Appendix (For Online Publication)

A. Data Processing

A.1. Data Sources

A.1.1. Primary Supplier-Category Allowance Data The retailer maintains records of the allowance payments made by all its suppliers to the two supermarket chains included in our analysis. Each observation corresponds to a payment made by a supplier in a given product category of a given supermarket chain and includes the specific day when the payment was made. The panel includes payments made between July 2010 and August 2012. Trade allowances are grouped in this data set into the following five groups: 1) Slotting, placement and other fees; 2) Logistics fees; 3) New store opening fees; 4) Unsaleables fees and 5) Allowances negotiated in spot contracts.

A.1.2. Scandata This dataset contains scandata including retail prices, wholesale costs and quantities at the SKU-store level for the two supermarket chains included in our analysis. The panel covers the period from week 32 of 2010 to week 32 of 2012. Each SKU is identified by its barcode (EAN-13) and also by a unique identifier used by the retailer. There are nearly 150,000 SKUs in more than 200 supermarket stores in the data.

A.1.3. Product Master Record For each SKU identified both by its barcode (EAN-13) and the retailer internal unique identifier this dataset includes the category and section to which the SKU belongs to and the supplier that supplies the SKU. In addition, it includes the date when the SKU was added to the system for the first time, the SKU's brand name and whether it is a private label or not.

A.2. Data Preparation

We integrated the primary allowance data and the scandata using the supplier-SKU mapping provided by the product master record. Before merging the two datasets we aggregated data at the semi-annual level and removed some mismeasured values (e.g., negative prices and quantities) and removed outliers. We further removed some minor categories including seasonal products such as christmas decoration.

B. Further Details on the Data

Product Departments: The Department-level (Allowance) Data (dataset **II** in Table 3) include the following eight departments: Frozen Foods, Groceries, Non Food, Non Perishables, Perishables, Pharmacy, Textiles and All Departments.

Product Categories: Our analysis based on the Primary Supplier-Category (Allowance) Data and the Scandata (datasets I and III in Table 3, respectively) include the 175 product categories listed in Table B.1.

The retailer determines category definitions on the basis of proximity on supermarket shelves. In our analysis, we excluded 13 out of the initial 188 categories which were either not closely related to the retailer's main business (e.g., "restaurant", "prepared meals"), were seasonal in nature (e.g., "Christmas decoration"),r were poorly defined (e.g., "gift cases") or were economically irrelevant (e.g., "seeds"). The 10 excluded categories are: *Christmas Decoration*, *Own Pastries*, *Gift Cases*, *Pasta Making*, *Pre-Wash*, *Pre-payments*, *Restaurant*, *Prepared Meals*, *Cards*, *Special Seasons*, *Photography*, *Telephony*, and *Seeds*.

Table B.1 Product Categories Included in the Analysis

1	Pet accessories	46	Coloring	91	Eggs	136	Child perfumes
2	Computing accessories	47	Ethnic foods	92	Home insecticides	137	Frozen seafood
3	Bikes accessories	48	Prepared meals - Frozen	93	Baby nighttime	138	Fresh seafood
4	Bathroom accessories	49	Washing complements	94	Men nighttime	139	Batteries
5	Baby accessories	50	Spices	95	Women nighttime	140	Candles and matches
6	Hair accessories	51	Canned pate	96	Children nighttime	141	Swimming pools
7	Men accessories	52	Canned fruits and vegetables	97	Soap	142	Local spirits
8	Women accessories	53	Canned seafood	98	Garden	143	Pesticides
9	Child Accessories	54	Party items	99	Fresh juices	144	Chicken
10	Cooking oil	55	Creams	100	Toys	145	Desserts
11	Mineral waters	56	Body care	101	Dish-washing detergents	146	First aid
12	Dog food	57	Facial care	102	Milk powder	147	Paper products
13	Cat food	58	Men care	103	Milk UHT	148	Solar protection
14	Home ambience	59	Hair removal	104	Legumes	149	Instant mashed potatoes
15	Electric bulbs	60	Sports	105	Yeast	150	Cheeses
16	Sanitary sands	61	Milk derivatives	106	Office supplies	151	Powder drinks
17	Rice	62	Desktop-Notebook	107	Liquors	152	Pastries
18	Kitchen cleaning	63	Deodorants	108	Toilet cleaners	153	Milk flavoring
19	Manual cleaning	64	Laundry detergents	109	Home cleaners	154	Salt
20	Audio-Video	65	Sweeteners	110	Footwear cleaners	155	Dressings and sauces
21	Automotive	66	Home electronics	111	Tomato sauces	156	Health
22	Oat-meals	67	Cold cuts	112	Manicure-pedicure	157	Paper napkins
23	Sugar	68	School	113	Milk candy	158	Snacks
24	Functional drinks	69	Pharmacy	114	Lard	159	Dog snacks
25	Soft drinks	70	Hardware	115	Butter	160	Soups
26	Isotonic drinks	71	Auto Hardware	116	Makeup	161	Hair styling
27	Bikes	72	Delicatessen	117	Margarine	162	Clothing smoothers
28	Biscuits	73	Pasta	118	Medicines	163	Supplements
29	Trash bags	74	Perfumes	119	Kitchenware	164	Cards
30	Coffee	75	Frozen fruits	120	Jam and honey	165	Tea
31	Socks	76	Dried fruit	121	Furniture	166	Home textiles
32	Heat	77	Fruits and vegetables	122	Fruit juice	167	Paper towels
33	Baby footwear	78	Cookies	123	Child nutrition	168	TV-LCD
34	Men footwear	79	Candies	124	Other candies	169	Ventilation
35	Women footwear	80	Frozen hamburgers	125	Packaged bakery	170	Frozen vegetables
36	Children footwear	81	Flour	126	Own bakery	171	Baby clothing
37	Camping and outdoors	82	Ice-cream	127	Adult diapers	172	Men clothing
38	Meats	83	Ice	128	Baby diapers	173	Women clothing
39	Wax-scrubs	84	Oral hygiene	129	Cloths	174	Children clothing
40	Pork	85	Hair hygiene	130	Toilet paper	175	Vinegar
41	Breakfast cereals	86	Women hygiene	131	Grill		
42	Beers	87	Hypochlorites	132	Fresh pasta		
43	Champagne	88	Vegetables	133	Packaged pastries		
44	Chocolates	89	Wines	134	Natural products		
45	Cigarettes	90	Yogurts and desserts	135	Films and music		

Notes: The table reports all categories included in the analysis.

C. Categories Requiring Refrigeration or Freezing Equipment

Categories requiring refrigeration: Meats, Pork, Cold Cuts, Lard, Butter, Margarine, Fresh Pasta, Fresh Seafood, Chicken, Cheese, Yogurt and Desserts.

Categories requiring freezing: Prepared Meats - Frozen, Frozen Fruits, Frozen Hamburgers, Ice-Cream, Ice, Frozen Seafood, Frozen Vegetables.

D. Introduction of New Products

Table D.1 Allowances and Introduction of New Products

	(1)	(2)
New SKUs	0.0139***	0.0092***
	(0.0022)	(0.0021)
Direct Import		-0.1010***
		(0.0049)
Category FE	✓	✓
Chain FE	✓	✓
Time FE	✓	✓
Number of obs.	17,081	17,081
Adj. R-sq	0.2764	0.3441
Avg. FE	0.0892	0.0998

Notes: OLS estimates of a regression equation in which the dependent variable is slotting & placement allowances as a share of gross wholesale revenue. *NewSKUs* is a dummy variable that takes the value of 1 if a supplier introduces at least an SKU in a given category, chain, and period. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

Table D.2 Correlates of Allowances as a Share of Wholesale Revenue

	(1)	(2)
Groceries	0.0536***	0.0549***
	(0.0043)	(0.0040)
Direct Import		-0.0985***
		(0.0046)
Chain FE	✓	✓
Time FE	✓	✓
Number of obs.	10,767	10,767
Adj. R-sq	0.0859	0.1962
Avg. FE	0.0551	0.0647

Notes: OLS estimates of a regression equation in which the dependent variable is *slotting & placement allowances* as a share of gross wholesale revenue. The sample includes only suppliers who do not introduce new SKUs in a given category-chain-period combination. *Groceries* is a dummy variable that takes the value of 1 if a supplier operates in a grocery category. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

E. Private Label Sourcing

E.1. Correlates of Allowance Payments by Dedicated PL Suppliers

Table E.1 Probability of Making Allowance Payments Dedicated PL Suppliers

PL Margin	-0.0363***
	(0.0103)
Firm Size	-0.0039
	(0.0052)
Groceries X Size	0.1189***
	(0.0243)
Category FE	✓
Chain FE	✓
Time FE	✓
Number of obs.	2,770
Adj. R-sq	0.6267

Notes: OLS estimates of a regression equation in which the dependent variable is a dummy variable taking the value of one if the dedicated supplier makes a payment of slotting & placement fees. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

Table E.2 Slotting & Placement Allowances and PL Involvement
(% of gross supplier revenue)

	All Suppliers	Grocery Suppliers	All Suppliers	Grocery Suppliers
	(1)	(2)	(3)	(4)
Dedicated PL	-0.0963***	-0.0916***	-0.0964***	-0.0916***
	(0.0045)	(0.0089)	(0.0045)	(0.0089)
Dual Brander	-0.0358***	-0.0353***	-0.0362***	-0.0331***
	(0.0055)	(0.0068)	(0.0065)	(0.0089)
Number of Categories	-0.0009***	-0.0011***	-0.0009***	-0.0011***
	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Direct Import	-0.1125***	-0.1200***	-0.1125***	-0.1200***
	(0.0044)	(0.0052)	(0.0044)	(0.0052)
Dual x Commodity			0.0015	-0.0064
			(0.0099)	(0.0116)
Category FE	✓	✓	✓	✓
Chain FE	✓	✓	✓	✓
Time FE	✓	✓	✓	✓
Number of Obs.	17,081	11,001	17,081	11,001
Adjusted R-squared	0.4088	0.3168	0.4088	0.3167

Notes: Equation estimated by OLS. The dependent variable is the share of slotting & placement allowances in gross wholesale revenue. Dedicated PL is a dummy taking the value of one if the supplier only produces private labels; Dual Brander is a dummy taking the value of one if the supplier supplies both national brands and private labels; Number of Categories is the number of categories the supplier operates in; Direct Import is a dummy that takes the value of one if suppliers products in a given category are directly imported by the retailer; finally, Dual x Commodity is an interaction term between Dual Brander and a dummy taking the value of one if the category corresponds to a commodity category. Clustered standard errors in parentheses. p-values notation: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

E.2. Commodity Categories

The following is a list of commodity categories for which the dummy variable *Commodity* in Equation (3) takes the value of one:

Bakery, Cooking Oil, Dried Fruit, Eggs, Flour, Fresh Seafood, Frozen Seafood, Frozen Vegetables, Fruits and Vegetables, Honey and Jam, Legumes, Milk UHT, Packaged Seafood, Pastries (packaged), Rice, Salt, Seasonings, Sugar, Vinegar.

E.3. Share of PLs in Dual Brander Revenues

Table E.3 Share of PL Revenue versus Commodity Categories

Dual Brander Suppliers

Dep. Variable: Share of PL Revenue	
Commodity	-0.1826***
	(0.0389)
Chain FE	✓
Time FE	✓
Number of Obs.	931
Adj. R-sq	0.0564

Notes: OLS estimates of a regression equation in which the dependent variable is the share of PLs in total supplier revenue. *Commodity* is a dummy that takes the value of one if a category is identified as a commodity category (see Appendix E.2). Subsample of dual branders only. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

F. Further Evidence on Cross-Category Interrelationships

F.1. Cross-category Bivariate Correlation of Allowances

To provide further evidence on the extent to which our data are consistent with cross-category interrelationships, we examine how a given allowance type paid by a multi-category supplier comoves across the categories in which the supplier participates. For ease of exposition and relevance, we focus on the most important type of trade allowance in our data, namely *slotting & placement fees*.

Figure F.1 presents pairwise correlation coefficients between trade allowances paid by a multi-category supplier in a given category and its payments in other categories for the same chain-time combination.[34] Trade allowances are measured in logs. The height of each bar represents the correlation coefficient in a given category. Lighter bars indicate that the correlation coefficient is significantly different from zero at the 1 percent level.

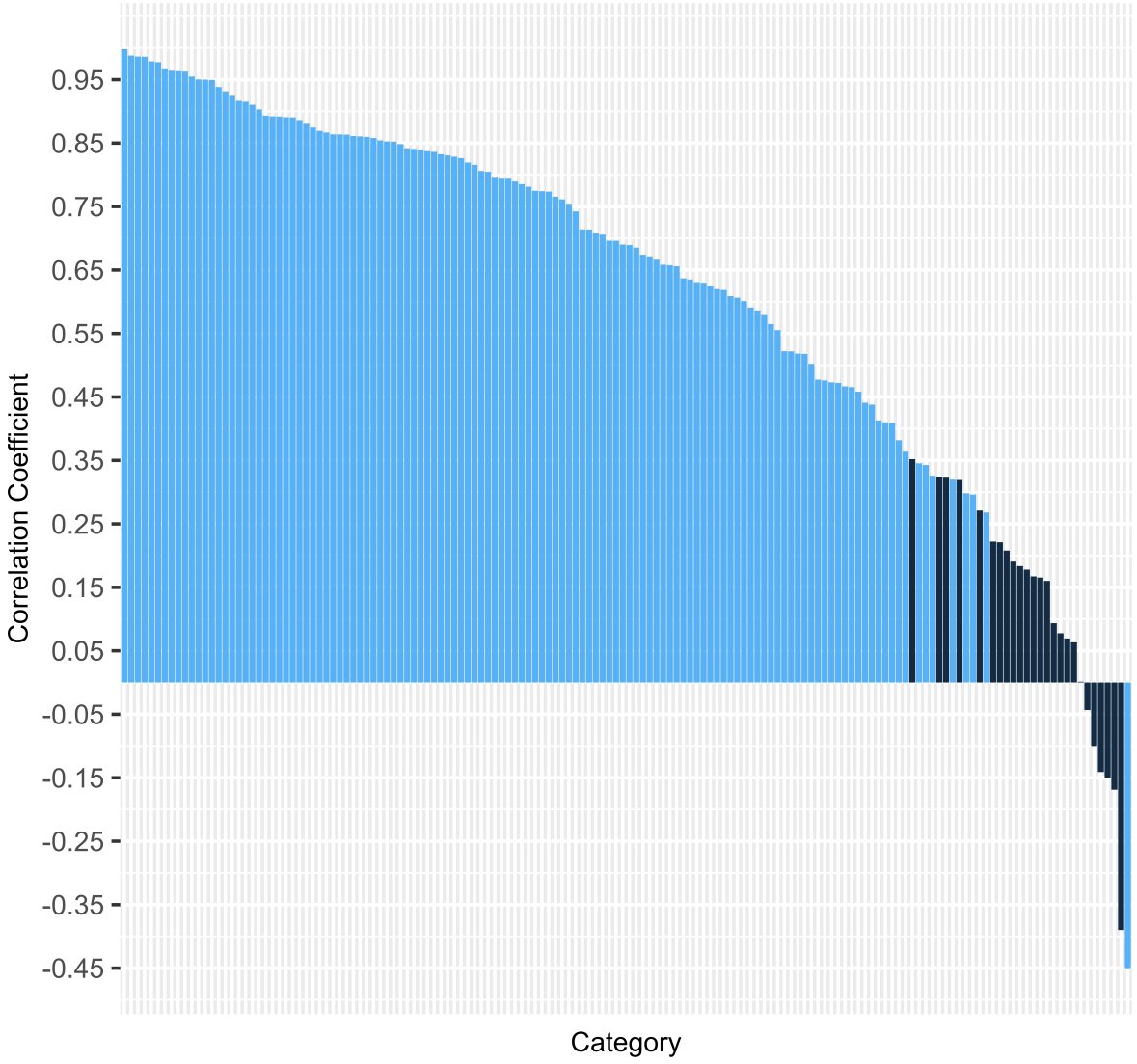
We find that trade allowances paid by a supplier in a given chain-period tend to be positively correlated across categories. Conditional correlations of allowances are statistically significantly different from zero in 83 percent of categories at the 1 percent level. The average correlation coefficient is approximately equal to 0.71 among those categories for which correlations are statistically significant (at the 1 percent level).

[34] Each category-specific correlation coefficient is given by:

$$\rho_j = \frac{\operatorname{cov}\left(a_{scjt}, a_{sc,-j,t}\right)}{\sqrt{\operatorname{var}\left(a_{scjt}\right)\operatorname{var}\left(a_{sc,-j,t}\right)}}$$

where a_{scjt} and $a_{sc,-j,t}$ are measures of trade allowances paid by the multi-category supplier s to chain c at time t in the category j and the other categories $-j$, respectively.

Figure F.1 Cross-Category Correlations of Trade Allowances (*slotting & placement*, Multi-category Suppliers only)



Notes: The figure shows the correlation coefficients at the category level between *slotting & placement allowances* (in logs) paid in a category by multi-category supplier and those paid in other categories using semi-annual time aggregation. Specifications include supplier, chain and time fixed effects. Sample restricted to multi-category suppliers (614 out of 1,571). Lighter bars denote statistically significant correlation coefficients (at the 1% level).

F.2. Robustness Checks on Cross-Category Interrelationships

Table F.1 Cross-Category Interrelationships
Suppliers with Dissimilar Revenues/Market Shares Across Categories

	Revenue	Market Share
	(1)	(2)
Focal Allowances (log)	0.9766***	0.9115***
	(0.0685)	(0.1108)
Category FE	✓	✓
Chain FE	✓	✓
Time FE	✓	✓
Number of Obs.	150	156
Adj. R.sq	0.8981	0.8796

Notes: OLS estimates of Equation (4) for the subsample of multi-category suppliers whose revenue (Column (1)) or market share (Column (2)) volatility across categories (measured by the coefficient of variation) is above the 67th percentile. The dependent variable is the level of slotting & placement fees in non-focal categories (in logs). All specifications include category, chain, and time-fixed effects using semi-annual time aggregation. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

Table F.2 Cross-Category Interrelationships
Suppliers Operating in Food and Non-food Categories

Focal Allowances (log)	0.9431***
	(0.0497)
Category FE	✓
Chain FE	✓
Time FE	✓
Number of Obs.	256
Adj. R.sq	0.9028

Notes: OLS estimates of Equation (4) for the subsample of suppliers that operate in both food and non-food categories. The dependent variable is the level of *slotting & placement fees* in non-focal categories (in logs). All specifications include category, chain, and time-fixed effects using semi-annual time aggregation. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

G. Relationship between Allowances and Spot Contracts

Table G.1 Frequency of Price Promotions and Spot Contract Allowances

Panel A: Retail Price Promotions				
	(1)	(2)	(3)	(4)
Allowances in t (log)	-0.0026*		-0.0030*	
	(0.0014)		(0.0018)	
Allowances in t-1 (log)		-0.0043**		-0.0037**
		(0.0017)		(0.0017)
Firm Size in t-1 (log)			-0.0036	-0.0033
			(0.0025)	(0.0025)
Category FE	✓	✓	✓	✓
Chain FE	✓	✓	✓	✓
Time FE	✓	✓	✓	✓
Number of Obs.	10,895	8,031	8,031	8,031
Adj. R-sq	0.1637	0.1652	0.1651	0.1655
Panel B: Wholesale Price Promotions				
	(1)	(2)	(3)	(4)
Allowances in t (log)	-0.0054***		-0.0036***	
	(0.0014)		(0.0014)	
Allowances in t-1 (log)		-0.0053***		-0.0036***
		(0.0014)		(0.0014)
Firm Size in t-1 (log)			-0.0099***	-0.0099***
			(0.0020)	(0.0020)
Category FE	✓	✓	✓	✓
Chain FE	✓	✓	✓	✓
Time FE	✓	✓	✓	✓
Number of Obs.	10,916	8,051	8,051	8,051
Adj. R-sq	0.2751	0.2732	0.2827	0.2827

Notes: OLS estimates of Equation (6). The dependent variable is a log transformation of the frequency of price promotions. In Panel A (B) frequencies of price promotions are based on retail (wholesale) prices. Allowances correspond to those negotiated in spot contracts. All specifications include category, chain, and time-fixed effects using semi-annual time aggregation. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

H. Robustness Checks on the Relationship between Prices and Allowances

Table H.1 Relationship between Prices and Allowances

Food Categories

	Retail Price		Wholesale Price		Retail Margin	
	(1)	(2)	(3)	(4)	(5)	(6)
Slotting & Placement in t (log)	0.0218***		0.0253***		-0.0035***	
	(0.0051)		(0.0052)		(0.0012)	
Slotting & Placement in t-1 (log)		0.0198***		0.0231***		-0.0033***
		(0.0052)		(0.0052)		(0.0011)
Supplier FE	✓	✓	✓	✓	✓	✓
Category FE	✓	✓	✓	✓	✓	✓
Chain FE	✓	✓	✓	✓	✓	✓
Number of Obs.	8,223	5,719	8,223	5,719	8,223	5,719
Adj. R-sq	0.8388	0.8486	0.8362	0.8462	0.6759	0.7211

Notes: OLS estimates of Equation (7) for the subsample of suppliers operating in food categories. In Columns (1) and (2), the dependent variable is the weighted average retail price (in logs). In Columns (3) and (4), the dependent variable is the weighted average wholesale price (in logs). In columns (5) and (6) the dependent variable is the retail margin, defined as the difference between the log-weighted average retail price and the log-weighted average wholesale price. All specifications include supplier, category, and chain fixed effects using semi-annual time aggregation. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.

Table H.2 Relationship between Prices and Allowances

Suppliers with High New Product Introduction Activity

	Retail Price		Wholesale Price		Retail Margin	
	(1)	(2)	(3)	(4)	(5)	(6)
Slotting & Placement in t (log)	0.0237***		0.0230***		0.0007	
	(0.0048)		(0.0050)		(0.0016)	
Slotting & Placement in t-1 (log)		0.0279***		0.0287***		-0.0008
		(0.0044)		(0.0044)		(0.0012)
Supplier FE	✓	✓	✓	✓	✓	✓
Category FE	✓	✓	✓	✓	✓	✓
Chain FE	✓	✓	✓	✓	✓	✓
Number of Obs.	5,994	4,297	5,994	4,297	5,994	4,297
Adj. R-sq	0.8832	0.8869	0.8989	0.9091	0.6128	0.6109

Notes: OLS estimates of Equation (7) for the subsample of suppliers operating in food categories. In Columns (1) and (2), the dependent variable is the weighted average retail price (in logs). In Columns (3) and (4), the dependent variable is the weighted average wholesale price (in logs). In columns (5) and (6) the dependent variable is the retail margin, defined as the difference between the log-weighted average retail price and the log-weighted average wholesale price. All specifications include supplier, category, and chain fixed effects using semi-annual time aggregation. Cluster-robust (at the supplier level) standard errors in parenthesis. P-values notation: *** p<0.01, ** p<0.05, * p<0.1.