6 Appendix

6.1 Sources and Methods of Change in Disputed Regulations

Table 4: Method of disputed regulation change. The most common sources of change are expiration and repeal.

Method	Number of cases
Expiration	34
Repealed	13
Court action	16
Repealed and replaced	14
Amended	10
Total changed	*87*
No change	180
No evidence	134

6.2 Descriptive Statistics and Discussion: Disputed Regulation Change

Table 5: **Branch(es) of host state national government tied to disputed regulation, by case (filed 1987-2017).** The majority of disputed regulations are tied to legislative and executive actions.

Branch	Regulation disputed (count)	Regulation changed (count)
Legislative	94	38
Executive	180	29
Legislative and Executive	37	12
Judicial	51	6
Judicial and Executive	5	1
Judicial and Legislative	3	1
Total	*370*	*87*

Table 6 organizes cases by home state. A claimant's home state is determined by the IIA invoked by the claimant; where the claimant does not invoke an international treaty, it is determined by the MNC's incorporation. Note that some cases involve claimants from multiple states; for this reason, the cases column of Table 6 does not sum to 87. Large economies of politically important countries are associated with more cases that resulted in the host state changing the law. This ranking also mirrors the pattern of ISDS more generally, where investors from large developed economies initiate more claims than others (Wellhausen, 2016; Van Harten and Malysheuski, 2016).

At the same time, Table 6 raises questions about "nationality-shopping" (Peinhardt and Wellhausen, 2015). MNCs often have ownership claims in multiple countries, which often allows them to access IIAs from a home country that might not be the one popularly understood as the home of the firm. For example, relatively permissive Dutch BITs have been under fire for facilitating "shopping"; in one case infamous in Venezuela, the Netherlands served as the home country for Exxon to sue the state, despite Venezuela not having a BIT with the United States.[1] Recall that one mechanism which we expect to explain the incidence of change in disputed regulations relies on trade relations between the claimant investor's home country and the host country. If claimants that engage in nationality shopping are somehow different or marginalized in their adopted home country, then their presence in the dataset would make it more difficult for us to identify home-host intermediate goods trade relations as a mechanism to explain changes in disputed regulations.[2]

Table 7 categorizes the number of cases associated with a change in the disputed regulation by industry. We follow the OECD standard in using the International Standard Industrial Classification of All Economic Activities (ISIC) Rev 4, using ISIC's industry classifications rather than the individual codes.[3]

Table 6: Count of cases for which the disputed regulation has been changed vs. total, by home state

Home Country	Count (regulatory change)	Count (total)	% of total
United States	26	154	16.9%
Netherlands	9	86	10.5%
United Kingdom	9	72	12.5%
Canada	7	46	15.2%
France	7	41	17.1%
Germany	7	52	13.5%
Spain	6	39	15.4%
Luxembourg	4	32	12.5%
Chile	2	7	28.6%
Greece	2	16	12.5%
Bahamas	1	2	50%
Belgium	1	15	6.7%
Bermuda	1	2	50%
Croatia	1	2	50%
Cyprus	1	18	5.6%
Italy	1	35	2.9%
India	1	4	25%
Mauritius	1	7	14.3%
Panama	1	3	33.3%
Poland	1	6	16.7%
Qatar	1	3	33.3%
Russia	1	16	6.3%
Sweden	1	7	14.3%
Switzerland	1	25	4%

Table 7: Count of cases with a change in disputed regulation(s) vs. total, by industry

Industry	Count (regulatory change)	Count (total)	% of total
Electricity, gas, water supply, sewerage, waste and remediation services	32	167	19.2%
Mining and extraction of energy producing products	10	70	14.3%
Financial and insurance activities	7	66	10.6%
Telecommunications	7	39	17.9%
Agriculture, forestry and fishing	6	26	23.1%
Chemicals and pharmaceutical products	5	19	26.3%
Food products, beverages and tobacco	4	36	11.1%
Mining and quarrying of non-energy producing products	2	52	3.8%
Transportation and storage	2	32	6.3%
Construction	2	62	3.2%
Wholesale and retail trade; repair of motor vehicles	2	13	15.4%
Other business sector services	2	18	11.1%
Motor vehicles, trailers and semi-trailers	1	2	50.0%
Public admin. and defence; compulsory social security	1	2	50.0%
Publishing, audiovisual and broadcasting activities	1	12	8.3%
Mining support service activities	0	4	0.0%
Textiles, wearing apparel, leather and related products	0	6	0.0%
Other non-metallic mineral products	0	9	0.0%
Basic Metals	0	15	0.0%
Electrical equipment	0	2	0.0%
Machinery and equipment	0	5	0.0%
Other transport equipment	0	3	0.0%
Other manufacturing; repair and installation of machinery and equipment	0	3	0.0%
Accomodation and food services	0	8	0.0%
Real Estate Activities	0	27	0.0%
Human health and social work	0	3	0.0%
Arts, entertainment, recreation and other service activities	0	9	0.0%

Around 40% of the cases where there has been a change in regulation belong to Electricity, Gas, Water Supply, Sewerage, Waste and Remediation services. This is a tertiary, aggregated industry, and arguably very well-connected via a broad conceptualization of economic integration, since utility services are inputs into all other industries. Under our argument, one reason the host state would change disputed regulations in this industry is to minimize negative spillovers that would stem from the interruption of provision of such key, and effectively universal, inputs. We again emphasize the importance of Argentina; out of the 32 cases in this industry, 16 were filed against Argentina around 2003-2004 in response to the particular 2002 Emergency Law. The other ten events comprise an important proportion of the positive cases of change in our outcome variable.

Many of the other industries with cases associated with changes in disputed regulations are ones in which trade in intermediate goods is at least anecdotally of importance, especially as compared to several of the ISIC classified industries such as real estate and health and social work associated with zero cases.

Figure 4 plots the count of ISDS cases associated with a change in a disputed regulation by the year in which the case was filed. For example, the disputed regulation(s) associated with 16 cases filed in 2003 was changed within the study period (through 2018). That spike in changes is due to a decision by President Macri of Argentina. An Emergency Law passed in 2002 gave special powers to the president over the management of fiscal and monetary policy in the context of the deep financial crisis the country faced. That regulation triggered ISDS arbitrations in 2003 and 2004 from a variety of foreign investors. President Macri allowed the regulation to expire in 2018, which fits with our coding scheme and causes the spike. Perhaps the passage of time, government turnover, and improving economic health in Argentina explain this particular change; we thoroughly examine whether our empirical analyses are robust to excluding Argentina. More broadly, we would be concerned if changes in disputed regulations systematically come about many years after the relevant ISDS arbitration. If this were true, we would be skeptical that the characteristics of the claimant investor have much at all to do with change. Figure 4 provides us confidence that this is not the case. In particular, it is not true that regulations disputed in older cases are disproportionately changed by the end of the study period. Thus, it is not ex ante obvious that temporal effects drive the outcome of interest, by employing year-fixed effects in the models reported in Table 2

[Figure 4 about here]

Table 8 organizes the count of ISDS cases associated with a change in disputed regulation(s) by host state. Again, we see that the Emergency Law expiration in Argentina accounts for an important number of cases, again motivating us to examine the sensitivity of our analyses to Argentina's inclusion. An important number also relates to cases involving Canada, the United States, and Mexico, which is consistent with deep economic integration among these three members of NAFTA.[4] It is particularly noteworthy that the United States is on the list at all, not to mention so high: the United States has famously never lost a case (to date), but it has nonetheless changed disputed regulations. We probe why.

Table 8: Count of ISDS cases associated with a change in disputed regulation(s) vs. total, by host state

Host Country	Count (regulatory change)	Count (total)	% of total
Argentina	35	59	59.3%
Canada	6	21	28.6%
United States	5	15	33.3%
Mexico	4	23	17.4%
Turkey	3	11	27.2%
Venezuela	3	42	7.1%
Belize	3	4	75.0%
Egypt	3	29	10.3%
India	2	21	9.5%
Peru	2	13	15.4%
Poland	2	25	8.0%
Spain	2	34	5.9%
Zimbabwe	2	3	66.7%
Bolivia	1	15	6.7%
Ghana	1	3	33.3%
Hungary	1	14	7.1%
Indonesia	1	7	14.3%
Latvia	1	7	14.3%
Malaysia	1	3	33.3%
Moldova	1	8	12.5%
Mongolia	1	4	25.0%
Nicaragua	1	1	100.0%
Philippines	1	5	20.0%
Romania	1	13	7.7%
Saint Kitts and Nevis	1	1	100.0%
Slovenia	1	3	33.3%
Sri Lanka	1	4	25.0%
Ukraine	1	21	4.8%

6.3 Robustness: Regression Analysis

Table 9: Total bilateral trade in intermediates and regulatory change (Argentine Emergency Law cases excluded)

	Dependent variable:				
	Disputed regulation change = 1				
	(1)	(2)	(3)	(4)	(5)
Bilateral GVC exports to host	0.127**	0.111**	0.836**	0.386	0.345
	(0.053)	(0.054)	(0.366)	(0.551)	(0.625)
GDP gap		−0.002	−0.013	−0.028	−0.047*
		(0.013)	(0.018)	(0.025)	(0.027)
Democracy (host)		0.116**	0.171***	0.074	0.155
		(0.047)	(0.066)	(0.085)	(0.112)
Veto players (host)		−0.070	−0.281	−0.219	−0.315
		(0.136)	(0.178)	(0.270)	(0.297)
Bilateral FDI flow to host			0.047	−0.001	0.005
			(0.042)	(0.057)	(0.061)
Bilateral exports to host (non-GVC)			−0.786**	−0.238	−0.206
			(0.351)	(0.551)	(0.631)
Investor win					2.770***
					(0.895)
Constant	−3.315***	−1.679	−0.370	−18.618	−18.189
	(0.396)	(1.363)	(0.927)	(4,106.198)	(6,578.623)
Year Dummies	No	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	Yes	Yes
Observations	670	595	357	313	313
Log Likelihood	−177.428	−185.670	−105.401	−49.847	−43.820
Akaike Inf. Crit.	358.857	423.339	248.802	185.694	175.639
Note:					*p<0.1; **p<0.05; ***p<0.01

Table 10: Total bilateral trade in intermediates and regulatory change (regulatory challenges only)

	Dependent variable:				
	Disputed regulation change = 1				
	(1)	(2)	(3)	(4)	(5)
Bilateral GVC exports to host	0.027	0.040	1.416**	1.942***	2.062***
	(0.042)	(0.061)	(0.574)	(0.739)	(0.792)
GDP gap		−0.007	−0.041*	−0.030	−0.040
		(0.015)	(0.024)	(0.029)	(0.030)
Democracy (host)		0.048	0.057	0.100	0.152
		(0.052)	(0.074)	(0.090)	(0.100)
Veto players (host)		0.100	0.005	−0.006	−0.179
		(0.153)	(0.217)	(0.287)	(0.308)
Bilateral FDI flow to host			0.019	0.007	0.005
			(0.048)	(0.057)	(0.059)
Bilateral exports to host (non-GVC)			−1.469**	−2.054***	−2.153***
			(0.578)	(0.767)	(0.817)
Investor win					1.159*
					(0.645)
Constant	−1.348***	−0.872	0.686	1.846	1.950
	(0.298)	(1.543)	(1.217)	(1.998)	(2.101)
Year Dummies	No	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	Yes	Yes
Observations	357	303	192	189	189
Log Likelihood	−194.577	−134.744	−72.194	−56.671	−54.978
Akaike Inf. Crit.	393.153	319.487	182.387	187.342	185.957

Note: *p<0.1; **p<0.05; ***p<0.01

Table 11: Total bilateral trade in intermediates and regulatory change ("no evidence" cases excluded)

	Dependent variable:				
	Disputed regulation change = 1				
	(1)	(2)	(3)	(4)	(5)
Bilateral GVC exports to host	0.050	0.077	0.846**	0.938**	1.202**
	(0.042)	(0.056)	(0.372)	(0.445)	(0.550)
GDP gap		0.002	−0.009	0.001	−0.016
		(0.013)	(0.018)	(0.020)	(0.022)
Democracy (host)		0.118**	0.192***	0.183**	0.266***
		(0.049)	(0.068)	(0.075)	(0.097)
Veto players (host)		−0.089	−0.324*	−0.389*	−0.613**
		(0.141)	(0.181)	(0.207)	(0.243)
Bilateral FDI flow to host			0.029	0.040	0.042
			(0.044)	(0.048)	(0.054)
Bilateral exports to host (non-GVC)			−0.821**	−0.952**	−1.216**
			(0.357)	(0.442)	(0.543)
Investor win					2.924***
					(0.668)
Constant	−2.078***	−1.473	0.066	1.248	1.713
	(0.298)	(1.369)	(0.942)	(1.461)	(1.645)
Year Dummies	No	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	Yes	Yes
Observations	565	469	275	265	265
Log Likelihood	−235.052	−166.633	−93.378	−76.880	−64.210
Akaike Inf. Crit.	474.104	385.266	224.756	237.760	214.420

Note: *p<0.1; **p<0.05; ***p<0.01

6.4 Robustness: Bilateral-industry GVC measure

Here we report results for the same regression models employed in Table 2 in the paper, but using an alternative measure of GVC integration for robustness purposes: Bilateral-industry GVC exports to host. This measure is the value of the exported intermediates from the claimant's industry in the home country to all industries in the claimant's host country, measured in the year of filing. For example, in a case filed in 2013 where the claimant is from Norway, the respondent state is Poland, and the claimant's ISIC industry code is 24 (manufacture of basic metals), we take the value of exported intermediates from the metals manufacturing industry in Norway to Poland in 2013.

One benefit of this alternative measure is that it addresses the skeptical reader's concern that, perhaps, Norwegian investment in industries outside metals manufacturing is unlikely to meaningfully incentivize Poland to change the regulation disputed by the Norwegian metals manufacturer. Put differently, this measure assumes that Polish policymakers take signals from threats to home-industry-specific GVC ties suggested by an ISDS arbitration. The OECD data, disaggregated by industry, are less comprehensive than the total bilateral trade in intermediates data. However, we are still able to match bilateral-industry-specific values to 466 of the 809 cases in our dataset. Table 12 reports the results of five logit models. We employ the same set of covariates from previous models, with the addition of the now-relevant Bilateral GVC exports to host (outside claimant's industry).

[Figure 5 about here]

While the Bilateral-industry GVC exports to host variable is positive and significant in the bivariate model (1), the coefficient loses significance upon the inclusion of covariates. However, we note that the sign of the variable remains consistently positive in all models, and it is thus robust to this alternative measure. It is possible that we have failed to reject the null hypothesis (industry-specific supply chain integration is not associated with regulatory change) when the null hypothesis is in fact false, thus committing type II error. If this is the case, it is likely due to lack of data availability. As noted previously, OECD data on industry-specific bilateral trade in intermediates are not as comprehensive as the data on total bilateral trade in intermediates. As a result, not only do we have fewer degrees of freedom, but we also run the risk that the missing data points are systematically different than the non-missing values, which would add bias to our results.

Table 12: Industry-specific bilateral trade in intermediates and regulatory change

	Dependent variable:				
	Disputed regulation change = 1				
	(1)	(2)	(3)	(4)	(5)
Bilateral-industry GVC exports to host	0.074**	0.041	−0.002	−0.078	−0.045
	(0.036)	(0.044)	(0.100)	(0.117)	(0.132)
Bilateral GVC exports to host (outside claimant's industry)			0.740	1.247*	2.099***
			(0.502)	(0.637)	(0.815)
GDP gap		0.011	0.008	0.010	−0.014
		(0.016)	(0.025)	(0.033)	(0.035)
Democracy (host)		0.081	0.113	0.083	0.141
		(0.052)	(0.073)	(0.088)	(0.103)
Veto players (host)		−0.009	−0.102	−0.040	−0.303
		(0.158)	(0.223)	(0.297)	(0.333)
Bilateral FDI flow to host			0.126*	0.153**	0.172*
			(0.066)	(0.078)	(0.096)
Bilateral exports to host (non-GVC)			−0.736	−1.291**	−2.198***
			(0.490)	(0.658)	(0.847)
Investor win					2.399***
					(0.758)
Constant	−2.077***	17.806	−1.365	−0.405	−0.137
	(0.152)	(6,522.639)	(1.395)	(1.892)	(2.036)
Year Dummies	No	Yes	Yes	Yes	Yes
Industry Dummies	No	No	No	Yes	Yes
Observations	466	377	238	238	238
Log Likelihood	−167.016	−120.941	−67.889	−52.679	−46.584
Akaike Inf. Crit.	338.032	293.883	175.778	187.359	177.169

Note: *p<0.1; **p<0.05; ***p<0.01

Further, the industry-specific and all other industries trade in intermediates variables are highly correlated ($\rho = .59$), and thus multicollinearity is likely inflating our standard error estimates.

On the other hand, it is possible that we have failed to reject the null hypothesis when the null hypothesis is indeed true. If this is the case, the implication is that host states are primarily concerned with general - as opposed to industry-specific - supply chain integration when deliberating regulatory change in response to facing arbitration. As Wellhausen (2015) shows, foreign firms from the same home state are more likely to divest if one of their co-nationals is targeted by the host government, regardless of the targeted co-national's industry. If the same logic applies here, meaning that firms are more likely to divert their supply chains in response to *any* co-national investor's grievance, then it follows that host governments should pay greater attention to total bilateral supply chain integration than to integration in a single industry. This is precisely what our main results show in the paper, in Table 2.

Finally, most covariates retain their signs and significance levels from previous specifications; notably, the variable capturing intermediate exports from home to host state in all industries besides that of the investor remains statistically and substantively significant (see Figure 5).

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