Supporting Information to:

Estimating prices for "new" aquaculture species: a hedonic pricing approach

Sean Pascoe, Lukas Danner, Thejani Gunaratne, Tiana Pang, Peggy Schrobback, Tim Perrins and Polly Hilder

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Table S1. Summary of key data used in the analysis

		Average			Dummy variables				
Species and product form	Count	Price ($/kg)	Quantity (kg)	Length (cm)	Fillets	Gilled, gutted and headed	Frozen	Import	Farmed
Basa	276	$2.12	505190	32					
• Basa_Fillets_Fresh	93	$1.30	211352	32	1	0	0	1	1
• Basa_Fillets_Frozen	93	$1.42	1277167	32	1	0	1	1	1
• Basa_Whole_Frozen	90	$3.68	11115	32	0	0	1	1	1
Dory-John	147	$11.61	4711	40					
• DORY-JOHN_GH_Fresh	53	$9.91	251	40	0	1	0	0	0
• DORY-JOHN_WHO_Fresh	94	$12.57	7226	40	0	0	0	0	0
Flathead-Tiger	94	$7.95	57378	45					
• FLAT-TIGR_WHO_Fresh	94	$7.95	57378	45	0	0	0	0	0
Gemfish	187	$4.16	2846	75					
• GEMFISH_GH_Fresh	93	$3.75	3936	75	0	1	0	0	0
• GEMFISH_WHO_Fresh	94	$4.57	1767	75	0	0	0	0	0
Grenadier-Blue	137	$1.76	1322	80					
• GREND-BLU_GH_Fresh	85	$1.55	1963	80	0	1	0	0	0
• GREND-BLU_WHO_Fresh	52	$2.11	275	80	0	0	0	0	0
Hake	108	$2.80	447751	60					
• Hake_Fillets_Frozen	93	$2.45	516575	60	1	0	1	1	0
• Hake_Whole_Frozen	15	$4.96	21039	60	0	0	1	1	0
Hoki	140	$2.78	248871	80					
• Hoki_Fillets_Frozen	93	$1.62	374215	80	1	0	1	1	0
• Hoki_Whole_Fresh	40	$5.12	720	80	0	0	0	1	0
• Hoki_Whole_Frozen	7	$4.79	1587	80	0	0	1	1	0
Ling-Pink	188	$7.59	13786	100					
• LING-PINK_GH_Fresh	94	$7.08	22950	100	0	1	0	0	0
• LING-PINK_WHO_Fresh	94	$8.09	4621	100	0	0	0	0	0
Morwong-Jackass	94	$4.67	9235	35					
• MOR-JACK_WHO_Fresh	94	$4.67	9235	35	0	0	0	0	0
Nile Perch	74	$2.69	124603	55	1	0	1	1	0
• Nile Perch_Fillets_Frozen	74	$2.69	124603	55	1	0	1	1	0

Species and product form	Count	Average			Dummy variables				
		Price ($/kg)	Quantity (kg)	Length (cm)	Fillets	Gilled, gutted and headed	Frozen	Import	Farmed
Orange Roughy	85	$7.99	1778	40					
• ORANGROUG_GH_Fresh	22	$12.11	701	40	0	1	0	0	0
• ORANGROUG_WHO_Fresh	63	$6.55	2154	40	0	0	0	0	0
Salmon	96	$14.50	1343423	70					
• Salmon_Whole_Fresh	96	$14.50	1343423	70	0	0	0	0	1
Tilapia	259	$3.33	43452	23					
• Tilapia_Fillets_Fresh	58	$2.96	13296	23	1	0	0	1	1
• Tilapia_Fillets_Frozen	91	$3.54	15373	23	1	0	1	1	1
• Tilapia_Whole_Fresh	17	$6.94	3399	23	0	0	0	1	1
• Tilapia_Whole_Frozen	93	$2.70	97057	23	0	0	1	1	1
Trevalla-Blueye	187	$13.34	4853	60					
• TR-BLUEYE_GH_Fresh	93	$13.05	7439	60	0	1	0	0	0
• TR-BLUEYE_WHO_Fresh	94	$13.63	2295	60	0	0	0	0	0
Trevally-Silver	94	$6.30	10815	40					
• TREV-SILV_WHO_Fresh	94	$6.30	10815	40	0	0	0	0	0
Warehou-Blue	107	$3.89	581	50					
• WAHOU-BLU_GH_Fresh	58	$4.72	893	50	0	1	0	0	0
• WAHOU-BLU_WHO_Fresh	49	$2.91	213	50	0	0	0	0	0
Warehou-Silver	104	$1.83	1857	51					
• WAHOU-SIL_GH_Fresh	10	$1.96	341	51	0	1	0	0	0
• WAHOU-SIL_WHO_Fresh	94	$1.82	2018	51	0	0	0	0	0
Whiting-Eastern-School	94	$4.03	35160	18					
• WHI-E-SCH_WHO_Fresh	94	$4.03	35160	18	0	0	0	0	0
Total	2471	$5.59	157009	53					

Table S2. "Eating" characteristics used in the analysis

	Characteristics						
Source/Species	Thickness	Flesh	Texture	Flavour	Oiliness	Moisture	Source
Sydney Fish Market							
• Blue Grenadier	Medium	Off-white	Soft	Sweet	Low	Moist	1
• Blue Warehou	Thick	Off-white	Medium	Medium	Low	Dry	1
• Blue-eye Trevalla	Thick	Pale pink	Firm	Mild	Medium	Moist	1
• Eastern School Whiting	Thin	Off-white	Soft	Mild	Low	Moist	1,5
• Flathead	Thick	White	Firm	Sweet	Low	Medium	1
• Gemfish	Medium	Pale pink	Medium	Medium	High	Medium	1
• Jackass Morwong	Medium	Pale pink	Firm	Medium	Low	Moist	2,3
• John Dory	Thin	White	Medium	Sweet	Low	Moist	1
• Orange Roughy	Medium	White	Medium	Mild	Low	Moist	3,4
• Pink Ling	Thin	White	Firm	Medium	Low	Moist	1
• Silver trevally	Thick	Pink	Medium	Mild	High	Moist	2,3
• Silver Warehou	Thick	Off-white	Firm	Medium	Low	Dry	1
Imports							
• Basa (Thailand, Viet-Nam)	Thin	Off-white	Soft	Sweet	Medium	Moist	6
• Hake (South Africa, Namibia)	Thick	Pale pink	Soft	Mild	Low	Moist	6
• Hoki (NZ Hake)	Medium	Off-white	Soft	Mild	Low	Moist	1
• Nile Perch (Africa)	Thick	Pale pink	Medium	Mild	Medium	Moist	7
• Tilapia (Asia)	Medium	Pale pink	Medium	Sweet	Low	Moist	6
Domestic Aquaculture							
• Salmon	Thick	Pink	Medium	Medium	High	Moist	1

1) www.fishfiles.com.au; 2) https://www.sydneyfishmarket.com.au/Home/Seafood/Species-Information/List; 3) http://www.sea-ex.com/fishphotos/jackass.htm; 4) https://www.costiscatch.com.au/product/sea-perch-orange-roughy-fillet/; 5) https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0009/375885/Eastern-School-Whiting.pdf; 6) https://www.chefs-resources.com/seafood/finfish/; 7) http://www.cookingfishmonger.com/

Table S3. Attributes evaluated in the descriptive sensory analysis including their definitions and how they were assessed. All attributes were assessed using a visual analogue scale (0-100) with anchor low at 5 and high at 95.

	Definition	Method of assessment
ODOUR		
OD_Initial odour intensity	The intensity of aroma perceived initially	Sniffing as soon as the foil was unwrapped
OD_Overall odour intensity	The intensity of aromas as a whole	Sniffing the fish by taking the saucer closer to nose
OD_Ammonia	The aroma associated with sweat / cleaning agents	Sniffing the fish by taking the saucer closer to nose
OD_Fishy	The aroma associated with raw fish	Sniffing the fish by taking the saucer closer to nose
OD_Muddy / Earthy	The aroma associated with mud / wet soil	Sniffing the fish by taking the saucer closer to nose
OD_Oceanic	The aroma associated with seawater with seaweed	Sniffing the fish by taking the saucer closer to nose
FLAVOUR		
FL_Overall flavour intensity	The intensity of flavours as a whole	Chewing the sample as you would normally eat
FL_Buttery	The flavour associated with fattiness	Chewing the sample as you would normally eat
FL_Meaty	The flavour associated with meat products	Chewing the sample as you would normally eat
FL_Metallic	The intensity of metallic / bloody flavour	Chewing the sample as you would normally eat
FL_Muddy / Earthy	The flavour associated with mud / wet soil	Chewing the sample as you would normally eat
FL_Oceanic	The flavour associated with seawater with seaweed	Chewing the sample as you would normally eat
TASTE		
T_Salty	Intensity of salty taste	Holding the breath for 2-3 seconds after chewing
T_Sweet	Intensity of sweet taste	Holding the breath for 2-3 seconds after chewing
T_Umami	Intensity of savouriness	Holding the breath for 2-3 seconds after chewing
TEXTURE		
TX_Chewiness	The duration needed for the fish to breakdown before it can be swallowed	Chewing the fish and swallowing
FX_Fibrous	The amount of fibres present when chewing	Chewing the fish for 2-3 seconds
TX_Firmness	How firm the sample is	Pressing the fish using a fork
TX_Flakiness	The degree to which the fish breaks into flakes	Trying to break the fish apart using a fork
TX_Juiciness	The amount of liquid released after the first bite	Chewing the fish after the first bite
TX_Tenderness	Force required to bite the fish	Chewing the fish
AFTERTASTE / AFTERFEEL		
AT_Bitter	The residual bitter taste that remains after the fish has been swallowed	20 seconds after swallowing the fish
AT_Dry mouthfeel	The feeling of dryness after the fish has been swallowed	20 seconds after swallowing the fish
AT_Metallic	The residual metallic / bloody flavour that remains after the fish has been swallowed	20 seconds after swallowing the fish
AT_Oceanic	The residual flavour associated with seawater with seaweed that remains after the fish has been swallowed	20 seconds after swallowing the fish
AT_Oily mouthcoating	The residual fattiness that remains after the fish has been swallowed	20 seconds after swallowing the fish
AT_Persisting flavour	The residual flavour intensity that remains after the fish has been swallowed	20 seconds after swallowing the fish
AT_Umami	The residual savouriness that remains after the fish has been swallowed	20 seconds after swallowing the fish

Table S4. ANOVA and results summary of the sensory descriptive analysis. Values are mean intensity ratings rated on a visual analogue scale (0-100). Superscript indicated no significant differences between samples based on LSD-Fisher post-hoc comparison. That is, species with the same superscript are not significantly different with respect to the characteristic considered. Significantly different samples do not share the same lower-case letter.

	T.anak	Barramundi (WC)	Barramundi (farmed)	Basa	Flathead	Hoki	Kingfish (WC)	Kingfish (farmed)	Murray Cod	Pink Ling	F	Prob
Odour												
OD_Initial odour intensity	43.2 de	38.1 e	52.0 cd	68.9 ab	73.7 a	50.4 cd	58.4 bc	54.5 cd	45.9 de	51.0 cd	7.29	<0.001
OD_Overall odour intensity	42.8 cd	38.8 d	53.9 b	68.4 a	74.2 a	52.4 bc	58.0 b	51.4 bc	43.0 cd	48.0 bcd	10.13	<0.001
OD_Ammonia	18.0 b	21.4 b	24.8 b	61.6 a	53.5 a	21.2 b	18.9 b	26.1 b	29.6 b	21.1 b	11.91	<0.001
OD_Fishy	37.3 bcd	30.0 d	42.2 bc	45.7 ab	54.8 a	42.9 bc	54.3 a	44.6 abc	34.7 cd	43.1 bc	4.57	<0.001
OD_Muddy/Earthy	33.2 bc	29.6 bc	46.0 a	40.3 ab	50.6 a	26.3 c	31.6 bc	32.6 bc	33.9 bc	32.1 bc	3.63	0.001
OD_Oceanic	42.2 abc	31.8 c	38.4 bc	49.9 a	50.2 a	44.8 ab	52.2 a	46.0 ab	37.7 bc	42.9 abc	2.53	0.013
Flavour												
FL_Overall flavour intensity	50.2 cd	39.1 e	56.3 bc	53.9 bc	65.3 a	53.5 bcd	65.1 a	59.7 ab	45.0 de	40.6 e	9.27	<0.001
FL_Buttery	24.4 bcd	33.0 b	45.8 a	48.5 a	14.5 d	29.9 b	27.4 bc	17.3 cd	28.6 bc	23.0 bcd	6.55	<0.001
FL_Meaty	44.5 abc	31.7 d	43.4 abc	21.9 e	44.3 abc	39.8 bcd	52.0 a	48.3 ab	32.5 d	37.1 cd	7.42	<0.001
FL_Metallic	19.1 bc	18.4 c	17.1 c	15.5 c	29.4 a	17.3 c	22.3 abc	26.8 ab	15.2 c	20.2 bc	2.56	0.012
FL_Muddy/Earthy	25.8 bcd	20.1 d	44.1 a	35.6 ab	42.9 a	23.7 bcd	22.1 cd	32.1 abcd	35.4 abc	25.1 bcd	3.31	0.002
FL_Oceanic	36.9 b	35.5 b	39.8 ab	43.7 ab	48.5 a	39.7 ab	46.6 a	43.1 ab	42.0 ab	36.2 b	1.73	0.095
Taste												
T_Salty	35.3 cde	31.4 e	40.4 bcde	53.8 a	43.8 abcd	45.7 abc	45.8 abc	46.9 ab	33.7 de	30.2 e	3.82	<0.001
T_Sweet	33.8 bcd	38.4 bcd	44.8 b	57.0 a	27.6 d	44.9 b	36.2 bcd	34.1 bcd	40.0 bc	31.1 cd	3.95	<0.001
T_Umami	38.5 cde	35.6 cde	43.2 abcd	50.8 a	41.1 bcd	47.4 ab	44.2 abc	44.0 abc	34.8 de	32.3 e	3.61	0.001
Texture												
TX_Chewiness	44.5 cd	28.5 ef	31.2 ef	21.7 f	58.4 ab	49.7 bc	66.8 a	65.5 a	38.2 de	53.8 bc	17.43	<0.001
TX_Fibrous	36.1 c	32.3 c	37.6 bc	18.6 d	51.8 a	48.8 ab	58.4 a	53.3 a	31.1 cd	51.2 a	8.03	<0.001
TX_Firmness	64.9 b	29.0 e	29.6 e	22.2 e	69.2 ab	43.8 cd	72.9 a	63.4 b	38.3 d	50.7 c	46.01	<0.001
TX_Flakiness	48.9 cd	60.7 ab	55.1 bc	53.4 bc	50.3 bcd	66.3 a	52.6 bc	57.5 abc	59.5 abc	39.8 d	3.36	0.002
TX_Juiciness	44.9 cd	52.7 bc	58.2 ab	64.9 a	30.6 e	44.0 cd	38.7 de	40.2 de	57.7 ab	44.4 cd	7.34	<0.001
TX_Tenderness	45.1 cd	67.6 b	69.1 b	79.6 a	29.0 f	53.1 c	29.3 f	34.5 ef	63.1 b	39.3 de	29.01	<0.001

	T.anak		Barramundi (WC)		Barramundi (farmed)		Basa		Flathead		Hoki		Kingfish (WC)		Kingfish (farmed)		Murray Cod		Pink Ling		F	Prob
Aftertaste and feel																						
AT_Bitter	23.3	b	18.7	b	24.7	b	16.7	b	35.6	a	17.7	b	21.1	b	25.9	ab	18.9	b	23.9	b	2.57	0.012
AT_Dry mouthfeel	26.7	ab	23.7	ab	21.9	b	21.1	b	34.0	a	26.7	ab	25.3	ab	29.8	ab	23.4	ab	30.2	ab	1.10	0.370
AT_Metallic	21.2	bc	18.2	c	19.2	bc	17.8	c	32.0	a	20.4	bc	24.6	abc	27.9	ab	19.3	bc	22.8	bc	2.03	0.046
AT_Oceanic	24.0	b	26.6	b	30.4	ab	28.5	ab	36.2	a	29.3	ab	36.7	a	29.8	ab	29.1	ab	25.8	b	1.85	0.072
AT_Oily mouthcoating	19.2	bc	27.1	ab	33.5	a	25.1	abc	24.8	bc	20.5	bc	25.2	abc	18.5	c	25.5	abc	21.1	bc	2.15	0.034
AT_Persisting flavour	37.0	de	33.3	e	49.9	ab	35.9	e	51.5	a	39.1	cde	49.3	abc	47.0	abcd	39.8	bcde	33.6	e	3.42	0.001
AT_Umami	29.6	abc	28.2	abc	34.7	a	30.3	abc	30.9	abc	32.0	ab	32.0	ab	27.9	abc	26.0	bc	22.9	c	1.23	0.286

Table S5. Generalised variance inflation factors

		Log-linear		Linear		Box-Cox		Semi-log	
	Df	GVIF	GVIF^ (1/(2*Df))	GVIF	GVIF^ (1/(2*Df))	GVIF	GVIF^ (1/(2*Df))	GVIF	GVIF^ (1/(2*Df))
Continuous variables									
• Quantity	1	6.43	2.54	34.49	5.87	34.45	5.87	34.42	5.87
• Quantity*Import	1	54.06	7.35	21.03	4.59	21.00	4.58	20.98	4.58
• Length	1	8.92	2.99	11.02	3.32	11.02	3.32	11.02	3.32
Dummy variables									
• Import	1	40.22	6.34	13.58	3.69	13.58	3.69	13.58	3.69
• Fillets	1	3.72	1.93	3.39	1.84	3.39	1.84	3.39	1.84
• Gilled and headed	1	1.51	1.23	1.49	1.22	1.49	1.22	1.49	1.22
• Frozen	1	3.91	1.98	3.87	1.97	3.87	1.97	3.87	1.97
• Farmed	1	25.55	5.05	25.58	5.06	25.58	5.06	25.57	5.06
Factors									
• Thickness	2	231.94	3.90	383.90	4.43	383.50	4.43	383.20	4.42
• Flesh colour	2	200.36	3.76	228.70	3.89	228.59	3.89	228.50	3.89
• Texture	2	67.22	2.86	71.52	2.91	71.49	2.91	71.47	2.91
• Flavour	2	138.17	3.43	295.80	4.15	295.58	4.15	295.43	4.15
• Oiliness	2	207.11	3.79	270.92	4.06	270.68	4.06	270.51	4.06
• Moisture	2	29.58	2.33	83.15	3.02	83.08	3.02	83.03	3.02
Time									
• Year_2012	1	2.06	1.43	1.98	1.41	1.99	1.41	1.99	1.41
• Year_2013	1	2.10	1.45	2.00	1.41	2.00	1.42	2.01	1.42
• Year_2014	1	2.07	1.44	1.99	1.41	1.99	1.41	1.99	1.41
• Year_2015	1	2.05	1.43	1.97	1.40	1.98	1.41	1.98	1.41
• Year_2016	1	2.05	1.43	1.97	1.40	1.97	1.41	1.98	1.41
• Year_2017	1	2.06	1.43	1.97	1.40	1.98	1.41	1.98	1.41
• Year_2018	1	2.04	1.43	1.97	1.40	1.97	1.40	1.97	1.40
• Month_2	1	1.83	1.35	1.83	1.35	1.83	1.35	1.83	1.35
• Month_3	1	1.86	1.36	1.84	1.36	1.84	1.36	1.84	1.36
• Month_4	1	1.86	1.36	1.84	1.36	1.84	1.36	1.84	1.36
• Month_5	1	1.86	1.36	1.84	1.36	1.84	1.36	1.84	1.36
• Month_6	1	1.91	1.38	1.86	1.36	1.86	1.36	1.86	1.36
• Month_7	1	1.90	1.38	1.85	1.36	1.86	1.36	1.86	1.36
• Month_8	1	1.88	1.37	1.85	1.36	1.85	1.36	1.85	1.36
• Month_9	1	1.86	1.36	1.84	1.36	1.84	1.36	1.84	1.36
• Month_10	1	1.83	1.35	1.83	1.35	1.83	1.35	1.83	1.35
• Month_11	1	1.75	1.32	1.76	1.33	1.76	1.33	1.76	1.33
• Month_12	1	1.76	1.33	1.76	1.33	1.76	1.33	1.76	1.33

For models with categorial variables, standard variance inflation factors are not applicable. Generalised variance inflation factors assess correlations across each of the factors separately, resulting in high values of GVIF, particularly when many factors are compared. To standardise these, the values are transformed by $GVIF^{(1/(2*Df))}$, which has similar properties to the standard VIF measure. These measures can be interpreted by the usual rule of thumb values of $<5 \Rightarrow$ no multicollinearity; $5 < GVIF^{(1/(2*df))} < 10 \Rightarrow$ some multicollinearity; and $>10 \Rightarrow$ serious multicollinearity.

Table S6. Estimated coefficients and model diagnostics, log-linear model

	Random effects panel data model				Clustered and robust standard errors			
	Estimate	Std. Error	z-value	Sig	Std. Error	t-stat	DF	Sig
(Intercept)	1.975	0.159	12.447	***	0.124	15.975	87.60	***
log(as.numeric(Quantity))	-0.060	0.006	-9.933	***	0.007	-8.441	78.50	***
log(as.numeric(Length))	0.041	0.088	3.373	***	0.028	1.461	90.60	
log(as.numeric(Quantity)):Import	-0.091	0.009	-10.161		0.009	-10.538	85.90	***
Import	0.295	0.042	0.975	**	0.078	3.786	86.20	***
Fillets	-0.337	0.030	-11.370	***	0.024	-14.128	86.40	***
Gilled_headed	0.055	0.020	2.763		0.021	2.684	90.00	**
Frozen	0.142	0.030	4.799	***	0.038	3.778	83.00	***
Farmed	-0.108	0.076	-1.420		0.049	-2.221	88.80	*
as.factor(Thickness)Medium	-2.160	0.090	-24.072	***	0.085	-25.550	82.10	***
as.factor(Thickness)Thick	-0.065	0.041	-1.578	***	0.032	-2.028	89.90	*
as.factor(Flesh)Pink	0.722	0.043	16.904	***	0.029	24.798	88.00	***
as.factor(Flesh)White	-0.554	0.099	-5.589	***	0.081	-6.835	84.60	***
as.factor(Texture)Medium	0.259	0.040	6.467	*	0.035	7.295	90.00	***
as.factor(Texture)Firm	0.855	0.068	12.499	***	0.056	15.151	88.30	***
as.factor(Flavour)Medium	0.133	0.065	2.060	***	0.040	3.290	89.50	**
as.factor(Flavour)Sweet	0.914	0.084	10.896	***	0.063	14.432	86.30	***
as.factor(Oilness)Medium	-0.714	0.054	-13.318	***	0.046	-15.415	85.90	***
as.factor(Oilness)High	0.478	0.072	6.678	***	0.056	8.519	90.00	***
as.factor(Moisture)Medium	-0.478	0.063	-7.549		0.050	-9.642	89.80	***
as.factor(Moisture)Dry	-1.109	0.068	-16.354		0.047	-23.481	89.40	***
Year_2012	0.026	0.028	0.938		0.019	1.380	19.10	
Year_2013	0.039	0.028	1.379	+	0.022	1.741	19.00	+
Year_2014	0.025	0.028	0.891		0.018	1.373	19.20	
Year_2015	0.049	0.028	1.722		0.019	2.602	19.20	*
Year_2016	-0.024	0.028	-0.852		0.027	-0.899	18.90	
Year_2017	-0.019	0.028	-0.681		0.021	-0.925	19.10	
Year_2018	0.038	0.028	1.330		0.018	2.032	19.10	+
Month_2	0.009	0.032	0.288	*	0.026	0.363	13.90	
Month_3	-0.008	0.032	-0.246	+	0.025	-0.316	13.90	
Month_4	-0.063	0.032	-1.970		0.024	-2.611	13.90	*
Month_5	-0.054	0.032	-1.672		0.020	-2.718	13.90	*
Month_6	-0.025	0.032	-0.774	.	0.031	-0.788	14.00	
Month_7	-0.005	0.032	-0.143		0.021	-0.216	13.90	
Month_8	0.054	0.032	1.700		0.026	2.117	13.90	.
Month_9	0.002	0.032	0.051	*	0.023	0.072	13.90	
Month_10	0.027	0.033	0.827	***	0.021	1.260	13.80	
Month_11	-0.077	0.034	-2.306	***	0.036	-2.153	12.90	+
Month_12	-0.112	0.033	-3.341		0.020	-5.603	12.90	***
RSS	259.780							
Scaled RSS	259.780							
χ^2 (DF = 38)	12067.2			***				
$\bar{R}^2$	0.829							
Hausman χ^2 (DF=20)	6.229							
AIC	-5488.1							
BIC	-5261.4							

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '+' 0.1 ' ' 1.

Table S7. Estimated coefficients and model diagnostics, linear model

	Random effects panel data model				Clustered and robust standard errors			
	Estimate	Std. Error	z-value	Sig	Std. Error	t-stat	DF	Sig
(Intercept)	5.109	0.334	15.296	***	0.156	32.674	26.100	***
as.numeric(Quantity)	0.000	0.000	-9.898	***	0.000	-5.132	24.800	***
as.numeric(Length)	-0.011	0.005	-2.152	*	0.006	-1.805	83.500	.
as.numeric(Quantity):Import	0.000	0.000	10.129	***	0.000	5.523	29.200	***
Import	-4.014	0.268	-14.950	***	0.307	-13.087	81.500	***
Fillets	-2.320	0.149	-15.544	***	0.126	-18.347	84.400	***
Gilled_headed	0.066	0.105	0.628		0.098	0.673	90.400	
Frozen	-1.216	0.155	-7.852	***	0.184	-6.619	79.300	***
Farmed	-2.082	0.402	-5.182	***	0.361	-5.769	90.300	***
as.factor(Thickness)Medium	-11.360	0.451	-25.171	***	0.657	-17.297	71.800	***
as.factor(Thickness)Thick	3.604	0.325	11.072	***	0.515	6.994	50.900	***
as.factor(Flesh)Pink	2.225	0.248	8.963	***	0.187	11.890	89.500	***
as.factor(Flesh)White	-6.599	0.577	-11.427	***	0.758	-8.700	75.100	***
as.factor(Texture)Medium	3.131	0.209	14.992	***	0.202	15.478	89.800	***
as.factor(Texture)Firm	6.272	0.365	17.190	***	0.359	17.484	89.100	***
as.factor(Flavour)Medium	4.393	0.531	8.272	***	0.785	5.594	53.500	***
as.factor(Flavour)Sweet	9.606	0.577	16.644	***	0.854	11.251	58.800	***
as.factor(Oilness)Medium	-3.944	0.293	-13.463	***	0.399	-9.894	67.600	***
as.factor(Oilness)High	6.528	0.496	13.169	***	0.714	9.145	61.500	***
as.factor(Moisture)Medium	-8.647	0.521	-16.612	***	0.773	-11.189	57.100	***
as.factor(Moisture)Dry	-13.139	0.596	-22.043	***	0.928	-14.163	50.500	***
Year_2012	-0.283	0.237	-1.193		0.148	-1.911	19.600	.
Year_2013	-0.089	0.236	-0.375		0.156	-0.567	19.600	
Year_2014	-0.064	0.237	-0.268		0.130	-0.490	19.700	
Year_2015	-0.089	0.237	-0.373		0.131	-0.674	19.600	
Year_2016	-0.099	0.237	-0.418		0.150	-0.662	19.500	
Year_2017	-0.220	0.236	-0.931		0.150	-1.468	19.600	
Year_2018	0.146	0.237	0.616		0.138	1.055	19.600	
Month_2	0.015	0.274	0.054		0.128	0.117	13.900	
Month_3	0.157	0.274	0.573		0.147	1.065	13.900	
Month_4	-0.130	0.274	-0.475		0.108	-1.202	13.900	
Month_5	-0.148	0.274	-0.540		0.123	-1.206	13.900	
Month_6	0.015	0.272	0.054		0.128	0.114	13.900	
Month_7	0.106	0.273	0.390		0.100	1.065	13.900	
Month_8	0.424	0.273	1.553		0.143	2.952	13.900	*
Month_9	0.203	0.274	0.742		0.128	1.581	13.900	
Month_10	0.391	0.275	1.421		0.140	2.798	13.900	*
Month_11	-0.260	0.284	-0.913		0.185	-1.401	13.000	
Month_12	-0.281	0.284	-0.992		0.141	-2.003	13.000	.
RSS	7193.600							
Scaled RSS	414.967							
χ^2 (DF = 38)	12315.8			***				
$\bar{R}^2$	0.833							
Hausman χ^2 (DF=20)	20.754							
AIC	2713.12							
BIC	2938.765							

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '+' 0.1 ' ' 1.

Figure S1. Likelihood plot of lambda for use in the Box-Cox transformation

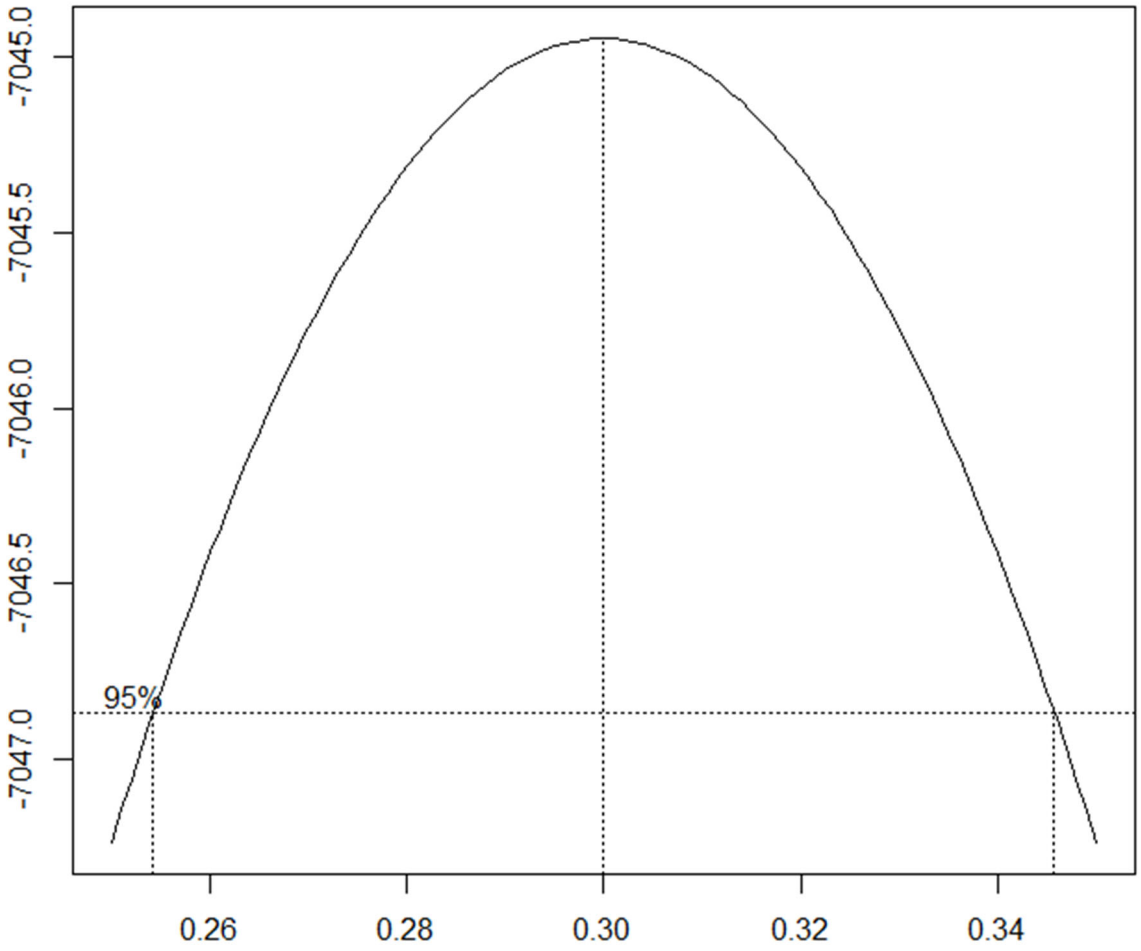

Table S8. Estimated coefficients and model diagnostics, Box-Cox model

	Random effects panel data model				Clustered and robust standard errors			
	Estimate	Std. Error	z-value	Sig	Std. Error	t-stat	DF	Sig
(Intercept)	1.977	0.102	19.397	***	0.046	42.616	27.0	***
as.numeric(Quantity)	0.000	0.000	-7.866	***	0.000	-4.982	24.7	***
as.numeric(Length)	-0.004	0.002	-2.694	**	0.002	-2.715	83.5	**
as.numeric(Quantity):Import	0.000	0.000	6.904	***	0.000	4.630	29.2	***
Import	-0.860	0.083	-10.321	***	0.093	-9.224	81.5	***
Fillets	-0.908	0.046	-19.594	***	0.042	-21.528	84.4	***
Gilled_headed	0.054	0.033	1.654	+	0.029	1.837	90.4	+
Frozen	-0.218	0.048	-4.541	***	0.065	-3.347	79.3	**
Farmed	-0.545	0.125	-4.371	***	0.102	-5.350	90.3	***
as.factor(Thickness)Medium	-3.255	0.140	-23.233	***	0.166	-19.573	71.8	***
as.factor(Thickness)Thick	0.703	0.101	6.957	***	0.133	5.291	50.8	***
as.factor(Flesh)Pink	0.719	0.077	9.326	***	0.056	12.778	89.5	***
as.factor(Flesh)White	-1.499	0.179	-8.362	***	0.194	-7.724	75.0	***
as.factor(Texture)Medium	0.763	0.065	11.761	***	0.056	13.517	89.8	***
as.factor(Texture)Firm	1.742	0.113	15.379	***	0.100	17.498	89.1	***
as.factor(Flavour)Medium	1.040	0.165	6.306	***	0.205	5.071	53.4	***
as.factor(Flavour)Sweet	2.281	0.179	12.734	***	0.220	10.379	58.7	***
as.factor(Oilness)Medium	-1.207	0.091	-13.270	***	0.104	-11.572	67.6	***
as.factor(Oilness)High	1.598	0.154	10.384	***	0.193	8.273	61.5	***
as.factor(Moisture)Medium	-1.961	0.162	-12.138	***	0.202	-9.701	57.0	***
as.factor(Moisture)Dry	-3.061	0.185	-16.542	***	0.236	-12.976	50.4	***
Year_2012	-0.011	0.071	-0.157		0.038	-0.297	19.6	
Year_2013	0.038	0.071	0.532		0.043	0.879	19.5	
Year_2014	0.029	0.071	0.407		0.032	0.897	19.6	
Year_2015	0.049	0.071	0.683		0.035	1.414	19.6	
Year_2016	-0.028	0.071	-0.391		0.044	-0.631	19.5	
Year_2017	-0.048	0.071	-0.670		0.040	-1.187	19.6	
Year_2018	0.058	0.071	0.808		0.037	1.571	19.6	
Month_2	0.022	0.083	0.264		0.042	0.515	13.9	
Month_3	0.038	0.082	0.462		0.041	0.924	13.9	
Month_4	-0.056	0.082	-0.677		0.036	-1.553	13.9	
Month_5	-0.054	0.082	-0.659		0.035	-1.534	13.9	
Month_6	0.001	0.082	0.013		0.048	0.022	13.9	
Month_7	0.024	0.082	0.296		0.035	0.695	13.9	
Month_8	0.120	0.082	1.464		0.046	2.611	13.9	*
Month_9	0.044	0.082	0.538		0.040	1.104	13.9	
Month_10	0.103	0.083	1.240		0.042	2.475	13.9	*
Month_11	-0.079	0.086	-0.924		0.059	-1.351	13.0	
Month_12	-0.114	0.086	-1.328		0.041	-2.756	13.0	*
RSS	693.73							
Scaled RSS	294.789							
χ^2 (DF = 38)	10774.7			***				
$\bar{R}^2$	0.814							
Hausman χ^2 (DF=20)	14.534							
AIC	-2914.19							
BIC	-2688.55							

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '+' 0.1 ' ' 1.

Table S9. Estimated coefficients and model diagnostics, Semi-log model

	Random effects panel data model				Clustered and robust standard errors			
	Estimate	Std. Error	z-value	Sig	Std. Error	t-stat	DF	Sig
(Intercept)	1.537	0.068	22.633	***	0.030	50.584	27.8	***
as.numeric(Quantity)	0.000	0.000	-6.545	***	0.000	-4.863	24.6	***
as.numeric(Length)	-0.003	0.001	-3.138	**	0.001	-3.582	83.5	***
as.numeric(Quantity):Import	0.000	0.000	5.067	***	0.000	3.964	29.1	***
Import	-0.439	0.056	-7.801	***	0.061	-7.203	81.5	***
Fillets	-0.645	0.031	-20.632	***	0.029	-22.500	84.4	***
Gilled_headed	0.040	0.022	1.817	+	0.020	2.011	90.4	*
Frozen	-0.078	0.032	-2.414	*	0.045	-1.744	79.3	+
Farmed	-0.344	0.084	-4.092	***	0.067	-5.153	90.3	***
as.factor(Thickness)Medium	-2.008	0.094	-21.250	***	0.100	-20.102	71.8	***
as.factor(Thickness)Thick	0.336	0.068	4.933	***	0.078	4.325	50.8	***
as.factor(Flesh)Pink	0.483	0.052	9.282	***	0.039	12.377	89.5	***
as.factor(Flesh)White	-0.813	0.121	-6.721	***	0.117	-6.922	75.0	***
as.factor(Texture)Medium	0.426	0.044	9.728	***	0.037	11.447	89.8	***
as.factor(Texture)Firm	1.053	0.076	13.776	***	0.066	15.998	89.1	***
as.factor(Flavour)Medium	0.592	0.111	5.321	***	0.121	4.893	53.4	***
as.factor(Flavour)Sweet	1.270	0.121	10.509	***	0.130	9.752	58.7	***
as.factor(Oilness)Medium	-0.763	0.061	-12.446	***	0.063	-12.057	67.6	***
as.factor(Oilness)High	0.914	0.104	8.803	***	0.117	7.779	61.4	***
as.factor(Moisture)Medium	-1.070	0.109	-9.815	***	0.121	-8.873	57.0	***
as.factor(Moisture)Dry	-1.707	0.125	-13.678	***	0.138	-12.397	50.4	***
Year_2012	0.007	0.047	0.142		0.023	0.288	19.6	
Year_2013	0.033	0.047	0.695		0.027	1.208	19.5	
Year_2014	0.025	0.047	0.539		0.020	1.278	19.6	
Year_2015	0.048	0.047	1.017		0.021	2.253	19.6	*
Year_2016	-0.024	0.047	-0.509		0.029	-0.822	19.5	
Year_2017	-0.029	0.047	-0.615		0.025	-1.157	19.5	
Year_2018	0.039	0.047	0.822		0.023	1.704	19.5	
Month_2	0.019	0.055	0.347		0.029	0.664	13.9	
Month_3	0.022	0.054	0.409		0.027	0.829	13.9	
Month_4	-0.038	0.054	-0.697		0.025	-1.517	13.9	
Month_5	-0.036	0.054	-0.655		0.022	-1.592	13.9	
Month_6	0.002	0.054	0.037		0.034	0.058	13.9	
Month_7	0.015	0.054	0.268		0.025	0.591	13.9	
Month_8	0.076	0.054	1.411		0.031	2.468	13.9	*
Month_9	0.023	0.054	0.430		0.027	0.855	13.9	
Month_10	0.059	0.055	1.079		0.027	2.188	13.9	*
Month_11	-0.050	0.057	-0.885		0.039	-1.277	13.0	
Month_12	-0.080	0.056	-1.419		0.027	-2.995	13.0	*
RSS	315.71							
Scaled RSS	315.71							
χ^2 (DF = 38)	9405.81			***				
$\bar{R}^2$	0.792							
Hausman χ^2 (DF=20)	10.628							
AIC	-4808							
BIC	-4583							

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '+' 0.1 ' ' 1.

Table S10. Box-Cox test for functional form

Model	Scaled RSS	Box-Cox χ^2	Critical value (DF=20)	Probability
Log-linear	259.78	-	10.85	-
Linear	414.97	244.70	10.85	6.2E-41
Box-Cox	294.79	66.05	10.85	2.9E-07
Semi-log	315.71	101.87	10.85	2.4E-13

Scaled RSS are derived from running the model with a modified dependent variable, normalised by the geometric mean of the dependent variable. i.e.,

$$\log(P/\overline{P}) = f(\log(x));\ (P/\overline{P}) = f(x);\left(\frac{P^{\gamma}-1}{\lambda}\Big/\frac{\overline{P}^{\gamma}-1}{\lambda}\right) = f(x);\ \log(P/\overline{P}) = f(x)$$

The test statistic is derived from $Box-Cox\ =\ N/2*log\left(RSS_{largest}/RSS_{smallest}\right) \approx \chi^2$