International trade and macro: Trade policy uncertainty

Policy uncertainty

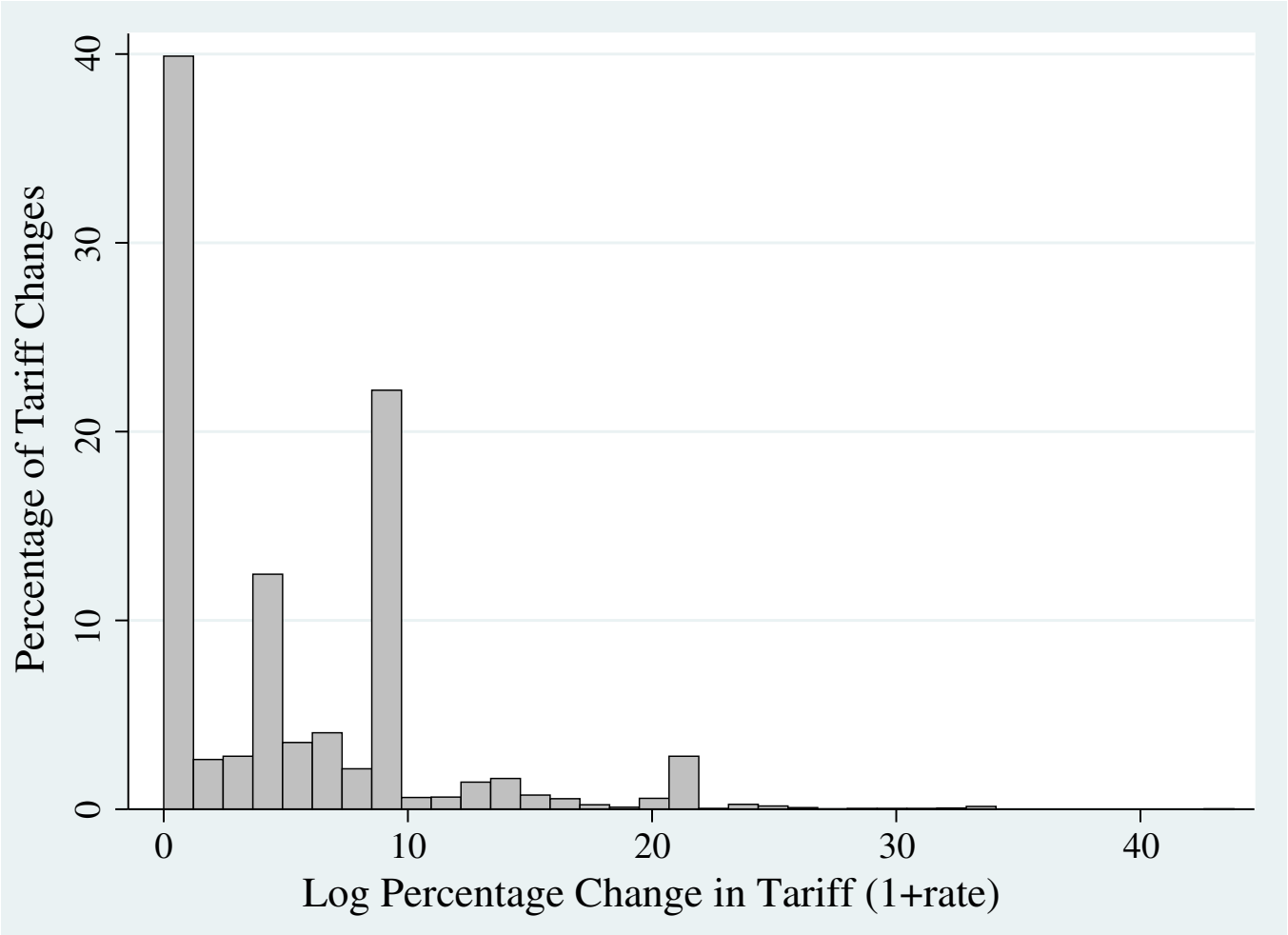
- Policy uncertainty is everywhere
  - Will we be wearing masks next month?
  - What will the corporate tax be in 5 years?
  - Will Madison metro build a Bus Rapid Transit line?
  - Will the Fed raise the FFR?
- Trade policy has some unique features that makes it great to study. Two examples:
  1. WTO tariff bindings
  2. China-U.S. (pre-2018) tariff policy

WTO tariff bindings

- Under WTO rules, bargain over a bound tariff: $\bar{\tau}_{gjt}$
  - Tariff cannot exceed this rate; can be below
  - Many countries have goods with tariffs below bound rate
  - The *binding gap* is $\bar{\tau}_{gjt} - \tau_{gjt}$
- The gap tells us how much worse it could get for an exporter
- When there are sunk costs of exporting, uncertainty over a *binding reversal* creates an option value to delay exporting
  - This is an extensive margin effect
  - Future tariffs, not current are important here

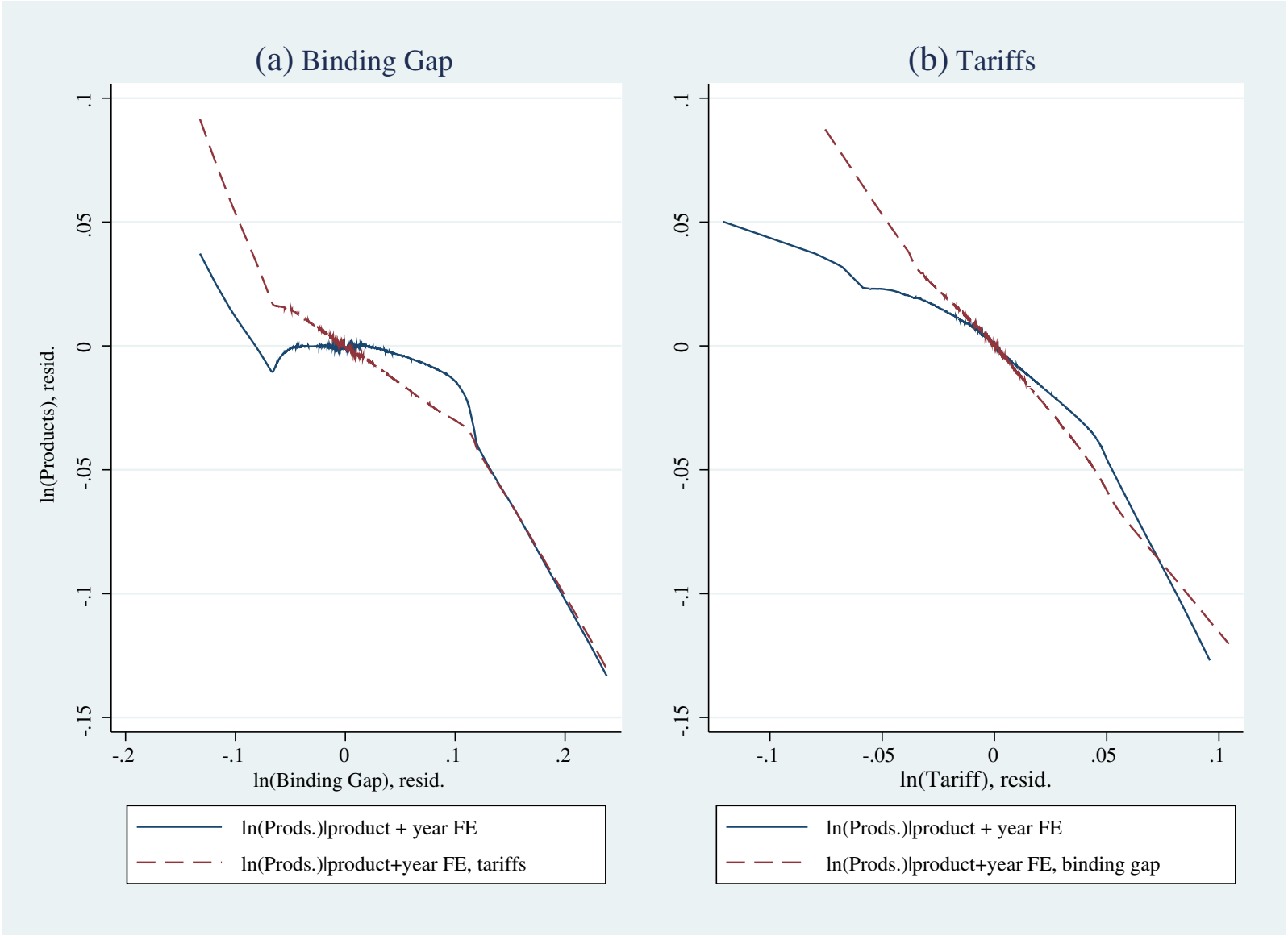
- There is some confusion about language in this literature. The "uncertainty" they are talking about is not a mean preserving spread. There are first-moment differences, too.

Handley (2014): Australia



Notes: Change in log points from the MFN tariff to the bound tariff in 2001. $100 \times \ln(B_v/\tau_v)$ where $B, \tau = (1 + \text{ad-valorem rate})$.

Handley (2014): Australia



Handley (2014): Australia

$$I_{gjt} = \alpha_{jt} + \alpha_{gj} + \beta_0 \log(\bar{\tau}_{gjt}/\tau_{gjt}) + \beta_1 \log(\tau_{gjt}) + \epsilon_{gjt}$$

- I_{gjt} indicator function of exports of g from j

Dependent variable: product traded (binary)			
	(1)	(2)	(3)
Binding gap (ln)	−0.0804***	−0.0915***	
	[0.00819]	[0.00888]	
Applied tariff (ln)	−0.135***	−0.164***	−0.0942***
	[0.0101]	[0.0126]	[0.0107]
Preference margin		0.143***	0.0371
		[0.0289]	[0.0267]
Observations	3,770,862	3,770,862	3,770,862
R-squared	0.796	0.796	0.796

Notes: All columns include exporter–year and exporter–product fixed effects. Robust standard errors in brackets are clustered by product–year.

*** p < 0.01

China-U.S.

- 1980: U.S. grants China normal trade relations (NTR), big tariff cut
- 1980-1989: NTR needs to be renewed by President
- 1990-2001: NTR needs to also be renewed by Congress
  - Perceived as increase in uncertainty. . .
  - . . . but always renewed
- 2001: China joins WTO, gains permanent NTR status
- Chinese imports to U.S. grow after 2001, even though tariffs **do not** change
- *NTR gap* is the difference between the NTR tariffs and the fall back "column 2" tariffs

Pierce and Schott (2016): US tariffs on China

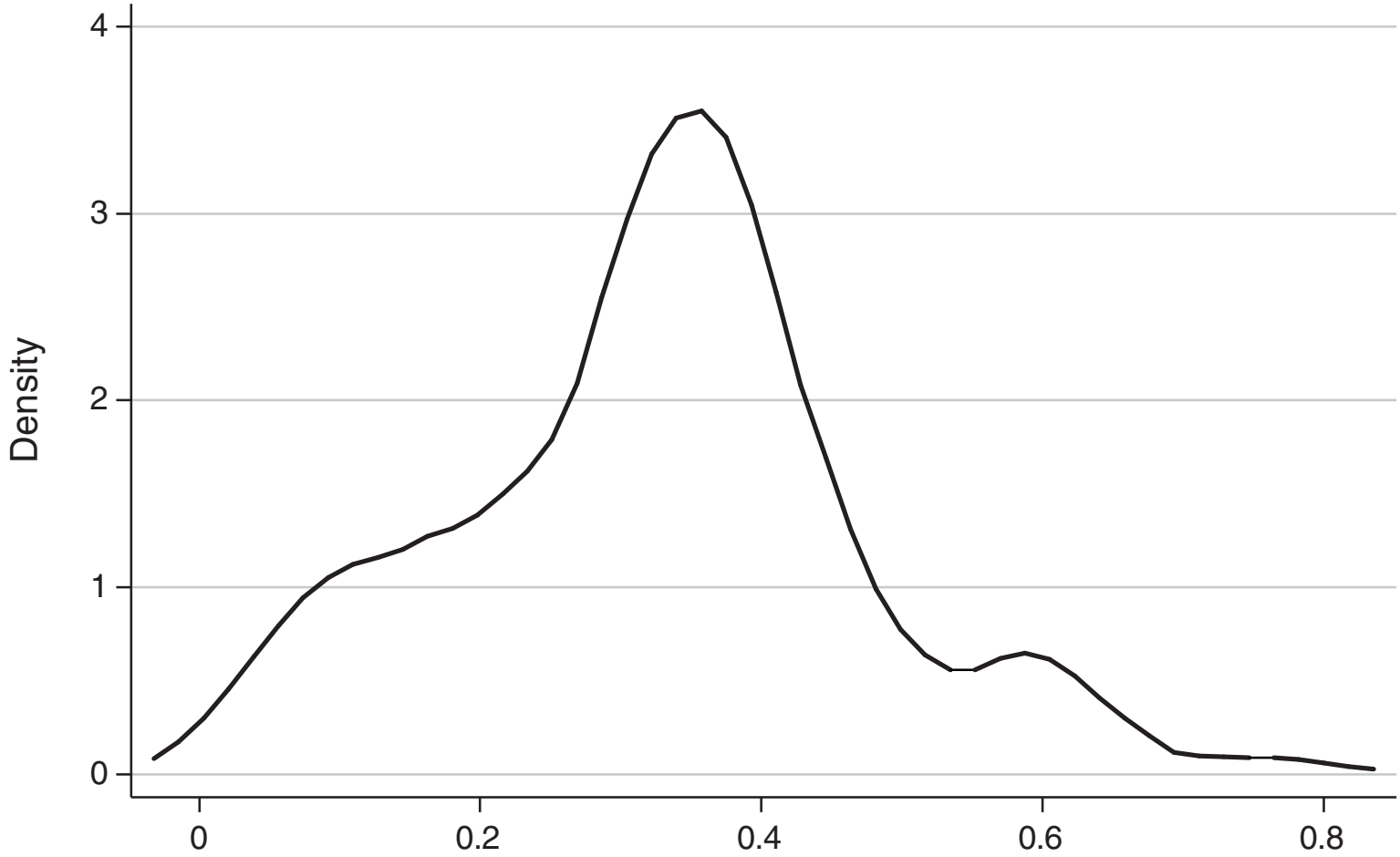


FIGURE 2. DISTRIBUTION OF NTR GAPS ACROSS CONSTANT MANUFACTURING INDUSTRIES, 1999

Pierce and Schott (2016): US tariffs on China

- WTO accession $\rightarrow$ more imports to US $\rightarrow$ lower US employment
- Should matter more in goods with more uncertainty (large NTR gap)
- DiD: before after PNTR, across industries with different gaps

$$\log(e_{it}) = \theta PostPNTR_t \times NTRGap_i + PostPNTR_t \times X_i'\gamma + X_{it}'\lambda + \delta_t + \delta_i + \alpha + \epsilon_{it}$$

Pierce and Schott (2016): US tariffs on China

	$\ln(\text{Emp}_{it})$	$\ln(\text{Emp}_{it})$	$\ln(\text{Emp}_{it})$
Post $\times$ NTR Gap$_i$	−0.714	−0.601	−0.469
	(0.193)	(0.191)	(0.147)
Post $\times$ $\ln(\text{K}/\text{Emp}_{i,1990})$		0.037	−0.016
		(0.031)	(0.025)
Post $\times$ $\ln(\text{NP}/\text{Emp}_{i,1990})$		0.081	0.132
		(0.054)	(0.053)
Post $\times$ Contract Intensity$_i$			−0.181
			(0.112)
Post $\times$ ΔChina Import Tariffs$_i$			−0.244
			(0.140)
Post $\times$ ΔChina Subsidies$_i$			0.063
			(0.088)
Post $\times$ ΔChina Licensing$_i$			−0.238
			(0.164)
Post $\times$ 1{Advanced Technology$_i$}			−0.036
			(0.045)
MFA Exposure$_{it}$			−0.342
			(0.060)
NTR$_{it}$			−0.455
			(0.670)
US Union Membership$_{it}$			−0.123
			(0.203)
Observations	5,700	5,700	5,700
R^2	0.98	0.98	0.99
Fixed effects	*i*,*t*	*i*,*t*	*i*,*t*
Employment weighted	Yes	Yes	Yes
Implied impact of PNTR	−0.229	−0.193	−0.151

Alessandria et al. (2019)

- Same U.S.-China uncertainty, but take advantage of the within-year dynamics
  - Congress votes between July and September to renew NTR status
- How do imports change in the months before, during after?
  - Consider a model with storable goods and costs of ordering
  - Firms hold inventories to minimize ordering costs
  - Uncertainty can lead to stockpiling of goods

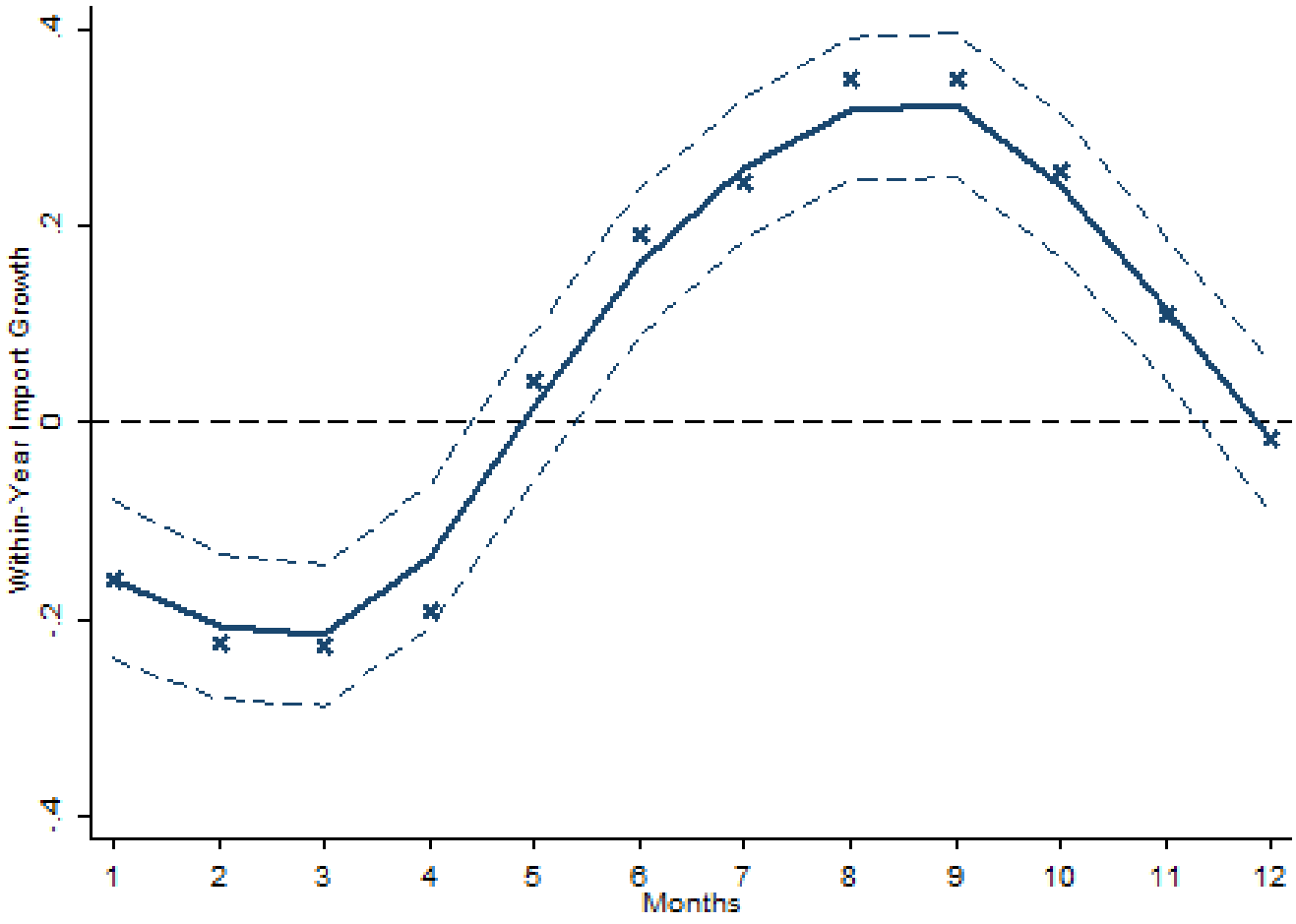
Alessandria, Khederlarian, and Khan (2019)

- More DiD...

$$\log(v^{ijzt}_{m-2:m}/v^{ijzt}_{m-7:m-5}) = \sum_{m'} \beta^{TPU}_{m'} I_{i=US,j=CHN} I_{m=m'} X_{zt} + \sum_{m'} \beta_{m'} I_{m=m'} X_{zt} + \gamma_{itm} + \gamma_{jtm} + \gamma_{sm} + \epsilon_{ijztm}$$

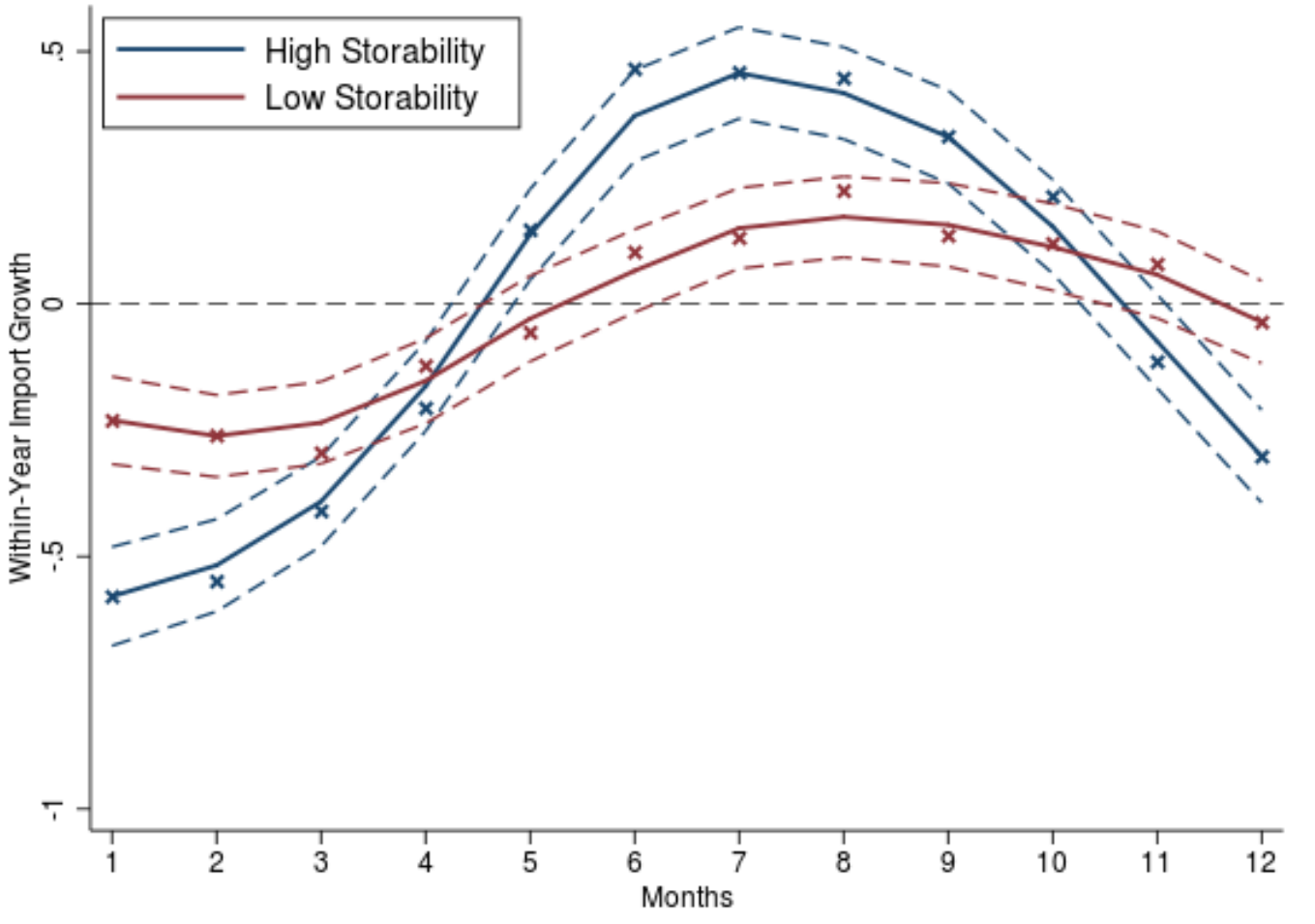
- The growth rate looks at 3-month groups to smooth noise
- $\beta^{TPU}_{m'}$ measures the response to uncertainty (X_{zt} is NTR gap)
- Fixed effects to control for product, importer, and exporter seasonality

Alessandria, Khederlarian, and Khan (2019)



Alessandria, Khederlarian, and Khan (2019)

- This should matter more for goods that are easier to store



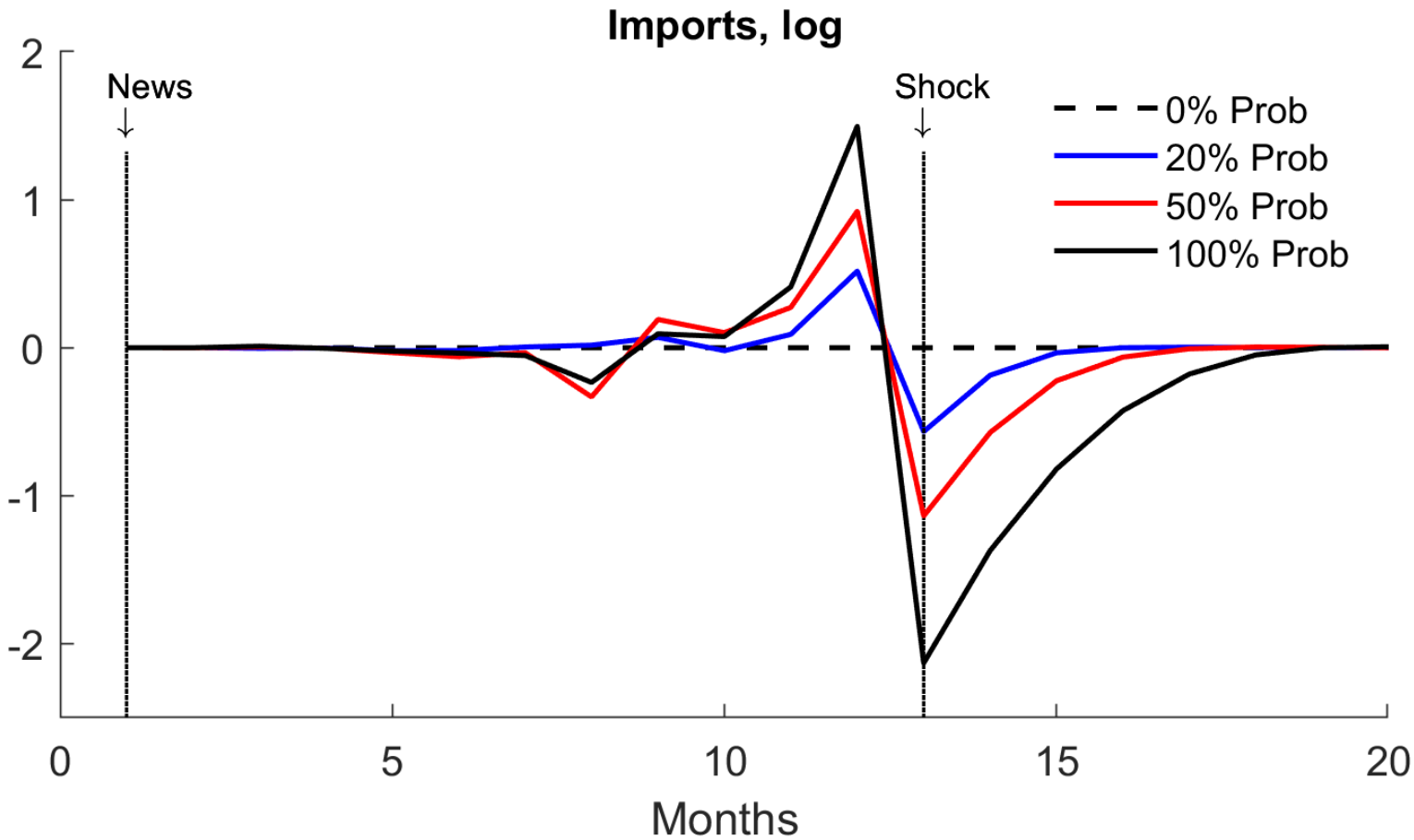
Magnitude: Certain vs Uncertain Changes

- Median uncertain tariff increase, 31% relative to monthly average
  - Before uncertainty resolution, imports rise 10% (anticipatory elasticity = 0.35)
  - After resolution imports fall 5% (resolution elasticity = -0.2)
- Median certain tariff cut of 2% from NAFTA's phase-outs (Khan and Khederlarian, 2019)
  - Before resolution, imports fall 10% (anticipatory elasticity = 5)
  - After resolution imports rise 15% (resolution elasticity = - 7.5)

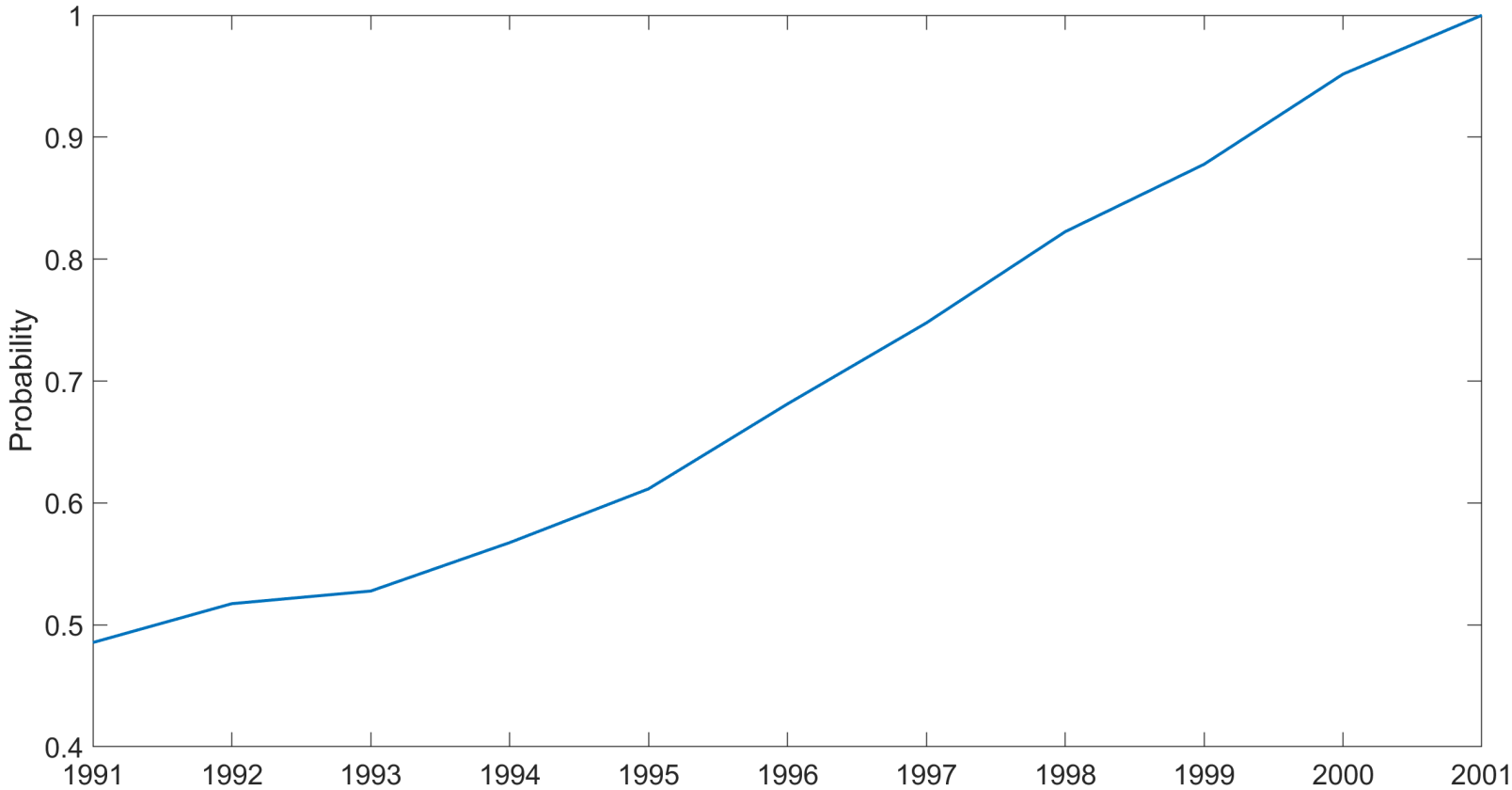
Quantification

- Using a model to estimate the probability of losing NTR
- The higher the probability of losing NTR, more incentive to stock up
- Will study the model in detail in a few weeks
  - Storeable good
  - Fixed cost of ordering
  - Firm faces a potential increase in tariffs, with varying probability
- Find the probability that gets the change in imports in the model closest to the data

Alessandria, Khederlarian, and Khan (2019)



Annual probability of maintaining NTR



Interesting stuff!

- We learn a lot from these unique tariff uncertainty episodes
- Are there more examples that can be used?
- Are their examples like this in other kinds of policy?
  - Debt ceiling negotiations?
  - Sunset clauses in antidumping duties?
- There is always a caveat. . .
  - NTR gap is correlated with the original liberalization in 1980
  - Explore this in Alessandria et al. (2021)

References I

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