

Appendix B: Data on Seafood Processing Companies

The dataset used in chapter 3 was constructed using a sample of seafood processing firms in the Chinese Industrial Enterprises Database, which is accessible through the institutions that subscribe to it.¹ To form my dataset, I extracted data on the aquatic product processing firms between 2005 and 2009 from the original database. The period was chosen for two reasons. First, since the 2010s, the Bureau of Statistics revised their sampling strategy for this database. More importantly, before 2010, certification programs had not yet started to work in China, nor had any Chinese stakeholder supported sustainable seafood certification. Focusing on this period thus allowed me to concentrate on the effects of transnational market agents while excluding the potential influences of support from domestic stakeholders and promotional activities of transnational certification programs. I focus on the processing firms not only due to data availability, but also because the number of certified fisheries and fish farms in China was very low (even none for the MSC) during this period, and most certified farms in China were also owned by large processing firms.

As the MSC and the GAA-BAP were the only two seafood certification programs introduced to China before 2010, the outcome of interest in my quantitative study here is firms' adoption of one of these standards. Accordingly, in the new dataset, I coded firms' certification status for a given year, using open access data on the certified facilities in China until 2011 from the two certification programs. I included the data until 2011 to take into consideration the time needed for assessment and audits after firms decide to apply for certification. The newly constructed binary variable is used as the dependent variable in my regression analysis. Of the certified firms in the focus period, more than 60% exist in the Chinese Industrial Enterprises

Database sample. Among those that cannot be merged, most are traders or contractors without actual processing capacity. Thus, excluding them would not introduce systematic bias to the analysis.

Additionally, according to experts in the industry, once Chinese processors have joined a transnational program, they rarely withdraw, as holding a certificate can help them maintain access to export markets.² Indeed, for the firms that can be merged in my dataset, none of them withdrew until 2013. In other words, at least in China's seafood processing industry, certification status is path dependent and rarely changes after firms' initial participation. Therefore, to reduce potential noise in the data caused by market fluctuations after firms' adoption of eco-certification, I exclude the observations of certified firms in the years immediately following their initial certification. In terms of the key explanatory variables in the analysis, I drew data from the original database on firms' trade and ownership, which reflect their exposure to transnational market influences. Moreover, several indicators of corporate performance, such as sales, size, and revenues, are also used to assess the effects of businesses' capacity. Tables B.1–B.4 show the correlation matrix and the results of various robustness checks.

Table B.1
Correlation matrix

	Export ratio	Export value	Foreign invested	Foreign owned	Assets	Employees	Sales
Export ratio	1						
Export value	0.851	1					
Foreign invested	0.236	0.229	1				
Foreign owned	0.121	0.0977	0.521	1			
Assets	0.0977	0.231	0.0828	-0.0111	1		
Employees	0.122	0.264	0.0981	-0.00363	0.447	1	
Sales	0.159	0.377	0.0902	0.000237	0.543	0.472	1
N	6,883						

Table B.2

Random-effects logistic regression (baseline model, 2-year lagged dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)
	Cert2	Cert2	Cert2	Cert2	Cert2	Cert2
Export ratio	0.973** (3.06)	1.022** (3.00)	0.971** (2.95)			
Export value				0.0695* (2.39)	0.0859** (2.83)	0.0442 (1.52)
Foreign invested	0.784** (2.92)	0.911** (2.92)	0.874** (2.98)	0.840** (2.93)	0.923** (2.97)	0.980** (3.23)
Foreign owned Assets	0.477*** (5.45)			0.421*** (4.05)		
Employees		0.000551*** (3.39)			0.000464** (2.80)	
Sales			0.654*** (5.30)			0.610*** (4.55)
2006.year	0.157 (0.37)	0.227 (0.51)	0.147 (0.34)	0.172 (0.40)	0.223 (0.51)	0.172 (0.40)
2007.year	-0.580 (-1.16)	-0.448 (-0.86)	-0.574 (-1.14)	-0.572 (-1.14)	-0.465 (-0.90)	-0.570 (-1.12)
2008.year	0.273 (0.68)	0.500 (1.13)	0.270 (0.65)	0.302 (0.73)	0.488 (1.11)	0.302 (0.72)
2009.year	-0.0703 (-0.16)	0.213 (0.44)	-0.121 (-0.27)	-0.0385 (-0.09)	0.191 (0.40)	-0.0983 (-0.22)
_cons	-9.857*** (-10.67)	-6.600*** (-6.88)	-13.04*** (-6.64)	-9.587*** (-6.29)	-6.658*** (-6.94)	-12.65*** (-6.18)
Insig2u_cons	-11.22 (-0.01)	0.542 (0.59)	-0.597 (-0.24)	-0.907 (-0.26)	0.506 (0.53)	-0.00869 (-0.01)
N	6,731	6,776	6,776	6,739	6,786	6,776

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table B.3

Mixed-effects logistic regression (columns 1–4: one year lagged dependent variable; columns 5–8 two-year lagged dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cert1	Cert1	Cert1	Cert1	Cert2	Cert2	Cert2	Cert2
Export ratio	1.615*** (4.41)	1.675*** (4.46)			0.973** (3.06)	1.021** (3.00)		
Export value			0.126*** (3.62)	0.150*** (4.23)			0.0695* (2.39)	0.0859** (2.83)
Foreign invested	0.826** (2.68)	0.900** (2.86)	0.890** (2.87)	0.892** (2.94)	0.784** (2.92)	0.908** (2.92)	0.840** (2.93)	0.921** (2.98)
Assets	0.484*** (4.43)		0.385*** (3.36)		0.477*** (5.45)		0.421*** (4.05)	
Employees		0.000416** (2.81)		0.000256 (1.74)		0.000549*** (3.42)		0.000462** (2.83)
2006.year	-0.124 (-0.31)	-0.292 (-0.71)	-0.143 (-0.36)	-0.212 (-0.54)	0.157 (0.37)	0.226 (0.51)	0.172 (0.40)	0.222 (0.51)
2007.year	-0.175 (-0.47)	-0.268 (-0.71)	-0.202 (-0.54)	-0.239 (-0.64)	-0.580 (-1.16)	-0.450 (-0.87)	-0.572 (-1.14)	-0.467 (-0.91)
2008.year	-0.608 (-1.50)	-0.681 (-1.64)	-0.617 (-1.52)	-0.629 (-1.54)	0.273 (0.68)	0.497 (1.12)	0.302 (0.73)	0.486 (1.11)
2009.year	0 (.)	0 (.)	0 (.)	0 (.)	-0.0702 (-0.16)	0.210 (0.44)	-0.0385 (-0.09)	0.187 (0.40)
_cons	-10.19*** (-6.04)	-6.113*** (-6.80)	-9.576*** (-6.06)	-6.185*** (-7.12)	-9.857*** (-10.67)	-6.584*** (-7.03)	-9.588*** (-6.29)	-6.642*** (-7.10)
var(_cons [coid])	0.285 (0.16)	1.069 (0.60)	0.734 (0.48)	0.659 (0.39)	5.32e-31 (0.00)	1.689 (1.11)	0.404 (0.29)	1.631 (1.06)
N	5,630	5,670	5,637	5,677	6,731	6,776	6,739	6,786

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table B.4

Complementary log-log regression (random-effects) (columns 1-4: 1-year lagged dependent variable; columns 5-8: two-year lagged dependent variable)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Cert1	Cert1	Cert1	Cert1	Cert2	Cert2	Cert2	Cert2
Export ratio	1.602*** (4.46)	1.636*** (4.59)			0.966** (3.07)	1.006** (3.02)		
Export volume			0.125*** (3.63)	0.151*** (4.26)			0.0686* (2.38)	0.0853** (2.85)
Foreign invested	0.805** (2.70)	0.857** (2.88)	0.866** (3.00)	0.865** (3.00)	0.771** (2.90)	0.889** (2.94)	0.823** (2.93)	0.902** (3.00)
Assets	0.477*** (4.51)		0.375*** (3.42)		0.469*** (5.50)		0.409*** (4.07)	
Employees		0.000358** (2.70)		0.000223 (1.73)		0.000515*** (3.48)		0.000434** (2.88)
2006.year	0 (.)	0 (.)	0 (.)	0 (.)	0.156 (0.37)	0.223 (0.52)	0.173 (0.41)	0.226 (0.53)
2007.year	-0.0580 (-0.15)	-0.000760 (0.00)	-0.0584 (-0.15)	-0.0342 (-0.09)	-0.580 (-1.17)	-0.442 (-0.87)	-0.569 (-1.15)	-0.454 (-0.90)
2008.year	-0.481 (-1.11)	-0.416 (-0.97)	-0.464 (-1.08)	-0.419 (-0.99)	0.263 (0.66)	0.480 (1.11)	0.289 (0.72)	0.475 (1.12)
2009.year	0.116 (0.30)	0.246 (0.62)	0.141 (0.37)	0.193 (0.51)	-0.0735 (-0.17)	0.202 (0.43)	-0.0411 (-0.09)	0.185 (0.40)
_cons	-10.26*** (-5.71)	-6.171*** (-5.49)	-9.637*** (-6.10)	-6.323*** (-6.83)	-9.781*** (-10.82)	-6.560*** (-7.34)	-9.449*** (-6.35)	-6.641*** (-7.46)
lnsig2u	-1.088 (-0.20)	-0.360 (-0.13)	-0.268 (-0.15)	-0.637 (-0.22)	-8.238 (-0.54)	0.508 (0.60)	-1.014 (-0.26)	0.488 (0.56)
N	5,630	5,670	5,637	5,677	6,731	6,776	6,739	6,786

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

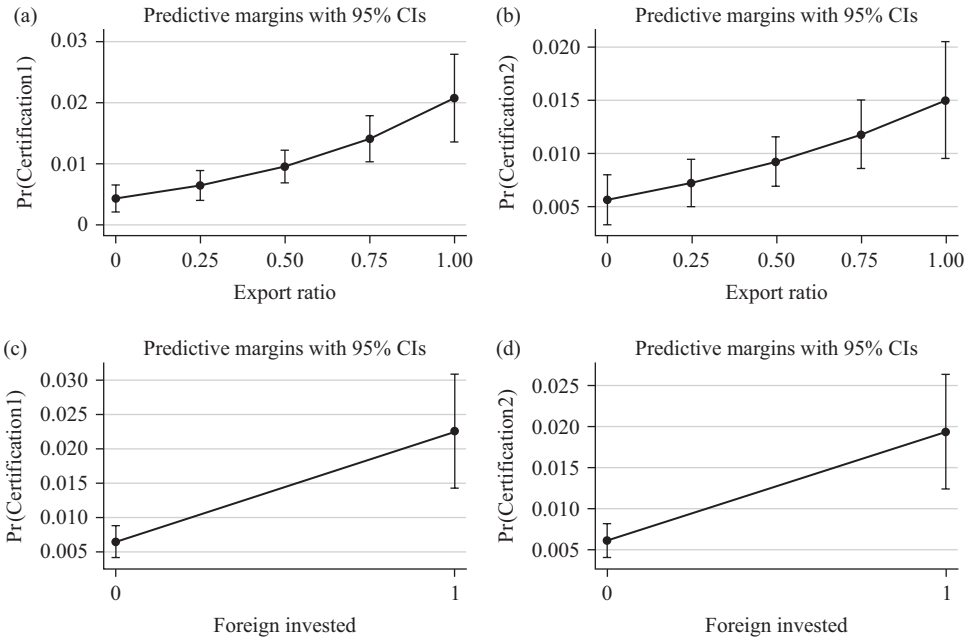


Figure B.1

Marginal effects of foreign market influences on the uptake of seafood certification in China.

Using the marginal effects, figure B.1 further demonstrates the influence of export and foreign investment on firms' adoption of eco-certification. According to the graph (a), holding other variables at their mean value, switching from the domestic market to the export market would increase the probability of certification from .004 to 0.02. This is a quite strong effect given the very small proportion of the positive outcome in our sample. Similarly, the graph (c) shows the clear differences between firms having foreign investors and those which do not.