ONLINE APPENDIX FOR THE COMPARATIVE ADVANTAGE OF FIRMS

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1. Online Appendix

1.1. **Input Unit Values and Dereservation.** Table 1 shows results of a regression of log unit values of domestically sourced intermediate inputs (by 5-digit input category i) on dereservation and tariff changes.

TABLE 1. Domestic Input Unit Values After Dereservation

	Dependent variable: log p_{jit}	
	(1)	(2)
$t \geq$ year i was de-reserved	-0.0760**	-0.0662**
	(0.012)	(0.014)
log InputTariff$_{it}$	-0.0642**	-0.0341**
	(0.0047)	(0.0052)
Year FE	Yes	Yes
Input Product FE	Yes	
Firm $\times$ Input Product FE		Yes
R^2	0.861	0.965
Observations	809346	430008

Standard errors in parentheses, clustered at the firm-year level.
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

1.2. **Additional Robustness Checks. Clustering at the firm level:** Tables 2 and 3 below, which are the main reduced-form regression table and its robustness table from the paper, are re-estimated with standard errors clustered at the firm level.

Single-industry firms: Table 4 below shows the benchmark reduced-form regressions using only single-industry firm-year observations (producers that are currently producing in one three-digit industry only).

Industries with Many Firms: There are few industries with just a few producers. 90% of all industry-years have more than 8 producers (75% more than 26 producers). More than 70% of producers in those industries with less than 8 producers are multi-industry firms. Table 5 shows the main reduced-form regressions on the subsample of industry-years with more than 8 producers. Results are very similar to those from the baseline specifications.

Wholesalers Excluded: The ASI contains a survey question, G11, which asks for the "sale value of goods sold in the same condition as purchased". That value is missing for about 12% of observations. Among those with nonmissing observations, it is zero for about 66% of observations, below one percent of *manufacturing* gross output for 78% of observations, and below 5 percent for 84%

TABLE 2. Industry Entry with Dereservation, Clustering at firm level

	Dependent variable: Add_{jkt}			
	(1)	(2)	(3)	(4)
$\text{InputSimilarity}^0_{jk}$	0.0379**	0.0371**	0.0273**	0.0268**
	(0.00041)	(0.00041)	(0.00062)	(0.00062)
$\text{InputSimilarity-Dereservation}^0_{jkt}$	0.0429**	0.0424**	0.0203**	0.0192**
	(0.0027)	(0.0027)	(0.0025)	(0.0025)
$\text{InputSimilarity-Tariff}^0_{jkt}$				-0.0701**
				(0.010)
Firm $\times$ Year FE α_{jt}	Yes	Yes	Yes	Yes
Industry $\times$ Year FE α_{kt}		Yes		
$k \times k' \times t$ FE $\alpha_{kk't}$			Yes	Yes
R^2	0.00981	0.0118	0.0575	0.0576
Observations	52691029	52691029	52666907	52666907

Standard errors in parentheses, clustered at the firm level.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

TABLE 3. Industry Entry with Dereservation, Clustering at firm level - Robustness

	Dependent variable: Add_{jkt}				
	(1)	(2)	(3)	(4)	(5)
$\text{InputSimilarity}^0_{jk}$	0.0379**	0.0251**	0.0245**	0.0199**	0.0195**
	(0.00041)	(0.00049)	(0.00050)	(0.00060)	(0.00061)
$\text{InputSimilarity-Dereservation}^0_{jkt}$	0.0429**	0.0383**	0.0378**	0.0155**	0.0145**
	(0.0027)	(0.0027)	(0.0026)	(0.0025)	(0.0025)
$\text{OutputSimilarity}^0_{jk}$		0.0136**	0.0136**	0.100**	0.100**
		(0.00060)	(0.00061)	(0.0018)	(0.0018)
$\text{OutputSimilarity-Dereservation}^0_{jkt}$		0.0344**	0.0334**	0.0171**	0.0171**
		(0.0016)	(0.0016)	(0.0022)	(0.0022)
Upstream^0_{jk}		0.0335**	0.0315**	0.0291**	0.0291**
		(0.00092)	(0.00092)	(0.0029)	(0.0029)
Downstream^0_{jk}		-0.00826**	-0.00756**	-0.00351*	-0.00356*
		(0.00062)	(0.00062)	(0.0015)	(0.0015)
$\text{InputSimilarity-Tariff}^0_{jkt}$					-0.0640**
					(0.0100)
Firm $\times$ Year FE α_{jt}	Yes	Yes	Yes	Yes	Yes
Industry $\times$ Year FE α_{kt}			Yes		
$k \times k' \times t$ FE $\alpha_{kk't}$				Yes	Yes
R^2	0.00981	0.0122	0.0140	0.0646	0.0646
Observations	52691029	52691029	52691029	52666907	52666907

Standard errors in parentheses, clustered at the firm level.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

of observations. In Table 6 below, we show the regressions from the reduced-form section of the paper for observations that report a G11 of less than one percent (column (2)), less than five percent

TABLE 4. Industry Entry – Single-industry Firms Only

	Dependent variable: Add_{jkt}					
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{InputSimilarity}^0_{jk}$	0.0371**	0.0246**	0.0367**	0.0244**	0.0294**	0.0223**
	(0.00046)	(0.00055)	(0.00046)	(0.00056)	(0.00074)	(0.00072)
$\text{InputSimilarity-Dereservation}^0_{jkt}$	0.0358**	0.0320**	0.0355**	0.0317**	0.0155**	0.0109**
	(0.0030)	(0.0029)	(0.0030)	(0.0029)	(0.0029)	(0.0028)
$\text{OutputSimilarity}^0_{jk}$		0.0139**		0.0137**		0.120**
		(0.00072)		(0.00072)		(0.0025)
$\text{OutputSimilarity-Dereservation}^0_{jkt}$		0.0286**		0.0279**		0.0104**
		(0.0018)		(0.0018)		(0.0026)
Upstream^0_{jk}		0.0333**		0.0321**		0.0347**
		(0.0011)		(0.0011)		(0.0041)
Downstream^0_{jk}		-0.0103**		-0.00976**		-0.00434*
		(0.00069)		(0.00069)		(0.0021)
$\text{InputSimilarity-Tariff}^0_{jkt}$					-0.0488**	-0.0420**
					(0.012)	(0.012)
Firm × Year FE α_{jt}	Yes	Yes	Yes	Yes	Yes	Yes
Industry × Year FE α_{kt}			Yes	Yes		
$k \times k' \times t$ FE $\alpha_{kk't}$					Yes	Yes
R^2	0.0100	0.0131	0.0117	0.0146	0.0783	0.0900
Observations	35318097	35318097	35318097	35318097	35286189	35286189

Standard errors in parentheses, clustered at the firm-industry level.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

TABLE 5. Industry Entry with Dereservation – Industry-Years with > 8 producers

	Dependent variable: Add_{jkt}			
	(1)	(2)	(3)	(4)
$\text{InputSimilarity}^0_{jk}$	0.0443**	0.0434**	0.0344**	0.0338**
	(0.00042)	(0.00042)	(0.00072)	(0.00073)
$\text{InputSimilarity-Dereservation}^0_{jkt}$	0.0521**	0.0516**	0.0243**	0.0230**
	(0.0029)	(0.0029)	(0.0028)	(0.0028)
$\text{InputSimilarity-Tariff}^0_{jkt}$				-0.0825**
				(0.011)
Firm × Year FE α_{jt}	Yes	Yes	Yes	Yes
Industry × Year FE α_{kt}		Yes		
$k \times k' \times t$ FE $\alpha_{kk't}$			Yes	Yes
R^2	0.0113	0.0131	0.0584	0.0584
Observations	44366233	44366233	44345156	44345156

Standard errors in parentheses, clustered at the firm-industry level.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

(column (3)), and less than ten percent (column (4)) of manufacturing gross output. The results are almost the same as for the full sample.

TABLE 6. Industry Entry, with No Wholesalers

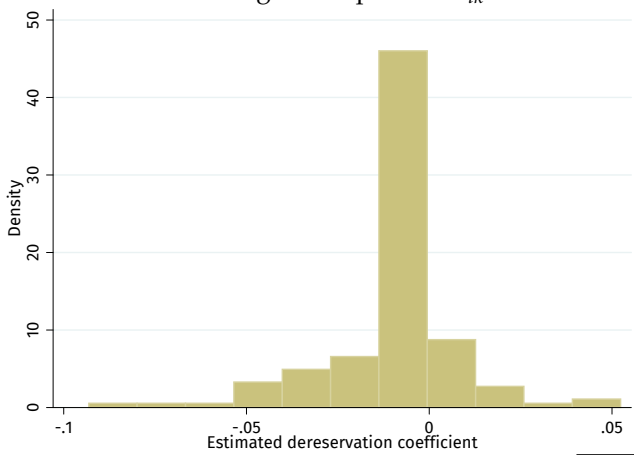
	Dependent variable: Add_{jkt}			
	(1)	(2)	(3)	(4)
$\text{InputSimilarity}^0_{jk}$	0.0195**	0.0197**	0.0198**	0.0196**
	(0.00057)	(0.00065)	(0.00063)	(0.00062)
$\text{InputSimilarity-Dereservation}^0_{jkt}$	0.0145**	0.0131**	0.0138**	0.0140**
	(0.0023)	(0.0026)	(0.0025)	(0.0025)
$\text{InputSimilarity-Tariff}^0_{jkt}$	-0.0640**	-0.0494**	-0.0523**	-0.0564**
	(0.0095)	(0.011)	(0.010)	(0.010)
$\text{OutputSimilarity}^0_{jk}$	0.100**	0.102**	0.101**	0.101**
	(0.0018)	(0.0021)	(0.0020)	(0.0020)
$\text{OutputSimilarity-Dereservation}^0_{jkt}$	0.0171**	0.0152**	0.0159**	0.0165**
	(0.0022)	(0.0026)	(0.0025)	(0.0025)
Upstream^0_{jk}	0.0291**	0.0314**	0.0314**	0.0313**
	(0.0030)	(0.0034)	(0.0033)	(0.0033)
Downstream^0_{jk}	-0.00356*	-0.00268	-0.00294$^+$	-0.00284$^+$
	(0.0014)	(0.0017)	(0.0016)	(0.0016)
Sample		$\chi < 0.01$	$\chi < 0.05$	$\chi < 0.10$
Firm $\times$ Year FE α_{jt}	Yes	Yes	Yes	Yes
Industry $\times$ Year FE α_{kt}				
$k \times k' \times t$ FE $\alpha_{kk't}$	Yes	Yes	Yes	Yes
R^2	0.0646	0.0692	0.0676	0.0669
Observations	52666907	36046972	39388763	41037045

Standard errors in parentheses, clustered at the firm-industry level.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

Notes: χ is the fraction of sales from wholesaling activity (G11) in manufacturing gross output (total sales in the J block).

1.3. **Estimated Technology Changes from Dereservation.** Figure 1.1 provides a histogram of coefficients from regressing the average single product firm 3-digit expenditure shares $\overline{\theta}_{ikt}$ each period on fixed effects for each input-industry and whether a within industry i has been dereserved at time t. While the estimates are on average slightly negative with a mean of -0.01 and standard deviation of 0.018, indicating the average movement is very small and the distribution of changes are hard to distinguish from zero.

FIGURE 1.1. Estimated Changes in Input Use $\overline{\theta}_{ik}$ from Dereservation



1.4. **Structural Robustness.** In parallel with the reduced form results, Table 7 presents structural estimation results controlling for $k \times k' \times t$ fixed effects. This is overcontrolling relative to the theory and we lose some precision but it reaffirms that the IV results still survive in the full specification.

TABLE 7. Structural results with (k, k', t) fixed effects

	Dependent variable: $\mathbf{1}(Sales_{jkt} > 0)$			
	(1)	(2)	(3)	(4)
$\sum_i(\theta_{ijt}\overline{\theta}_{ik} - \overline{\theta}_{ik}^2/2)$	0.0037**	0.0038**	0.0185	0.033*
	(0.0001)	(0.0001)	(0.0128)	(0.0134)
$\sum_i B_{it} \cdot (\theta_{ijt}\overline{\theta}_{ik} - \overline{\theta}_{ik}^2/2)$	-0.0001	-0.0001	-0.0004	-0.0006$^+$
	(0.0001)	(0.0001)	(0.0004)	(0.0003)
$\sum_i \tau_{it} \cdot (\theta_{ijt}\overline{\theta}_{ik} - \overline{\theta}_{ik}^2/2)$		-0.0003		-0.0039*
		(0.0003)		(0.0018)
κ_{jk}	Yes	Yes	Yes	Yes
κ_{jt}	Yes	Yes	Yes	Yes
$\kappa_{kk't}$	Yes	Yes	Yes	Yes
Estimator	OLS	OLS	IV	IV
R^2	0.862	0.862	0.857	0.857
Observations	77,745,382	77,745,382	46,185,150	46,185,150

Standard errors in parentheses, clustered at the firm-industry level.
$^+$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$

1.5. **First Stage Estimation.** Table 8 presents the results of estimating Equations (4.8-4.10) through OLS in Columns 2, 3 and 5 with comparision estimates in Columns 1 and 3 without tariff-input distance components, suppressing the absorbed coefficients corresponding to the plethora of γ terms.

TABLE 8. Structural Estimates for Multi-Industry Sales Premium

	$\sum_i \left(\theta_{ijt}\overline{\theta}_{ik} - \theta_{ijt}^2/2\right)$ (1)	(2)	$\sum_i B_{ijt} \cdot \left(\theta_{ijt}\overline{\theta}_{ik} - \theta_{ijt}^2/2\right)$ (3)	(4)	$\sum_i \tau_{ijt} \cdot \left(\theta_{ijt}\overline{\theta}_{ik} - \theta_{ijt}^2/2\right)$ (5)
$\sum_i \left(\theta_{ijt-1}\overline{\theta}_{ik} - \theta_{ijt-1}^2/2\right)$	-0.0131***	-0.0150***	-0.0339***	-0.0342***	-0.0177***
	(0.0001)	(0.0001)	(0.0002)	(0.0000)	(0.0000)
$\sum_i B_{ijt} \cdot \left(\theta_{ijt-1}\overline{\theta}_{ik} - \theta_{ijt-1}^2/2\right)$	0.0059**	0.0050***	0.5257***	0.5256**	0.0087***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0000)
$\sum_i \tau_{ijt} \cdot \left(\theta_{ijt-1}\overline{\theta}_{ik} - \theta_{ijt-1}^2/2\right)$		0.0841***		0.0108***	0.7099***
		(0.0006)		(0.00064)	(0.0001)
κ_{jk}	Yes	Yes	Yes	Yes	Yes
κ_{kt}	Yes	Yes	Yes	Yes	Yes
γ_{kt}	Yes	Yes	Yes	Yes	Yes
R^2	0.860	0.860	0.682	0.682	0.500

Standard errors in parentheses, clustered at the firm-industry level. 38,411,219 observations in each column.
$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$