



TRADE POLICY UNCERTAINTY AND THE WTO

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Motivation

- ✓ Jurisprudence: “security and predictability” of trade policy are among the goals of WTO
- ✓ However, WTO commitment set ceiling rates often below applied rates.
 - in most developing countries, 70-90% of tariff lines could be increased unilaterally by more than 15 percentage points
- ✓ Key question: “Do WTO bindings above the applied rate have any effect on trade policy uncertainty?”



Motivation

- ✓ This question is important because:
 - ✓ uncertainty hinders trade (Handley, 2011; Handley and Limao, 2011)
 - ✓ uncertainty-reducing motive for trade agreements (Limao and Maggi, 2012)

- ✓ However, little empirical evidence on the impact of trade agreements on TPU
 - Cadot, Olarreaga and Tschopp (2010): significant impact of RTAs on the volatility of agricultural trade policy
 - Rose (2004): WTO membership has neither impact on trade volatility nor on trade policy



What do we do?

- ✓ We focus on *MFN applied* tariffs as a indicator of trade policy
- ✓ .. In particular, on *ad valorem* tariffs
- ✓ We define trade policy uncertainty as the probability of a tariff *increase*
- ✓ Study the role that WTO bindings play in determining trade policy uncertainty
 - At the HS6-digit level
 - Period 1995-2011
 - Sample of WTO countries



Our contributions

1. Measure the portion of global trade under flexible trade policy regime
 - *Build* a new database
2. Develop a theoretically-based *empirical* model of trade policy uncertainty (for cooperative tariffs)
 - B&S(1990)'s model *augmented* by trade policy flexibility
3. Quantify the *value* of binding commitments in terms of their trade policy uncertainty-reducing effects



We find

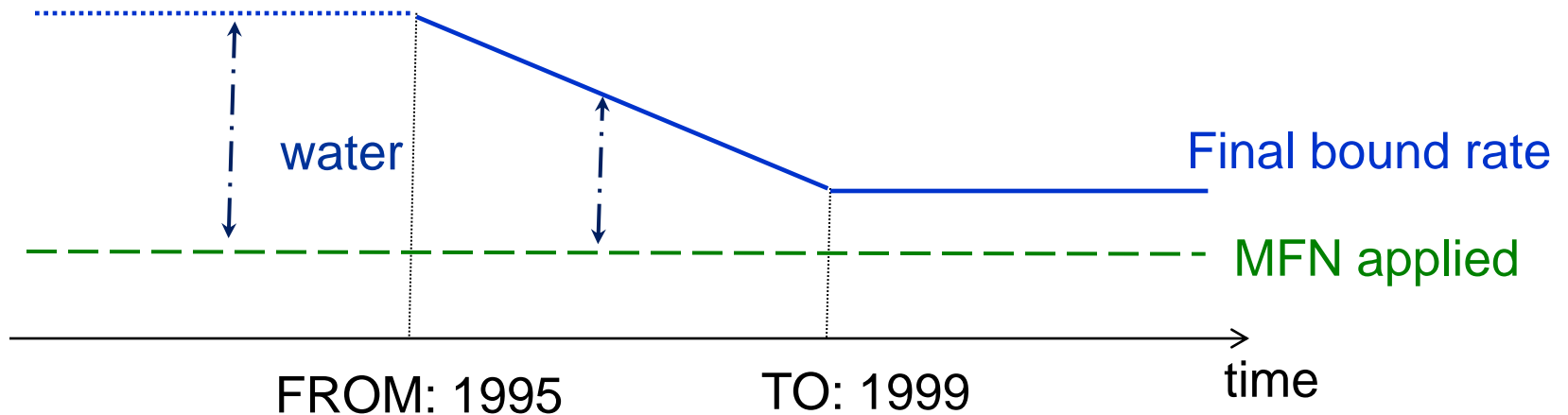
1. substantial portion of global trade with water >5
2. empirical trade policy uncertainty model supports
 - the TOT arguments of B&S(1990)'s model of time-varying cooperative tariffs
 - WTO flexibilities are important determinant of TPU
3. WTO commitments reduce the probability of a tariff increase by 8.6 percentage points.



A new data base: historical bindings

Account for implementation period
HS6digit, 1995-2011

Base rate

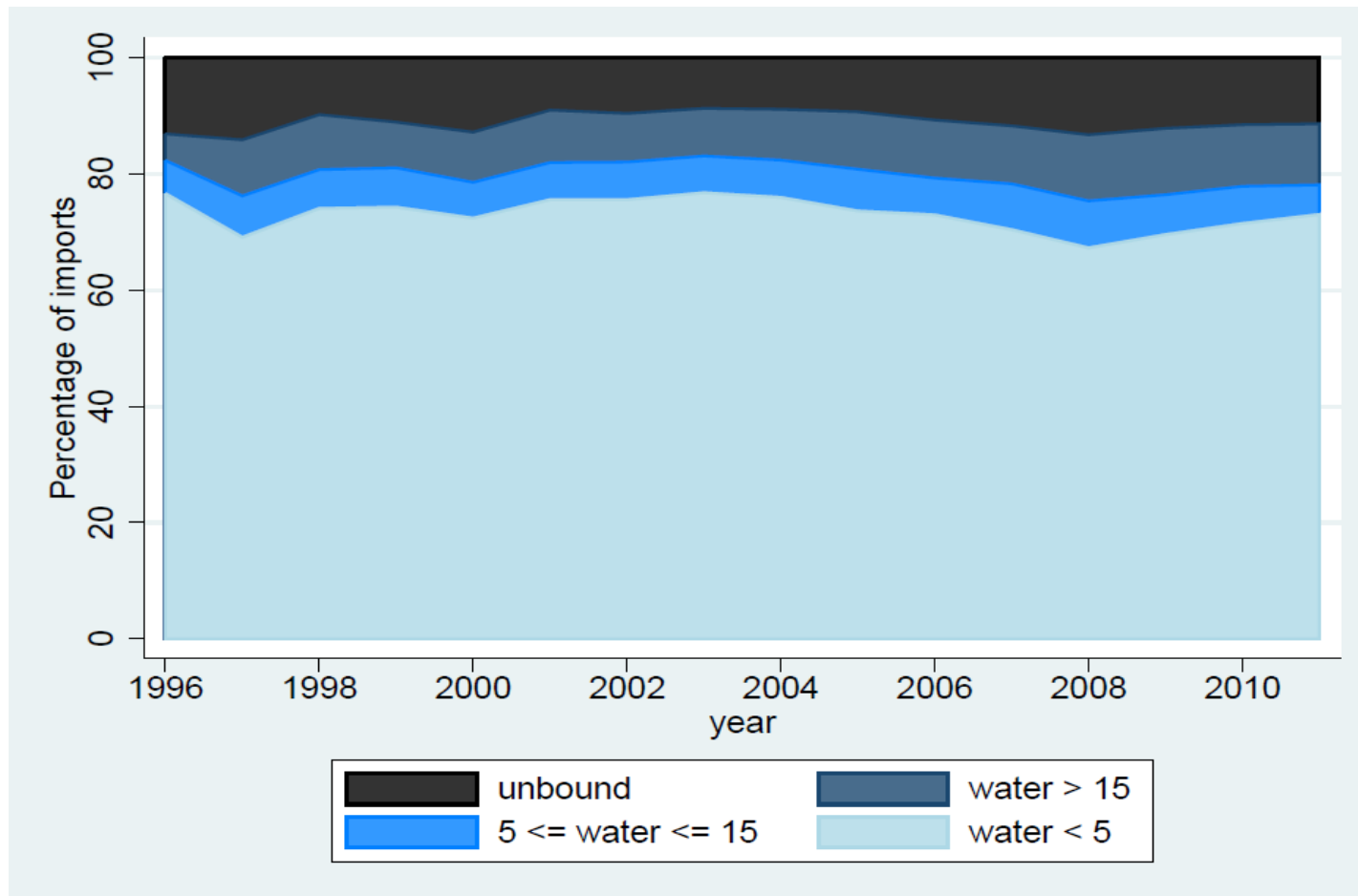


implementation period

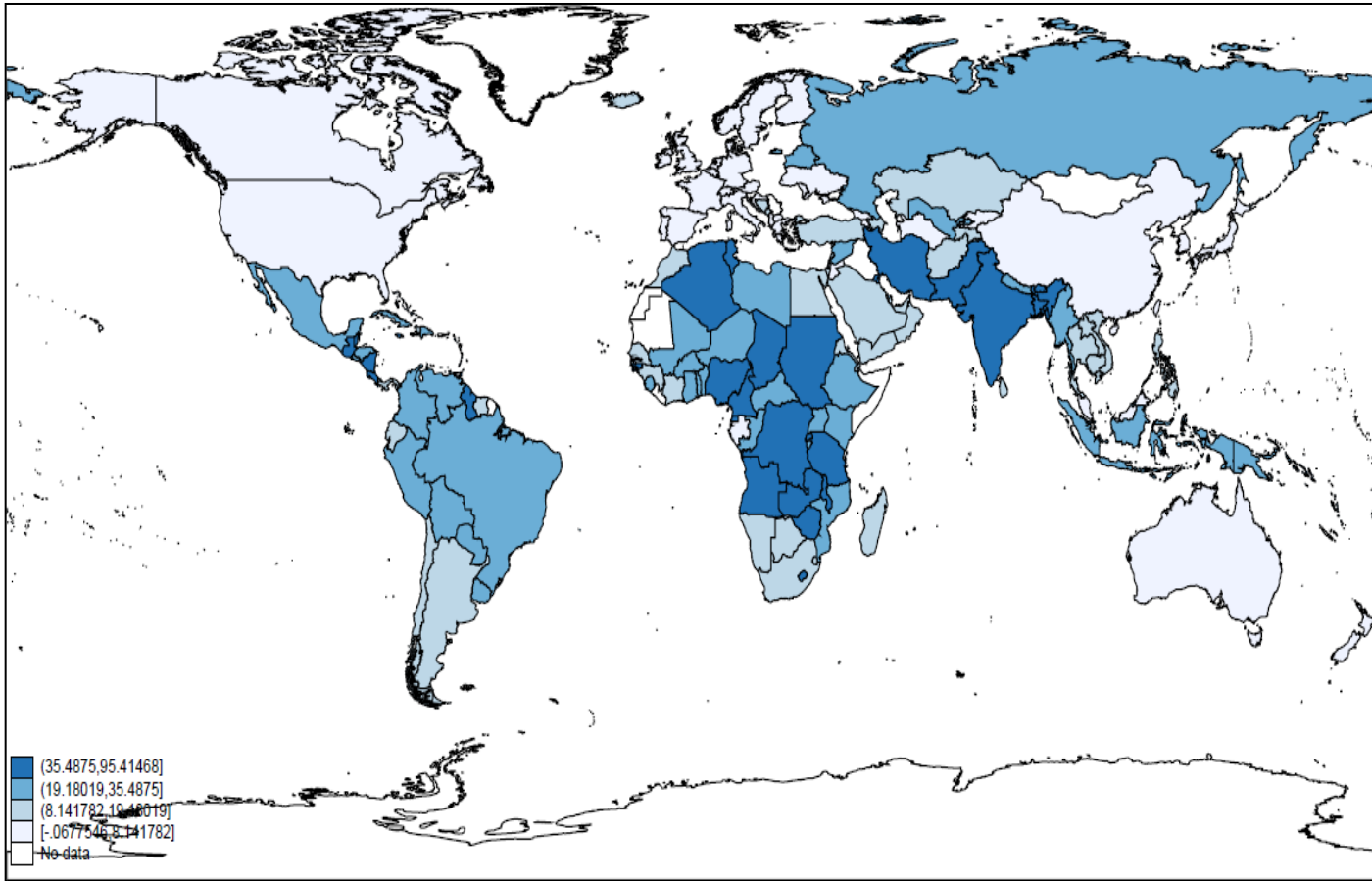


Trade under “water”

In 2011 approximately 27% of total imports were Unbound or water > 5



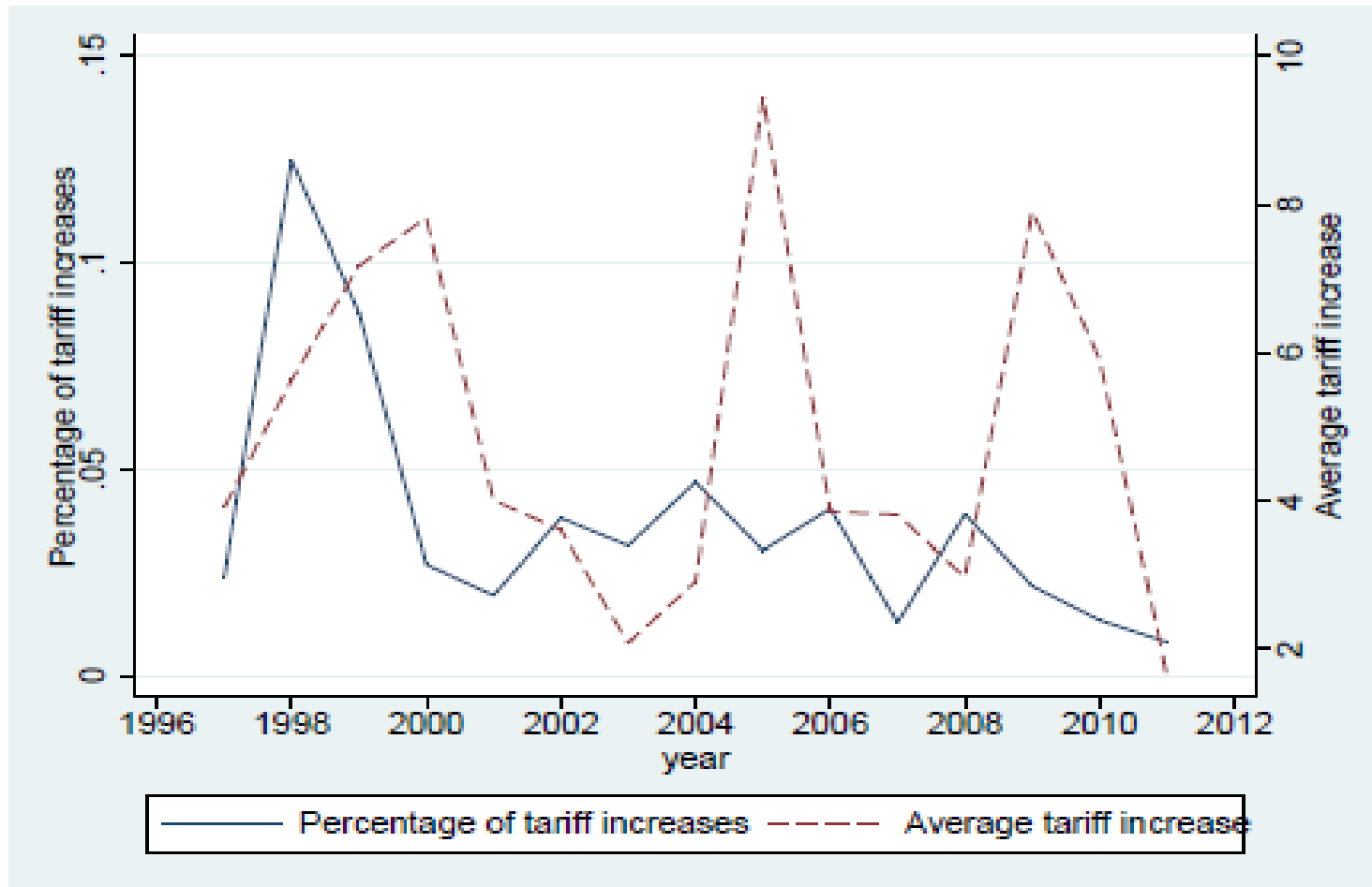
Trade policy flexibility differs significantly by country





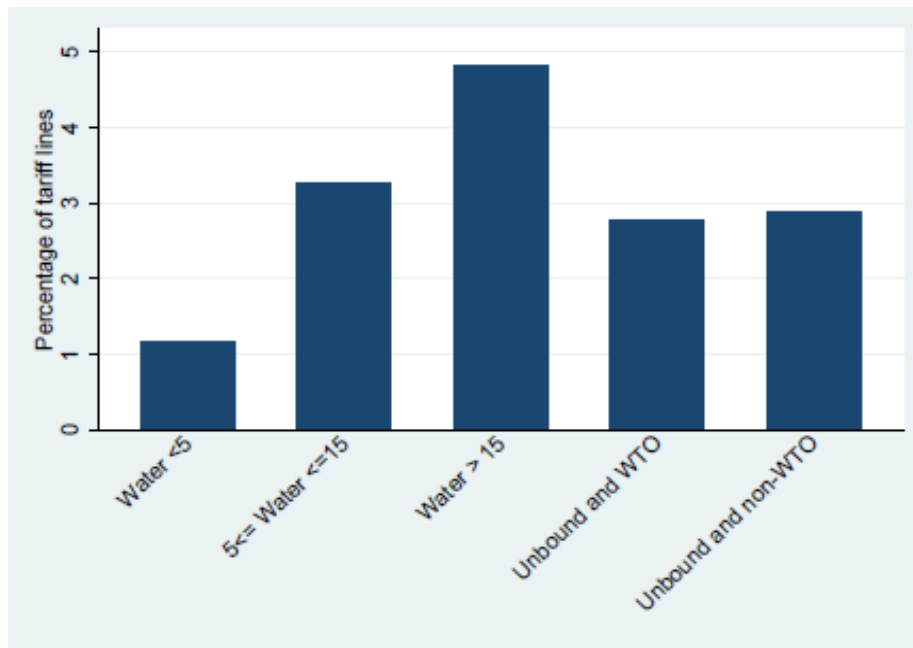
MFN tariffs change (1996-2011)

Countries do change their tariff policy.

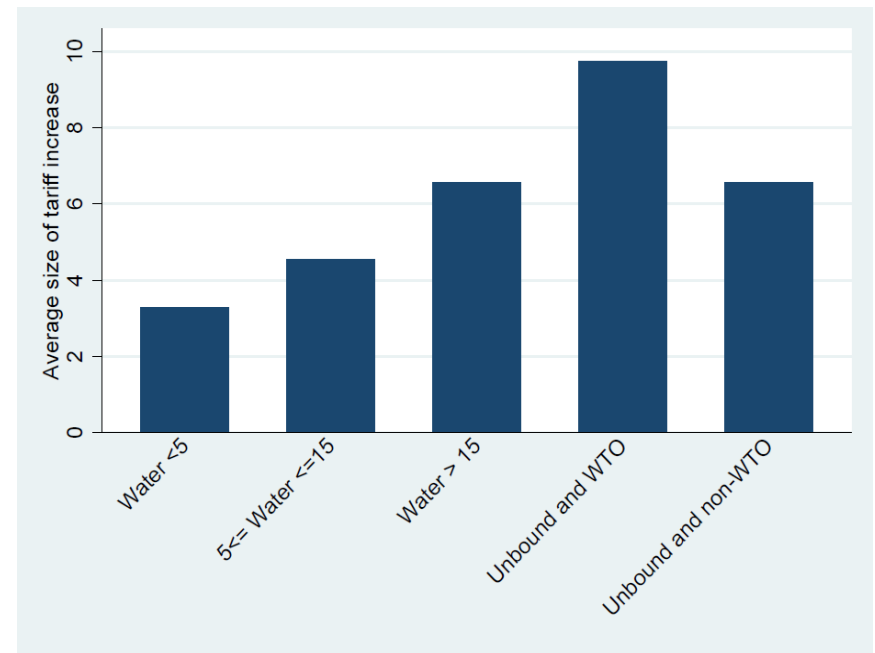


TPU and water show a positive correlation

Percentage of lines with tariff increases



Size of the increases



unbound lines “puzzle”: Are countries more likely to bound lines with higher probability of tariff changes?



B&S(1990) model of time varying cooperative tariffs

Like Bown and Crowley (2013), we rely on Bagwell & Staiger (B&S, 1990) model.

B&S model key predictions

A tariff increase to sustain cooperation is more likely:

- (i) the larger the unexpected surge of imports
- (ii) if export supply and import demand are inelastic (little response to a defection)
- (iii) the smaller the variance of import surge (uncommon import surges)

$$\text{Prob}(dt_{ckt} = 1) = \beta_0 + \beta_1 \Delta \text{ShareImports}_{ckt-1} + \\ + \beta_2 \text{Sd.}(\Delta \text{ShareImports})_{ck} + \beta_3 \text{ShareImports}_{ck} + \varepsilon_{ckt}$$



Results: Support for B&S(1990)'s model of time varying MFN tariffs

Dependent variable: 1=MFN tariff increased

VARIABLES	Bound lines only		Full sample	
	(1)	(2)	(3)	(4)
$\Delta(\text{share imports})_{\text{ckt}-1}$	0.883***	1.066***	0.739***	0.989***
Std. Dev. of $\Delta(\text{share imports})_{\text{ck}}$	-0.797***	-0.852***	-0.580**	-0.590**
Share of imports _{ck}	1.587***	1.672***	1.722***	1.809***
<i>Fixed effects</i>	c,t,k	ct,k	c,t,k	ct,k
Observations	4,015,122	3,877,044	4,876,905	4,715,189
ll	-440541	-404698	-546983	-500386



Our empirical model: an augmented B&S model

$$\begin{aligned} \text{Prob}(dt_{\text{ckt}} = 1) = & \beta_0 + \beta_1 \Delta \text{ShareImports}_{\text{ckt}-1} + \\ & + \beta_2 \text{Sd.}(\Delta \text{ShareImports})_{\text{ck}} + \beta_3 \text{ShareImports}_{\text{ck}} \\ & + \beta_4 \text{WTO flexibility}_{\text{ckt}} + \beta_5 \mathbf{X} + \varepsilon_{\text{cit}} \end{aligned}$$

$$\text{WTO flexibility}_t = \begin{cases} \text{water}_t = T_t^B - T_{t-1} \\ \text{effective water} = (\max(T_t^B - T_{t-1}); (T_t^P - T_{t-1})) \\ a \ln(1 + T_t^B) - b \ln(1 + T_{t-1}) + c \ln(1 + T_t^P) \end{cases}$$



Results: policy space matter!

Dependent variable: 1=MFN tariff increased, Bound lines only

	(1)	(2)	(3)	(4)
<i>Policy Space</i>				
$\ln(1 + \text{Bound rate})_{\text{ckt}}$	2.334***	2.322***		
$\ln(1 + \text{Prohibitive tariff})_{\text{ckt}}$		0.338***		
$\ln(1 + \text{MFN tariff})_{\text{ckt-1}}$	-6.953***	-7.204***		
$\text{Water}_{\text{ckt}}$			1.365***	
$\text{Effective water}_{\text{ckt}}$				1.875***
<i>Bagwell and Staiger's model</i>				
$\Delta(\text{share imports})_{\text{ckt-1}}$	0.914***	0.925***	0.941***	0.949***
$\text{Std. Dev. of } \Delta(\text{share imports})_{\text{ck}}$	-0.828***	-0.888***	-0.822***	-0.902***
$\text{Share of imports}_{\text{ck}}$	1.351***	1.348***	1.639***	1.776***
Observations	3,971,738	3,871,920	3,971,738	3,646,530
Log Likelihood	-429508	-421056	-435043	-394486



Robustness: other determinants of TPU

Dependent variable: 1=MFN tariff increases	(1)	(2)	(3)	(4)
<i>Policy Space</i>				
$\ln(1 + \text{Bound rate})_{\text{ckt}}$	2.313***	2.309***		
$\ln(1 + \text{Prohibitive tariff})_{\text{ckt}}$	0.338***	0.338***		
$\ln(1 + \text{MFN tariff})_{\text{ckt-1}}$	-7.234***	-7.365***		
$\text{Water}_{\text{ckt}}$			1.373***	
$\text{Effective water}_{\text{ckt}}$				1.887***
<i>Bagwell and Staiger's model</i>				
$\Delta(\text{share imports})_{\text{ckt-1}}$	1.178***	1.166***	1.156***	1.177***
Std. Dev. of $\Delta(\text{share imports})_{\text{ck}}$	-1.083***	-1.073***	-0.987***	-1.057***
$\text{Share of imports}_{\text{ck}}$	1.383***	1.335***	1.636***	1.769***
<i>Economic and Institutional variables</i>				
$\ln(\text{GDP})_{\text{ct}}$	-1.162***	-1.109***	-1.102***	-1.131***
$\text{GDP growth}_{\text{ct}}$	-0.153***	-0.212***	-0.209***	-0.300***
$\text{Average PTA depth}_{\text{ct}}$		0.186***	0.150***	0.183***
$\text{Custom Union* Average PTA depth}_{\text{ct}}$		0.321***	0.228***	0.211***
$1 = \text{Trade Policy Review}_{\text{ct-1}}$		-0.364***	-0.374***	-0.361***
Observations	3,862,417	3,813,357	3,911,715	3,589,186
ll	-418426	-415609	-429697	-389376



Robust to endogeneity: IV regressions

	Dependent variable: 1=MFN tariff increased		
	(1)	(2)	(3)
<i>Policy Space</i>			
Ln (1 + Bound rate) _{ckt}	0.749*		
Ln (1 + Prohibitive tariff) _{ckt}	0.004***		
Ln (1+ MFN tariff) _{ckt-1}	-0.595**		
Water _{ckt}		0.369**	
Effective water _{ckt}			0.326*
First stage			
Share of imports 95-99 _{ck}	-0.026***	-0.059***	-0.060***
F-test	11.74	40.58	41.13
<i>Bagwell and Staiger's model</i>	Yes	Yes	Yes
<i>Economic and Institutional variables</i>	Yes	Yes	Yes
Observations	421,746	418,712	433,179

Sample: New acceding countries; *Instrument:* import share 1995-1999



Robust to political economy controls

Dependent variable: Number of 6-digit tariff increases

	(1)	(2)	(3)	(4)
<i>Policy Space</i>				
$\ln(1 + \text{Bound rate})_{\text{ckt}}$	1.901***	1.636***		
$\ln(1 + \text{Prohibitive tariff})_{\text{ckt}}$	0.817***	1.732***		
$\ln(1 + \text{MFN tariff})_{\text{ckt-1}}$	-4.964***	-4.632***		
$\text{Water}_{\text{ckt}}$			0.881***	
$\text{Effective water}_{\text{ckt}}$				1.520***
<i>Political economy variables</i>				
$\ln(\text{N. employees})_{\text{t-1}}$		0.100***	0.105***	0.113***
$(\text{Value added} / \text{output})_{\text{t-1}}$		-0.194	-0.031	-0.032
<i>Bagwell and Staiger's model</i>				
$\Delta(\text{share imports})_{\text{ckt-1}}$	11.491**	3.654	2.612	2.379
$\text{Std. Dev. of } \Delta(\text{share imports})_{\text{ck}}$	-21.584***	-17.918***	-19.214***	-22.441***
$\text{Share of imports}_{\text{ck}}$	3.281**	1.418	4.384***	4.227**
<i>Economic and Institutional variables</i>				
	yes	yes	yes	yes
Observations	130,224	26,354	26,451	26,298
ll	-282577	-65377	-64122	-63385



Conclusions and further research

- ✓ we have explored a new channels of the gains from trade cooperation: a reduction of trade policy uncertainty
- ✓ We propose to evaluate the value of WTO as the uncertainty reducing effects of having bound rates below the prohibitive tariff.
- ✓ Future research could aim at:
 - ✓ Quantify the effects on trade
 - ✓ Other measures of trade policy