Web Appendix W1

Table A1

Panel A – Summary of Extant Relevant Research on Competition in Marketing

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study | Context | Key dependent variable | Marketing mix elements | Entrant/ Incumbent perspective | Incumbent factors affecting response/ performance | Industry |
| Gielens and Dekimpe (2007) | Entry into transition economies | Entry timing and size | Retailer format | Entrant | N/A | Grocery retail |
| Johnson and Tellis (2008) | Entry into China and India | Success of entry | None | Entrant | N/A | All |
| Shankar (1999) | New product introduction | Marketing mix responses | Advertising and sales force | Incumbent | Size, dominance, elasticity, relative leadership | Prescription drugs |
| Debruyne and Reibstein (2005) | Creation of new technology niches | Entry into new technology niches | None | Incumbent | Size and resources | Retail brokerage |
| Steenkamp et al. (2005) | Short-term marketing attacks | Marketing mix responses | Advertising and promotions | Incumbent | Market power and power asymmetry | Consumer packaged goods (CPG) |
| Ailawadi et al. (2010) | Entry of Walmart | Marketing mix responses | Pricing, promotion, product assortment | Incumbent | Size, profitability, growth | CPG retail |
| Mukherji et al. (2011) | New firm entry through acquisition | Marketing mix responses | Product | Incumbent | Size | Banking |
| *Our study* | *Liberalization* | *Marketing mix responses* | *Advertising, product, promotions, distribution* | *Incumbent* | *Domestic market knowledge and foreign market knowledge* | *All* |

Panel B – Summary of Extant Relevant Research on Liberalization in International Business/ Economics

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Study | Key dependent variable | Marketing mix elements | Incumbent factors | Industry |
| Aitken and Harrison (1999) | Plant productivity | None | Plant size | Manufacturing |
| Haskel, Perreira, and Slaughter (2007) | Plant productivity | None | None | Manufacturing |
| Blalock and Simon (2009) | Productivity | None | Absorptive capacity, production capacity, size | Manufacturing |
| Kosová (2010) | Domestic firm growth and survival | None | Absorptive capacity, technology gap | All |
| Zhang et al. (2010) | Productivity | None | Size, technology gap | Manufacturing |
| Zhang et al. (2014) | Productivity | None | None | Manufacturing |
|  |  |  |  |  |
| *Our study* | *Marketing mix responses* | *Advertising, product, promotions, distribution* | *Domestic market knowledge and foreign market knowledge* | *All* |

Web Appendix W2

Description of Marketing Variables in Prowess Data Dictionary

Advertising, promotions, and distribution are disparate activities and thus very different expenditure items, thus, they are reported separately.

Advertising – Advertising involves the conveying of information through paid media, is not directed to any person in specific, and hence is non-direct in nature.

Product - For each product of the firm, the Prowess database provides the value of sales, quantity, and units.

Promotions – Captures data on rebates and discounts as well as sales promotions.

Rebates and discounts – Rebates and discounts are marketing tools involving reduction in the invoice amount to be paid by a customer. They are aimed at encouraging purchases by prospective customers and enhancing the likelihood of the offtake of goods produced/ services. These are essentially price-related marketing expenses incurred by a firm. A rebate is a refund granted to a buyer by a manufacturer, distributor or dealer for making purchases above a certain amount or a certain volume during a particular time frame or during the course of a contract or an agreement. Manufacturers generally give rebates to bring down the effective final price of their products. A discount, on the other hand, is an amount or percentage of reduction in selling price of a product, given on a single transaction, and not at the end of a time frame/contract. It is unconditional in nature and offered to all customers, subject to their meeting certain conditions in terms of purchase volumes, etc. It is usually fixed in nature, i.e. it is granted as a percentage of the billing amount.

Sales promotions - It is a short term and direct method of garnering sales. The American Marketing Association defines sales promotions as ‘those marketing activities other than personal selling advertising and publicity that stimulate consumer purchasing and dealer effectiveness, such as display shows and exhibitions, demonstrations, and various non-recurrent selling efforts not in the ordinary routine.’ Sales promotions help in informing, persuading and reminding prospective and existing customers about a company and its products.

Distribution - This is the expenditure the company incurs to deliver its products to consumers or intermediaries such as distributors, wholesalers or retailers. It includes freight outward and handling charges. Loading and unloading of goods, freight expenses incurred by the company for transporting the goods from its premises to dealers or distributors are included under this item head. Sometimes, companies refer to such expenses as dispatch and forwarding expenditure. Amounts reported as breakage and shortage, loss of goods in transit, consignment expenses, etc. are included, by CMIE, under distribution expenses.

Web Appendix W3

Table C1 – Differences-in-Differences Estimates with Heterogeneous Treatment Effects, Controlling for Reduction in Trade Tariffs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
|  | Advertising | Product | Promotions | Distribution |
| Domestic market knowledge \* Post \* Liberalization | .003\*\* | .320\* | .005\*\* | .004 |
|  | (.002) | (.185) | (.002) | (.002) |
| Foreign market knowledge \* Post \* Liberalization | .003 | -.069 | -.007\*\* | -.008\*\* |
|  | (.003) | (.303) | (.003) | (.004) |
| Foreign market knowledge \* Liberalization | -.004 | -.111 | .003 | .012\*\*\* |
|  | (.003) | (.314) | (.004) | (.004) |
| Domestic market knowledge \* Post | -.002\* | -.241\* | -.001 | -.000 |
|  | (.001) | (.142) | (.002) | (.002) |
| Foreign market knowledge \* Post | -.001 | .019 | .004\*\* | .002 |
|  | (.002) | (.212) | (.002) | (.002) |
| Post \* Liberalization | -.004\*\* | -.049 | .000 | -.003 |
|  | (.002) | (.182) | (.002) | (.002) |
| Post \* Trade liberalization | .002\* | .155 | .002 | .004\*\* |
|  | (.001) | (.133) | (.001) | (.002) |
| Foreign market knowledge | .003\* | .569\*\*\* | .010\*\*\* | .015\*\*\* |
|  | (.002) | (.219) | (.002) | (.002) |
| Firm size (\*10-4) | .000 | 17.039\*\*\* | -.042\*\* | .003 |
|  | (.010) | (1.415) | (.020) | (.019) |
| Firm profitability | .006\*\*\* | .070 | .010\*\*\* | .010\*\*\* |
|  | (.001) | (.113) | (.002) | (.002) |
| Firm R&D | .000 | -.191\*\*\* | .000 | -.001 |
|  | (.000) | (.051) | (.001) | (.001) |
| Domestic competition | -.003 | .494 | .011\*\* | .003 |
|  | (.003) | (.336) | (.004) | (.004) |
| Industry concentration | .001 | .172 | -.006\* | .009\*\* |
|  | (.002) | (.246) | (.004) | (.004) |
| Intercept | .007\*\* | 3.742\*\*\* | .012\*\* | .012\*\* |
|  | (.004) | (.403) | (.005) | (.005) |
|  |  |  |  |  |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| F-statistic | 2.50 | 37.28 | 18.38 | 34.73 |
| Prob>F | .000 | .000 | .000 | .000 |
| Observations | 16,636 | 34,159 | 24,735 | 21,211 |
| Number of firms | 3,927 | 7,073 | 5,242 | 4,512 |

*\*\*\* p<.01, \*\* p<.05, \* p<.1*

Table C2 – Differences-in-Differences Estimates with Heterogeneous Treatment Effects, Controlling for Number of Foreign Firms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
|  | Advertising | Product | Promotions | Distribution |
|  |  |  |  |  |
| Domestic market knowledge \* Post \* Liberalization | .003\* | .343\* | .005\*\* | .004\* |
|  | (.002) | (.185) | (.002) | (.002) |
| Foreign market knowledge \* Post \* Liberalization | .003 | -.093 | -.008\*\* | -.008\*\* |
|  | (.003) | (.302) | (.003) | (.004) |
| Foreign market knowledge \* Liberalization | -.004 | -.066 | .003 | .013\*\*\* |
|  | (.003) | (.313) | (.004) | (.004) |
| Domestic market knowledge \* Post | -.002\* | -.265\* | -.001 | -.001 |
|  | (.001) | (.142) | (.002) | (.002) |
| Foreign market knowledge \* Post | -.001 | .039 | .005\*\* | .002 |
|  | (.002) | (.212) | (.002) | (.002) |
| Post \* Liberalization | -.003\* | .001 | .001 | -.001 |
|  | (.002) | (.163) | (.002) | (.002) |
| Foreign market knowledge | .003\* | .540\*\* | .010\*\*\* | .015\*\*\* |
|  | (.002) | (.219) | (.002) | (.002) |
| Firm size (\*10-4) | .001 | 17.118\*\*\* | -.042\*\* | .004 |
|  | (.010) | (1.413) | (.020) | (.019) |
| Firm profitability | .006\*\*\* | .080 | .010\*\*\* | .010\*\*\* |
|  | (.001) | (.113) | (.002) | (.002) |
| Firm R&D | .000 | -.192\*\*\* | .000 | -.001 |
|  | (.000) | (.051) | (.001) | (.001) |
| Domestic competition | -.001 | .184 | .010\*\* | .003 |
|  | (.003) | (.340) | (.004) | (.004) |
| Industry concentration | .002 | .108 | -.006\* | .009\*\* |
|  | (.002) | (.246) | (.004) | (.004) |
| Number of foreign firms (\*10-2) | .013\*\* | -3.559\*\*\* | -.011 | -.010 |
|  | (.007) | (.643) | (.009) | (.010) |
| Intercept | .005 | 4.135\*\*\* | .012\*\* | .012\*\* |
|  | (.004) | (.409) | (.005) | (.005) |
|  |  |  |  |  |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| F-statistic | 2.52 | 38.54 | 18.38 | 34.56 |
| Prob>F | .000 | .000 | .000 | .000 |
| Observations | 16,636 | 34,159 | 24,735 | 21,211 |
| Number of firms | 3,927 | 7,073 | 5,242 | 4,512 |

*\*\*\* p<.01, \*\* p<.05, \* p<.1*

Table C3 – Differences-in-Differences Estimates with Heterogeneous Treatment Effects, Controlling for Foreign Firms’ Marketing

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
|  | Advertising | Product | Promotions | Distribution |
| Domestic market knowledge \* Post \* Liberalization | .003\* | .330\* | .005\*\* | .004\* |
|  | (.002) | (.185) | (.002) | (.002) |
| Foreign market knowledge \* Post \* Liberalization | .003 | -.082 | -.008\*\* | -.008\*\* |
|  | (.003) | (.303) | (.003) | (.004) |
| Foreign market knowledge \* Liberalization | -.004 | -.106 | .003 | .012\*\*\* |
|  | (.003) | (.314) | (.004) | (.004) |
| Domestic market knowledge \* Post | -.002\* | -.256\* | -.001 | -.000 |
|  | (.001) | (.142) | (.002) | (.002) |
| Foreign market knowledge \* Post | -.001 | .028 | .005\*\* | .002 |
|  | (.002) | (.212) | (.002) | (.002) |
| Post \* Liberalization | -.003\* | .041 | .001 | -.001 |
|  | (.002) | (.163) | (.002) | (.002) |
| Foreign market knowledge | .003\* | .567\*\*\* | .010\*\*\* | .015\*\*\* |
|  | (.002) | (.220) | (.002) | (.002) |
| Firm size (\*10-4) | .001 | 17.099\*\*\* | -.041\*\* | .007 |
|  | (.010) | (1.415) | (.020) | (.019) |
| Firm profitability | .006\*\*\* | .069 | .010\*\*\* | .010\*\*\* |
|  | (.001) | (.113) | (.002) | (.002) |
| Firm R&D | .000 | -.190\*\*\* | .000 | -.001 |
|  | (.000) | (.051) | (.001) | (.001) |
| Domestic competition | -.003 | .416 | .009\* | .000 |
|  | (.003) | (.359) | (.004) | (.005) |
| Industry concentration | .001 | .175 | -.007\* | .008\*\* |
|  | (.002) | (.246) | (.004) | (.004) |
| Foreign firms’ marketing | -.004\* | -.359 | -.013\*\*\* | -.019\*\*\* |
|  | (.002) | (.446) | (.004) | (.005) |
| Intercept | .008\*\* | 3.845\*\*\* | .015\*\*\* | .016\*\*\* |
|  | (.004) | (.434) | (.005) | (.005) |
|  |  |  |  |  |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| F-statistic | 2.48 | 37.22 | 18.60 | 35.21 |
| Prob>F | .000 | .000 | .000 | .000 |
| Observations | 16,626 | 34,152 | 24,722 | 21,199 |
| Number of firms | 3,925 | 7,072 | 5,239 | 4,509 |

*\*\*\* p<.01, \*\* p<.05, \* p<.1*

Table C4 – Differences-in-Differences Estimates with Heterogeneous Treatment Effects, Including Industry Fixed Effects

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) |
|  | Advertising | Product | Promotions | Distribution |
| Domestic market knowledge \* Post \* Liberalization | .004\*\* | .370\* | .006\*\*\* | -.000 |
|  | (.002) | (.196) | (.002) | (.002) |
| Foreign market knowledge \* Post \* Liberalization | .006\* | -.302 | -.007\* | -.004 |
|  | (.003) | (.344) | (.004) | (.004) |
| Foreign market knowledge \* Liberalization | -.007\*\* | .109 | .002 | .009\*\* |
|  | (.003) | (.350) | (.004) | (.004) |
| Domestic market knowledge \* Post | -.003\* | -.294\*\* | -.003 | .002 |
|  | (.002) | (.149) | (.002) | (.002) |
| Foreign market knowledge \* Post | -.002 | .042 | .004 | -.003 |
|  | (.002) | (.233) | (.002) | (.003) |
| Post \* Liberalization | -.006 | .512 | .005 | -.017 |
|  | (.006) | (.769) | (.010) | (.011) |
| Foreign market knowledge | .004\*\* | .534\*\* | .011\*\*\* | .020\*\*\* |
|  | (.002) | (.239) | (.003) | (.003) |
| Firm size (\*10-4) | .001 | 17.217\*\*\* | -.035\* | .001 |
|  | (.010) | (1.414) | (.020) | (.019) |
| Firm profitability | .006\*\*\* | .064 | .010\*\*\* | .011\*\*\* |
|  | (.001) | (.113) | (.002) | (.002) |
| Firm R&D | .000 | -.155\*\*\* | .000 | -.001 |
|  | (.000) | (.051) | (.001) | (.001) |
| Domestic competition | -.003 | .328 | .010\*\* | .002 |
|  | (.003) | (.354) | (.005) | (.005) |
| Industry concentration | .003 | .399 | -.006 | .011\*\*\* |
|  | (.002) | (.262) | (.004) | (.004) |
| Post | .004 | 1.838\*\*\* | .005 | .001 |
|  | (.003) | (.361) | (.004) | (.004) |
| Intercept | .007\* | 3.750\*\*\* | .012\*\* | .013\*\* |
|  | (.004) | (.417) | (.005) | (.005) |
|  |  |  |  |  |
| Post \* Industry fixed effects | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| F-statistic | 1.69 | 12.29 | 5.45 | 10.46 |
| Prob>F | .000 | .000 | .000 | .000 |
| Observations | 16,636 | 34,159 | 24,735 | 21,211 |
| Number of firms | 3,927 | 7,073 | 5,242 | 4,512 |

*\*\*\* p<.01, \*\* p<.05, \* p<.1*

Table C5 – Differences-in-Differences Estimates with Heterogeneous Treatment Effects, Excluding Observations from 2000

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | |
|  | Advertising | Product | Promotions | Distribution | |
|  |  |  |  |  |
| Domestic market knowledge \* Post \* Liberalization | .003 | .327\* | .004\*\* | .003 |
|  | (.002) | (.187) | (.002) | (.002) |
| Foreign market knowledge \* Post \* Liberalization | .002 | -.113 | -.007\*\* | -.007\*\* |
|  | (.003) | (.307) | (.003) | (.003) |
| Foreign market knowledge \* Liberalization | -.003 | -.021 | .003 | .011\*\*\* |
|  | (.003) | (.321) | (.004) | (.004) |
| Domestic market knowledge \* Post | -.002 | -.232 | -.001 | .000 |
|  | (.001) | (.143) | (.002) | (.002) |
| Foreign market knowledge \* Post | -.000 | .094 | .004\* | .002 |
|  | (.002) | (.216) | (.002) | (.002) |
| Post \* Liberalization | -.002 | .030 | .001 | -.001 |
|  | (.002) | (.164) | (.002) | (.002) |
| Foreign market knowledge | .002 | .494\*\* | .009\*\*\* | .016\*\*\* |
|  | (.002) | (.226) | (.002) | (.002) |
| Firm size (\*10-4) | -.000 | 16.820\*\*\* | -.023 | .008 |
|  | (.011) | (1.605) | (.021) | (.021) |
| Firm profitability | .006\*\*\* | -.005 | .010\*\*\* | .010\*\*\* |
|  | (.001) | (.126) | (.002) | (.002) |
| Firm R&D | .000 | -.272\*\*\* | .000 | -.001\* |
|  | (.000) | (.055) | (.001) | (.001) |
| Domestic competition | -.007\*\* | .480 | .007 | .003 |
|  | (.003) | (.363) | (.005) | (.005) |
| Industry concentration | .000 | .055 | -.007\* | .008\*\* |
|  | (.002) | (.263) | (.004) | (.004) |
| Intercept | .012\*\*\* | 3.803\*\*\* | .015\*\*\* | .012\*\* |
|  | (.004) | (.423) | (.005) | (.005) |
|  |  |  |  |  |
| Firm fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| F-statistic | 2.36 | 31.91 | 16.64 | 34.55 |
| Prob>F | .000 | .000 | .000 | .000 |
| Observations | 14,667 | 29,594 | 21,582 | 18,702 |
| Number of firms | 3,640 | 6,610 | 4,839 | 4,221 |

*\*\*\* p<.01, \*\* p<.05, \* p<.1*