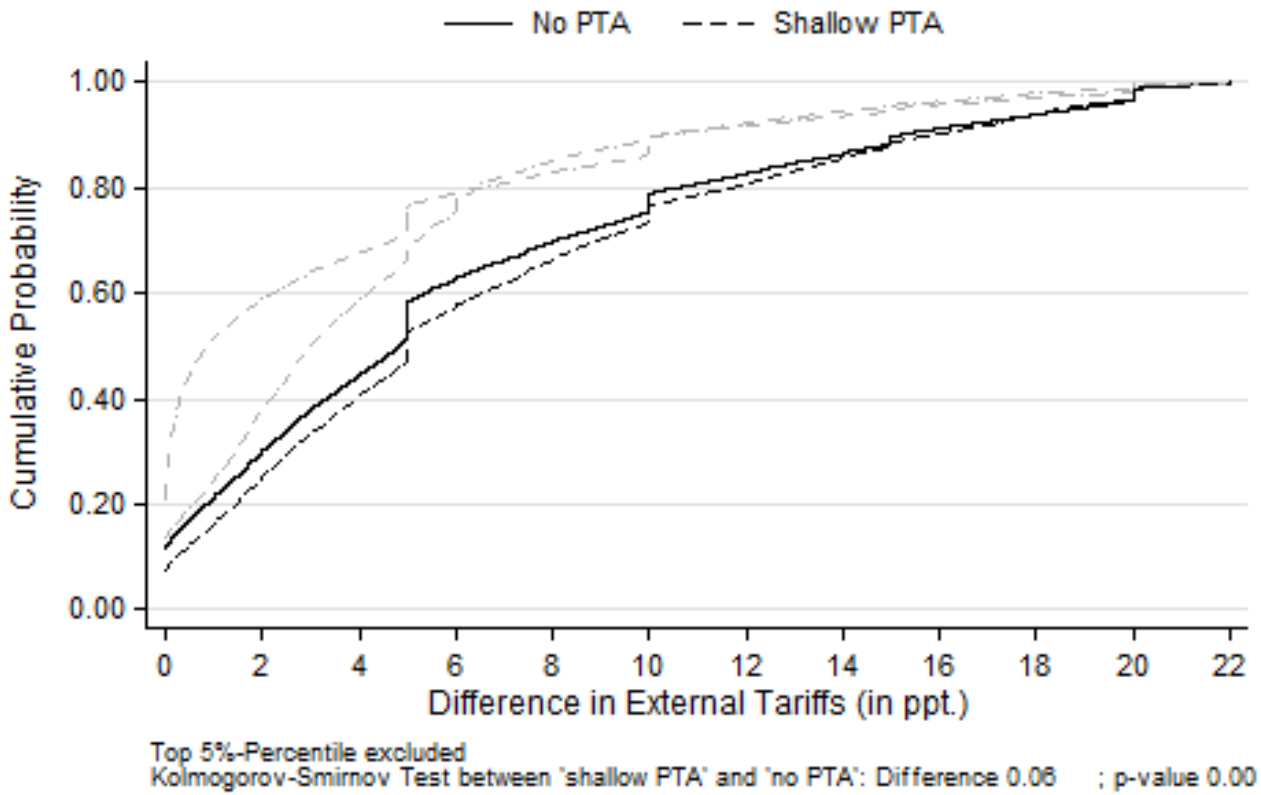
Figure 4: Absolute Difference in External Tariffs $\Delta\tau^a_{ijkt}$: deep PTA - no PTA



$\Delta\tau^a_{ijkt} = |t_{ikt} - t_{jkt}|$ with country i, country j and product k at year t. The data is for the year 2014.

Cumulative Distribution Function of $\Delta\tau^a_{ijkt}$ by Type of RTA

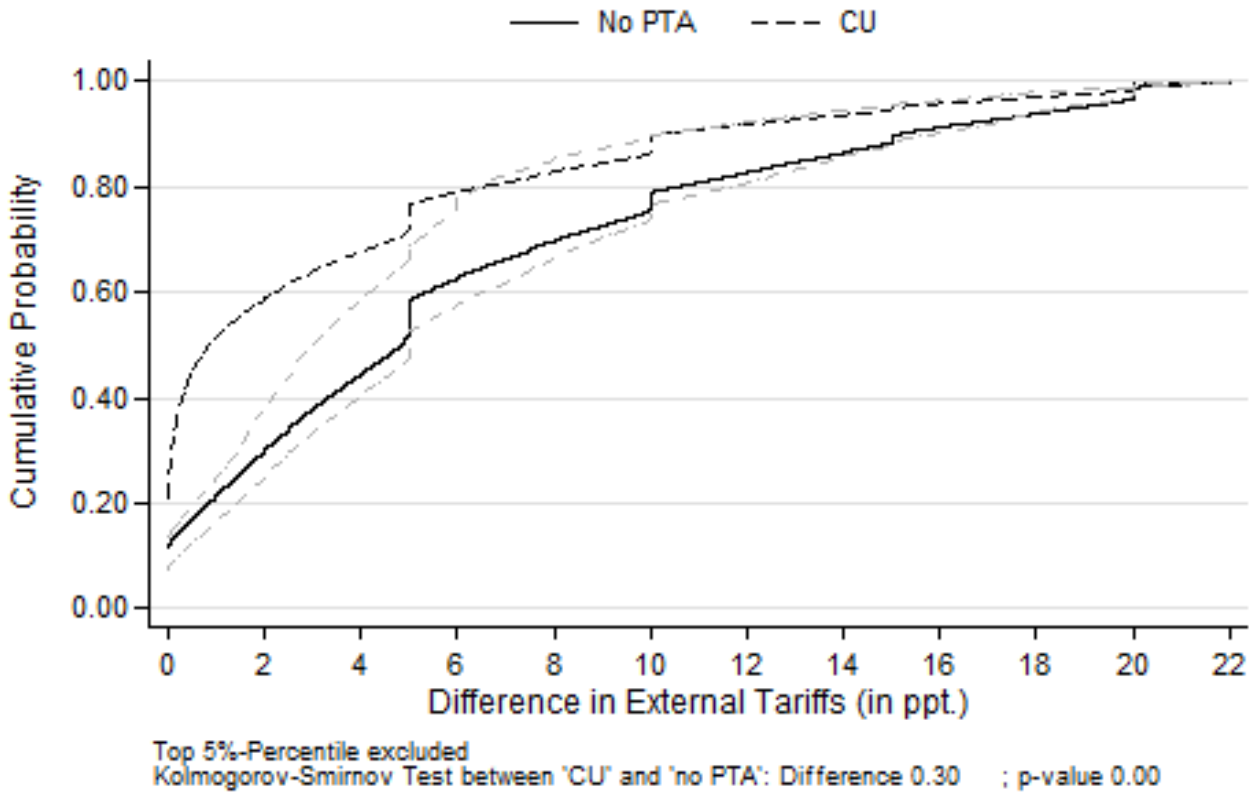
Figure 5: Absolute Difference in External Tariffs $\Delta\tau^a_{ijkt}$: shallow PTA - no PTA



$\Delta\tau^a_{ijkt} = |t_{ikt} - t_{jkt}|$ with country i, country j and product k at year t. The data is for the year 2014.

Cumulative Distribution Function of $\Delta\tau^a_{ijkt}$ by Type of RTA

Figure 6: Absolute Difference in External Tariffs $\Delta\tau^a_{ijkt}$: CU - no PTA



$\Delta\tau^a_{ijkt} = |t_{ikt} - t_{jkt}|$ with country i, country j and product k at year t. The data is for the year 2014.

Let's Recap

Research Question I

How big is the difference in external tariffs $\Delta\tau^a_{ijkt}$?

Research Question II

Do country-pairs with a PTA have systematically lower differences in external tariffs $\Delta\tau^a_{ijkt}$?

- Descriptive evidence shows clearly low differences in external tariffs
- They are even lower for country-pairs with a deep PTA
- Especially in light of non-negligible other trade costs the necessity of the RoO can be doubted
- New tariff data accounts for network of PTAs

$\Rightarrow$ **Result in itself interesting and policy relevant**

Channels

Research Question III

If country-pairs with a PTA have systematically lower differences what drives this result?

- **Selection:** same covariates correlate with the probability of having a PTA and $\Delta\tau^a_{ijkt}$
  - Baier et al. (2004) identify key economic variables to matter for RTA-formation
  - Same variables matter for tariff setting behavior of countries (Felbermayr et al. 2013)
- **PTA-Effect:** the PTA might also have a causal effect on $\Delta\tau^a_{ijkt}$
  - Technology transfer & FDI
  - Commitment Theory (Maggi et al. 1998, 2007)
  - Juggernaut Effect (Baldwin et al. 2015)

Empirical strategy

$$\Delta\tau^{a}_{ijkt} = \delta_0 + \delta_1 PTA_{ijt} + \sum_k \delta_k X_{ijt} + u_{ijkt}$$

- $\Delta\tau^{a}_{ijkt} = |t_{ikt} - t_{jkt}|$ with country i, country j and product k.
- $PTA_{ijt} = 1$ if country-pair has signed a PTA, and $= 0$ otherwise
- $\sum_k \delta_k X_{ijt}$ includes
  - Country FE i and j
  - Year FE t
  - Country-Year FE $i \times t$ and $j \times t$
  - Product FE k
  - Pair FE $i \times j$

Absolute Difference in External Tariffs - PTAs

Table 1: Dependent Variable: *Absolute Difference* $\Delta\tau^{a}_{ijkt}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PTA	-0.88***	-1.62***	-0.29***	-0.78***	-0.82***	-0.58***	-0.78***	-1.44***
	(0.176)	(0.102)	(0.092)	(0.077)	(0.078)	(0.146)	(0.153)	(0.192)
Years							0.04***	0.16***
							(0.009)	(0.026)
Years^2								-0.00***
								(0.001)
R^2	0.00	0.02	0.03	0.04	0.10	0.10	0.10	0.10
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 6,218, the number of products equals 4,670 and, the number of observations equals 29,754,310. ***/**/* Indicate significance at the 1%/5%/10% level.

Absolute Difference in External Tariffs - Deep PTAs

Table 2: Dependent Variable: *Absolute Difference* $\Delta\tau^{a}_{ijkt}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Deep PTA	-4.09***	-2.94***	0.16	-0.66***	-0.66***	-0.77***	-0.85***	-0.63**
	(0.172)	(0.189)	(0.168)	(0.090)	(0.090)	(0.137)	(0.136)	(0.255)
Years							0.02	-0.04
							(0.011)	(0.040)
Years^2								0.00*
								(0.001)
R^2	0.00	0.02	0.03	0.04	0.09	0.10	0.10	0.10
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 4,982, the number of products equals 4,635 and, the number of observations equals 22,302,712. ***/**/* Indicate significance at the 1%/5%/10% level.

Absolute Difference in External Tariffs - Shallow PTAs

Table 3: Dependent Variable: *Absolute Difference* $\Delta\tau^{a}_{ijkt}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Shallow PTA	0.37*	-1.05***	-0.32***	-0.65***	-0.71***	0.42	0.02	-1.50***
	(0.206)	(0.106)	(0.105)	(0.090)	(0.090)	(0.269)	(0.294)	(0.430)
Years							0.04***	0.24***
							(0.011)	(0.043)
Years^2								-0.01***
								(0.001)
R^2	0.00	0.02	0.03	0.05	0.10	0.10	0.10	0.10
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 6,064, the number of products equals 4,661 and, the number of observations equals 26,840,764. ***/**/* Indicate significance at the 1%/5%/10% level. CU

Robustness Checks

- What are the determinants of the selection channel? More
- Do products with little $\Delta\tau^{a}_{ijkt}$ matter in terms of imports?
  - $weight_{ijkt} = \frac{imp_{ikt}+imp_{jkt}}{\sum_{n=1}^{n=k} imp_{it}+\sum_{n=1}^{n=k} imp_{jt}}$ with *imp* equals imports (in $ Dollar), i country 1, j country 2, and k product. More
- Is the pattern driven by multilateral liberalizations (WTO-rounds)?
  - $\Delta\tau^{n}_{ijkt} = \frac{|t_{ikt}-t_{jkt}|}{t^{RoW}_{kt}}$ with country i, country j, product k and t_{RoW} average tariff of the RoW for product k. More

Conclusion

Summary

- Using a novel dataset we show that country-pairs with a PTA have systematically lower differences in external tariffs, the selection effect is even stronger for pairs with a deep PTA
- The result is neither driven by products that are actually not being imported nor by multilateral trade liberalizations
- We find selection to be the biggest driver, although a small PTA-effect can also be found
- The finding questions the necessity of the RoO
- Highly policy relevant because of the negative effects of RoO

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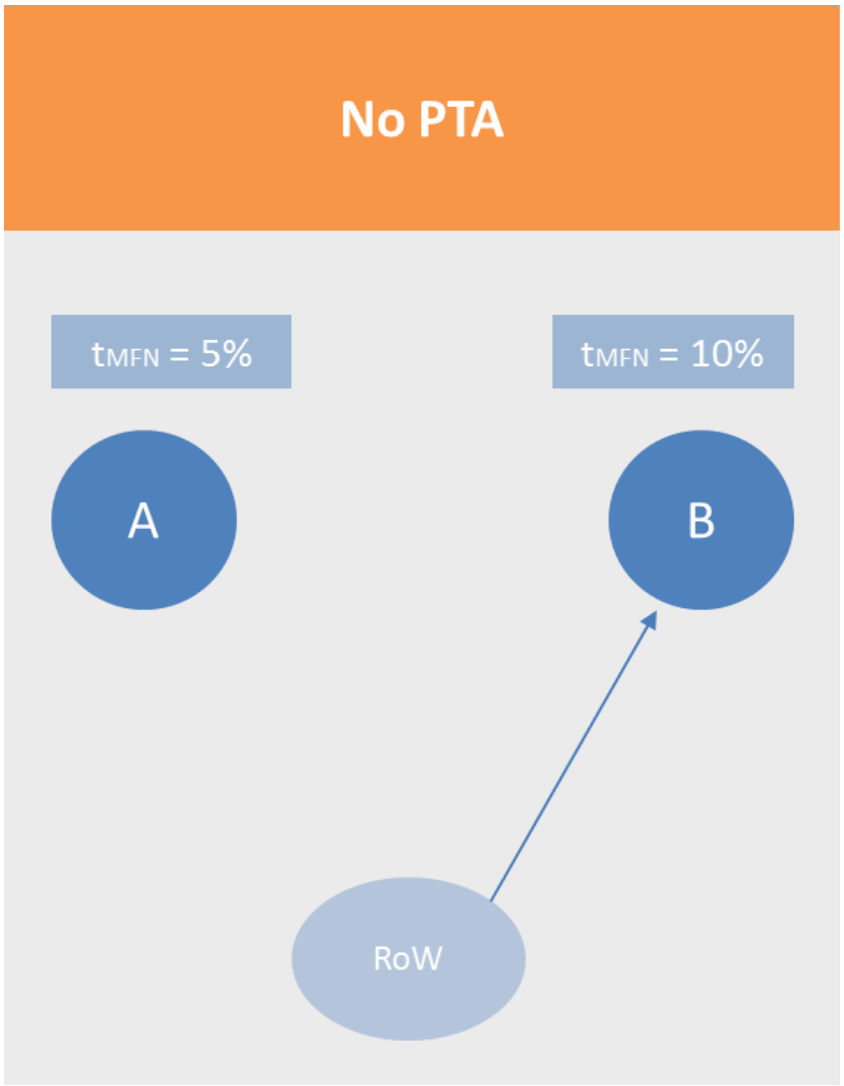
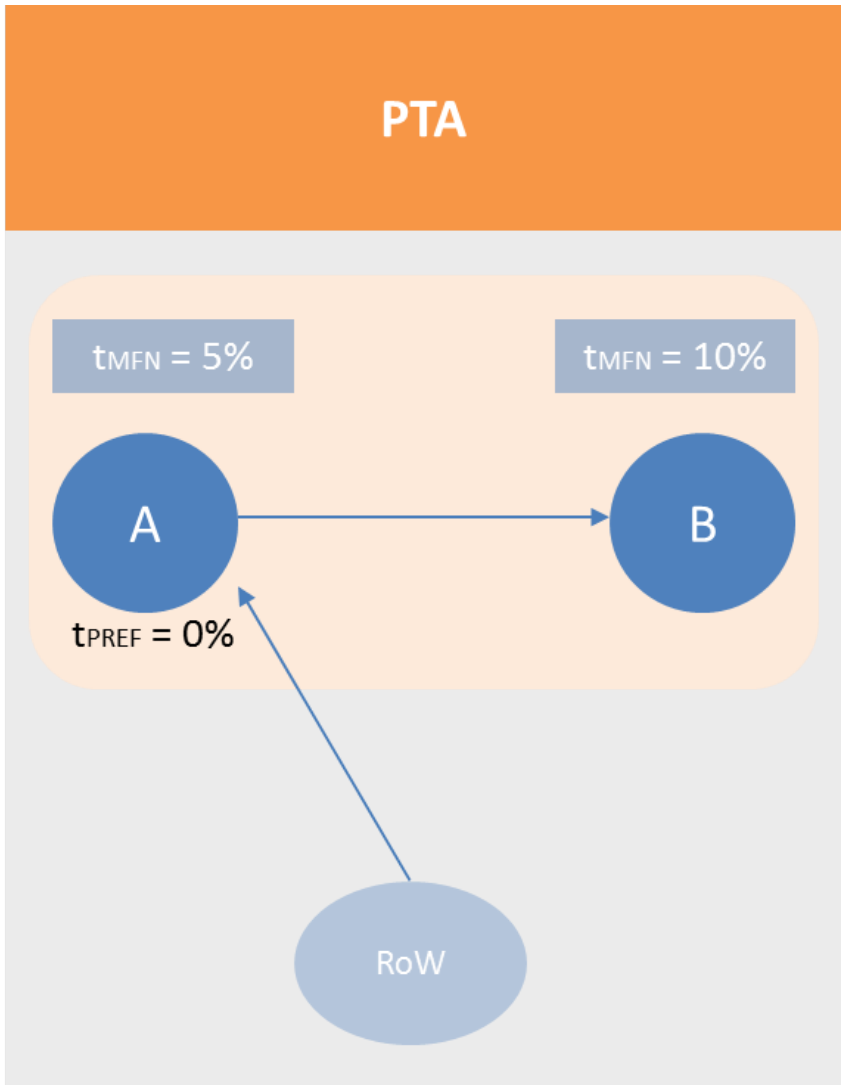
Threat of Trade Deflection in PTAs

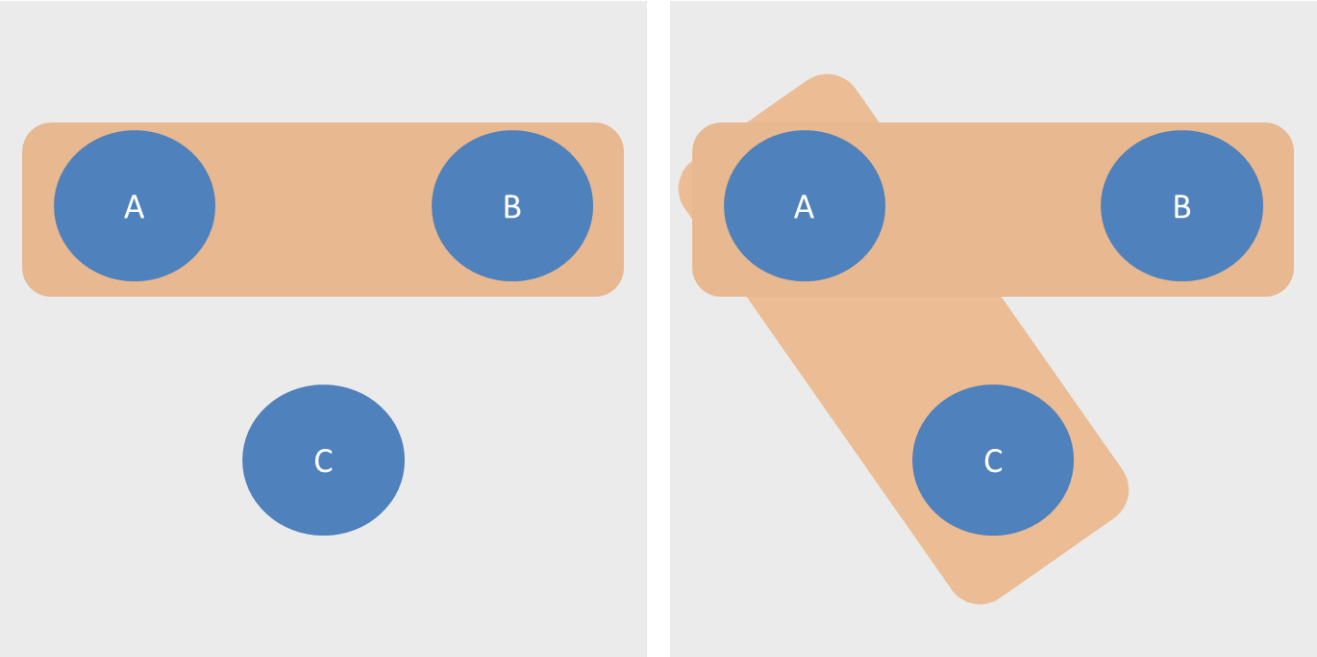




Back

Novel Tariff Data

Why do preferential tariffs matter?



Although $t_A^{mfn} = t_B^{mfn}$, it could be possible that $t_{AC}^{pref} < t_B^{mfn}$
$\rightarrow$ RoO only redundant when the tariff differences in applied external tariffs is small

Novel Tariff Data

Solution: Import-weighted average tariff t but: tariff data of poor quality

1. Generate bilateral tariff data (HS 6-digit)
   - **MFN Tariffs**
     - Combine TRAINS and IDB data (including AVE whenever available)
     - Missing values are set equal to nearest preceding observation, if there is no preceding observation, tariffs are set equal to nearest observation (similar to Caliendo et al. (2015))
   - **Preferential Tariffs**
     - Combine TRAINS and IDB data (including AVE whenever available)
     - If data is available for at least two years $\rightarrow$ interpolate to account for phasing-in
     - Generate mirror data: whenever i-j data is available but j-i data is missing: $t_{ji}^{pref} = t_j^{mfn} \frac{t_{ij}^{pref}}{t_i^{mfn}}$
2. Calculate weighted tariff for each country-product combination using information on imports (BACI)
   - $weight_{ijk} = \frac{imp_{ijk}}{\sum^j (imp_k)}$, where i is importer, j is exporter, and k is product

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Absolute Difference in External Tariffs - CUs

Table 4: Dependent Variable: *Absolute Difference* $\Delta\tau^a_{ijk}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Custums Union	-5.00***	-4.04***	-2.80***	-3.22***	-3.18***	-2.05***	-1.21**	-1.18**
	(0.237)	(0.126)	(0.132)	(0.117)	(0.115)	(0.437)	(0.471)	(0.550)
Years							-0.09***	-0.09*
							(0.013)	(0.050)
Years^2								0.00
								(0.002)
R^2	0.00	0.03	0.03	0.05	0.09	0.10	0.10	0.10
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 5,500, the number of products equals 4,631 and, the number of observations equals 23,036,152. ***/**/* Indicate significance at the 1%/5%/10% level. Back

Selection Channel: Replication of Baier & Bergstrand (2004)

	RTA	CU	Deep	Shallow	P(t<1)	P(t<3)
main						
Distance	0.82***	1.24***	0.80***	0.72***	0.72***	0.38***
	(0.038)	(0.119)	(0.053)	(0.046)	(0.071)	(0.043)
Remoteness	0.05***	0.34***	-0.06***	0.02*	0.26***	0.08***
	(0.007)	(0.022)	(0.011)	(0.008)	(0.012)	(0.008)
Total Market Size	0.08***	0.04**	0.01	0.12***	0.14***	0.07***
	(0.006)	(0.016)	(0.009)	(0.008)	(0.019)	(0.011)
Similarity of GDPs	0.02**	-0.17***	0.06***	0.00	-0.03	-0.07***
	(0.009)	(0.027)	(0.013)	(0.011)	(0.029)	(0.018)
Abs. Difference in GDP/Cap.	-0.01	0.18	0.91***	-0.02	0.81***	-0.13
	(0.044)	(0.163)	(0.089)	(0.052)	(0.279)	(0.084)
(Abs. Difference in GDP/Cap.)^2	0.01	-0.15***	-0.25***	0.03***	-0.45***	-0.01
	(0.009)	(0.050)	(0.021)	(0.011)	(0.125)	(0.021)
Relative Factor Endowment	0.11***	0.64***	-0.63***	0.34***	-0.70***	-0.32***
	(0.019)	(0.052)	(0.032)	(0.025)	(0.082)	(0.034)
Constant	2.48***	2.03	8.55***	-2.28***	-1.50	0.18
	(0.495)	(1.244)	(0.780)	(0.595)	(1.111)	(0.666)
R^2	0.19	0.82	0.27	0.14	0.70	0.38
Observations	7,021	4,603	4,422	5,282	7,021	7,021

Cross-section for 2014. Same control variables used as in Baier et al. (2004). Back

Difference in External Tariffs (Weighted with Imports) - all PTAs

Table 5: Dependent Variable: *Absolute Difference* $\Delta\tau^{w}_{ijk}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PTA	-1.24***	-1.47***	-0.19	-0.67***	-0.65***	-0.15	-0.38**	-0.98***
	(0.159)	(0.146)	(0.130)	(0.135)	(0.124)	(0.177)	(0.184)	(0.238)
Years							0.04***	0.16***
							(0.010)	(0.030)
Years^2								-0.00***
								(0.001)
R^2	0.00	0.04	0.05	0.09	0.16	0.17	0.17	0.17
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 6,218, the number of products equals 4,670 and, the number of observations equals 29,754,310. ***/**/* Indicate significance at the 1%/5%/10% level. $weight_{ijk} = \frac{imp_{ik}+imp_{jk}}{\sum_{n=1}^{n=k} imp_i + \sum_{n=1}^{n=k} imp_j}$, where *imp* equals imports (in $ Dollar), *i* country 1, *j* country 2, and *k* product. Back

Difference in External Tariffs (Weighted with Imports) - deep PTAs

Table 6: Dependent Variable: *Absolute Difference* $\Delta\tau^{w}_{ijk}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Deep PTA	-4.19***	-2.67***	0.54*	-0.37*	-0.42**	-0.45**	-0.44*	-0.41
	(0.152)	(0.272)	(0.281)	(0.192)	(0.169)	(0.208)	(0.226)	(0.366)
Years							-0.00	-0.01
							(0.021)	(0.072)
Years^2								0.00
								(0.003)
R^2	0.00	0.05	0.06	0.10	0.17	0.18	0.18	0.18
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 4,982, the number of products equals 4,635 and, the number of observations equals 22,302,712. ***/**/* Indicate significance at the 1%/5%/10% level. $weight_{ijk} = \frac{imp_{ik}+imp_{jk}}{\sum_{n=1}^{n=k} imp_i + \sum_{n=1}^{n=k} imp_j}$, where *imp* equals imports (in $ Dollar), *i* country 1, *j* country 2, and *k* product. Back

Difference in External Tariffs (Weighted with Imports) - shallow PTAs

Table 7: Dependent Variable: *Absolute Difference* $\Delta\tau^{w}_{ijk}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Shallow PTA	-0.28	-0.97***	-0.21	-0.57***	-0.54***	0.81***	0.36	-1.16***
	(0.183)	(0.144)	(0.141)	(0.138)	(0.129)	(0.284)	(0.291)	(0.412)
Years							0.05***	0.24***
							(0.011)	(0.042)
Years^2								-0.01***
								(0.001)
R^2	0.00	0.05	0.06	0.10	0.17	0.18	0.18	0.18
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 6,064, the number of products equals 4,661 and, the number of observations equals 26,840,764. ***/**/* Indicate significance at the 1%/5%/10% level. $weight_{ijk} = \frac{imp_{ik}+imp_{jk}}{\sum_{n=1}^{n=k} imp_i + \sum_{n=1}^{n=k} imp_j}$, where *imp* equals imports (in $ Dollar), *i* country 1, *j* country 2, and *k* product. Back

Normalized Difference in External Tariffs - all PTAs

Table 8: Dependent Variable: *Normalized Difference* $\Delta\tau^n_{ijk}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PTA	-0.01	-0.04***	-0.03***	-0.06***	-0.06***	-0.05***	-0.06***	-0.11***
	(0.016)	(0.008)	(0.008)	(0.007)	(0.007)	(0.013)	(0.013)	(0.016)
Years							0.00***	0.01***
							(0.001)	(0.002)
Years^2								-0.00***
								(0.000)
R^2	0.00	0.08	0.08	0.15	0.17	0.18	0.18	0.18
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 6,218, the number of products equals 4,670 and, the number of observations equals 29,754,310. ***/**/* Indicate significance at the 1%/5%/10% level. $\Delta\tau^n_{ijk} = \frac{\Delta\tau^a_{ijk}}{t^{RoW}_k}$, where $\Delta\tau^a_{ijk}$ absolute difference in external tariffs between country i and j, and t^{RoW}_k the average tariff of the RoW for product k. Back

Normalized Difference in External Tariffs - deep PTAs

Table 9: Dependent Variable: *Normalized Difference* $\Delta\tau^n_{ijk}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Deep PTA	-0.28***	-0.06***	-0.02	-0.05***	-0.05***	-0.07***	-0.06***	-0.08***
	(0.014)	(0.012)	(0.013)	(0.009)	(0.009)	(0.013)	(0.013)	(0.025)
Years							-0.00	0.00
							(0.001)	(0.005)
Years^2								-0.00
								(0.000)
R^2	0.00	0.08	0.08	0.13	0.16	0.17	0.17	0.17
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 4,982, the number of products equals 4,635 and, the number of observations equals 22,302,712. ***/**/* Indicate significance at the 1%/5%/10% level. $\Delta\tau^n_{ijk} = \frac{\Delta\tau^a_{ijk}}{t^{RoW}_k}$, where $\Delta\tau^a_{ijk}$ absolute difference in external tariffs between country i and j, and t^{RoW}_k the average tariff of the RoW for product k. Back

Normalized Difference in External Tariffs - shallow PTAs

Table 10: Dependent Variable: *Absolute Difference* $\Delta\tau^n_{ijk}$ *in External Tariffs*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Shallow PTA	0.09***	-0.03***	-0.02**	-0.05***	-0.05***	0.06**	0.02	-0.10***
	(0.019)	(0.009)	(0.009)	(0.008)	(0.008)	(0.024)	(0.026)	(0.036)
Years							0.00***	0.02***
							(0.001)	(0.003)
Years^2								-0.00***
								(0.000)
R^2	0.00	0.09	0.09	0.16	0.18	0.19	0.19	0.19
Imp.& Exp. FE		✓	✓					
Year FE			✓					
Imp.-Year& Exp.-Year FE				✓	✓	✓	✓	✓
HS6 FE					✓	✓	✓	✓
Pair FE						✓	✓	✓

Twoway clustered (country-pairs and products) standard errors in ( ). The number of country-pairs equals 6,064, the number of products equals 4,661 and, the number of observations equals 26,840,764. ***/**/* Indicate significance at the 1%/5%/10% level. $\Delta\tau^n_{ijk} = \frac{\Delta\tau^a_{ijk}}{t^{RoW}_k}$, where $\Delta\tau^a_{ijk}$ absolute difference in external tariffs between country i and j, and t^{RoW}_k the average tariff of the RoW for product k. Back