

**FIRM RESOURCES, INSTITUTIONAL CHANGES AND MULTINATIONALITY:
A COMPARATIVE ANALYSIS OF EXPORT PERFORMANCE OF
INDIAN PHARMACEUTICAL AND AUTOMOBILE INDUSTRIES**

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ABSTRACT

Export performance of emerging market firms is an area of significant interest in international business research. Using resource-based-view we use a framework that consists of firm resources belonging to two categories: knowledge-based resources and property-based resources. We employed a panel data regression analysis of firms in Indian pharmaceutical and automobile industries. Our results indicate that knowledge-based resources emerge as relatively more significant resources for both the industries in comparison to the property-based resources. Specifically, knowledge-based resources like import of raw materials, royalty payments and distribution expenses exhibited significant impact on the export performance of Indian pharmaceutical and automobile firms. In addition to the commonly used linear regression approach, we report the results of the quantile regression model. We note that most of the firm resources exhibit a significant impact on export performance using quantile regression model.

Keywords: *Automobiles; export performance; India; pharmaceuticals; quantile regression; resource-based-view*

1. INTRODUCTION

In the present globalised era, export performance of firms has gained a lot of significance (Tseng, Tansuhaj, Hallagan & McCullough, 2007). Ever since Indian economy embraced liberal economic policies, Indian industries have been exposed to a multitude of opportunities to tap into global markets. Among the Indian industries, two industries that have particularly generated tremendous interest were the pharmaceutical and automobile sectors. Both the industries have experienced similar growth paths after India attained independence in 1947. In tandem with other industries, India's pharmaceutical and automobile industries have undergone significant

transformation over the past six decades. This period has seen the expansion of both industries, the emergence of local R&D capabilities and a reconfiguration of capabilities in existing firms. The economic reforms initiated in India in 1991 and India finally becoming a signatory to the World Trade Organisation (WTO) provisions in 1995 have opened up global opportunities for Indian pharmaceutical and automobile industries. As per the provisions of the WTO, India has transitioned from a process-patents regime to a product patent regime beginning 1st January, 2005. The Indian government during the same time has envisioned an automotive mission plan to strengthen the Indian automobile industry during the period 2006-2016. In this back drop, we attempt to investigate the export performance of Indian pharmaceutical and automobile industries during the period 2005-2014. This period coincides with the product patents era for the pharmaceutical industry and the impetus planned for the automobile industry in India in the form of automotive mission plan (2006-2016).

In the back drop of the institutional changes that affected the Indian pharmaceutical and automobile industries during 2005-2014, we envisage to use the resource-based-view (RBV) to examine the impact of firm resources on the export performance of these two industries. During the period of our study, both the industries have shown a similar growth pattern in terms of their export performance registering more than 20 per cent growth in export revenues (Bhaumick, Driffield & Pal, 2010). We hope to contribute to the growing evidence on the export performance research in the context of emerging economies more importantly in light of the institutional that affected these industries during the past ten years.

After the introduction, our study will present an overview of the theoretical framework and the hypotheses. In the following section, we discuss the data source, variables and the methodology. In the subsequent section we discuss the results of the study. The last section presents the implications and conclusions.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Using the resource-based-view framework, we contend that availability of resources has a significant impact on export performance of firms. Tseng et al (2007) investigated the growth of multinationality among American firms. They argue that resources available within the firms range widely and hence need to be looked at from various categories of resources. Following the typology used by Miller and Shamsie (1996), Tseng et al (2007) broadly classify the firm resources into knowledge-based resources and property-based resources which are also termed as collective goods and private goods respectively. Drawing from the earlier literature, these two broad categories of resources can further be classified (Tseng et al, 2007). We follow the conceptualization proposed by Tseng et al (2007) and attempt to understand the determinants of export performance for Indian pharmaceutical and automobile industries.

Knowledge-based industries mainly consist of technological resources and marketing resources. Property-based resources include internally generated financial resources and externally generated financial resources.

Knowledge-based resources like technological resources help firms to enhance product quality which in turn facilitates an increased acceptance of those products in the global markets (Joseph & Reddy, 2009). Technological capabilities accumulated through strategic deployment of technological resources can act as important catalysts for export competitiveness of industries in emerging economies (Bhat & Narayanan, 2009).

Technological capabilities can be broadly acquired through in-house research efforts or by external support through imports. Internal R&D efforts help firms to develop differentiated products while imports of technological capabilities can be through disembodied or embodied technology resources (Joseph & Reddy, 2009; Bhat & Narayanan, 2009). According to these studies, disembodied technology is traditionally acquired through import of technological strengths by paying royalty & technical fees to external organizations. Similarly, embodied technology is accumulated with the help of import of capital goods and raw materials which helps to improve product quality. So our research considers four technological resources combined with marketing resources as part of the knowledge-based resources.

We also consider various property-based resources classified into internally generated financial resources and externally generated financial resources. We consider profits generated, current ratio and capital intensity as internally generated financial resources and foreign equity participation as an externally generated financial resource.

- H1: Knowledge-based resources are positively related to export performance of the Indian pharmaceutical and automobile industries
- H2: Property-based resources have significant impact on the export performance of Indian pharmaceutical and automobile industries

There is a large body of extant research on determinants of export performance of firms (Bonaccorsi, 1992; Calof, 1994; Sterlacchini, 1999; Basile, 2011; Cassiman & Golovko, 2011). Table 1 presents a summary of studies on determinants of export performance in the Indian context. The summary includes the important studies which focused on the impact of knowledge-based resources and property based resources on export performance. It can be observed from Table 1 that many of the studies have been done on a sample of multi-industries while a few studies focused on one/two industries.

Table 1 here

3. DATA AND METHODS

Data Source

Data for our research was extracted from Prowess database compiled by Centre for Monitoring Indian Economy (CMIE). Our sample includes 272 pharmaceutical firms and 277 automobile firms. The period of study was for the period 2005-2014. We considered all those firms which had at least one year of export sales during the period of study. As mentioned earlier, we chose

this period to compare the export determinants of Indian pharmaceutical and automobile industries during time of institutional changes that have affected these industries. Since data was not available for all the variables for the entire period of study, the total number of observations was 71370 over the ten year period which presents an unbalanced panel.

The OLS regression is represented as follows:

$$\text{EXPINT} = \alpha + \beta_1 \text{RDINT} + \beta_2 \text{ICGINT} + \beta_3 \text{IRMINT} + \beta_4 \text{ROYINT} + \beta_5 \text{MARKINT} + \beta_6 \text{ADVINT} + \beta_7 \text{DISTINT} + \beta_8 \text{PATINT} + \beta_9 \text{CR} + \beta_{10} \text{CAPINT} + \beta_{11} \text{FE} + \beta_{12} \text{SIZE} + \varepsilon$$

In addition to the OLS regression model, we have also employed quantile regression model responding to a call by Li (2015) who demonstrates the utility of using quantile regression approach in addition to the more commonly used linear regression model.

Variables

Table 2 gives an overview of the dependent and independent variables considered for the study. Export intensity which was the most widely used measure of export performance (Wang, Cao, Zhou, & Ning, et al, 2013) was taken as the dependent variable.

Table 2 here

4. RESULTS AND DISCUSSION

Table 3 and Table 4 give an account of descriptive statistics and correlations for all the variables pharmaceutical and automobile industries respectively.

Tables 3 and 4 here

Table 5 presents a comparative account of the regression results for the Indian pharmaceutical and automobile industries. Based on the results from the Hausman test, the fixed effects model was chosen. The data has been checked for stationarity using the panel unit root test (Levin, Lin and Chu, 2002) and the data was found to be stationary. The data was also checked for multicollinearity by calculating the variance inflation factor (VIF) values and correlation values. It was found that all the VIF values are less than 3 and hence it can be concluded that the data does not suffer from any multicollinearity with the other variables used (Besley, Kuh & Selsch, 1980). The explanatory power of all the models can be considered to be good due to the high value of the adjusted R².

Table 5 here

As per our hypotheses, among various knowledge-based resources, we find that R&D expenses have shown no impact on export performance of pharmaceutical industry while exhibiting a negative impact for automobile industry. It is important to note that prior to 1995, the emphasis on R&D activities was very low in the Indian pharmaceutical industry due to the protection provided by the process patent system prevalent in India. Very few Indian firms like Ranbaxy, Dr. Reddy's, and Wockhardt used to spend their resources on R&D capabilities and even those attempts were meager in comparison to the research budgets of foreign multinational corporations. However, in product patent regime of post-TRIPs period, the lack of prior experience and high cost of developing original research molecules is curbing the export performance of Indian firms.

The import of capital goods failed to show any impact on export performance of both the industries. Import of capital goods is essential for emerging economy firms to be on par with the latest technologies of competitors from the developed world and hence it was expected that the import of capital goods exhibited a significant impact on export performance. However, we see that Indian pharmaceutical and automobile firms have not been able to capitalize yet on utilizing the knowledge gained from import of capital goods to improve the export performance in light of the institutional reforms.

The import of raw materials was significant for both the industries. In case of pharmaceutical industry, import of high quality raw materials was essential to match the quality standards of global healthcare regulators like United States Food and Drug Administration (USFDA), Therapeutic Goods Administration, Australia (TGA) or Medicines Control Agency (MCA) in UK. Majority of Indian pharmaceutical exports were targeted at North American, European and Asia-Pacific markets which were regulated by these agencies. Most of the pharmaceutical exports need high quality excipients (raw materials other than the active drug substances which are necessary to manufacture various dosage forms) either for better stability or increased efficacy of the drugs. Similarly, the automobile firms imported raw materials to adhere to the global environmental standards relevant to the automobile industry.

The payment of royalties was found to be significant for the Indian pharmaceutical industry. Horner (2014) highlighted that during prior to 2005, most of the foreign firms were unwilling to part with their technologies with Indian firms through the royalty payments route since they were apprehensive about the legal implications of patents during the transitory-TRIPs period (1995-2004). Though some firms like Dr. Reddy's were able to forge alliances with foreign firms, the general attitude towards the utility of royalty payments was very weak during the transitory-TRIPs period. The scenario changed significantly in the post-TRIPs period as the confidence of foreign firms increased after India fully completed the transition to a fully product patent regime

from 2005. Royalty payments had a significant but negative impact in case of automobile industry.

Majority of the Indian pharmaceutical exports come under prescription medicines and not over-the-counter medicines. Hence marketing intensity was not for the pharmaceutical industry. Unlike consumer goods, pharmaceutical products are relatively insensitive to marketing expenses though some promotional expenses towards pulling the retailers and distributors to stock the products might show a significant impact on export sales. Since automobile industry is very sensitive to the promotions aimed at distributors, marketing expenses have shown a significant impact on export performance.

When it comes to the advertising expenses, the pharmaceutical industry has exhibited a negative impact while it failed to show any impact in case of automobile exports. The distribution expenses have shown a positive and significant impact in case of both the industries. This is expected since large amount of resources were required to reach out to global markets.

In case of the property-based resources, results indicate that among the internally generated financial resources profitability intensity had a significant impact on both the industries but had a negative impact on the automobile industry. This can be attributed to the global economic instabilities during this period which affected the bottom lines of the automobile firms. Pharmaceutical industry in general is immune to such instabilities since it deals with human health. Capital intensity has shown a positive impact on the Indian pharmaceutical industry but failed to show any significant impact for the automobile industry. This indicates that the fixed assets accrued by the Indian pharmaceutical firms helped them in the export performance but found to be insufficient in case of automobile firms. Current ratio failed to show any significant effect on the export performance of both the industries. In the case of externally generated financial resources, we considered foreign equity participation and expected that the export performance will have a significant impact on export performance. But the results indicate the contrary which could be due to the apprehensions of foreign investments owing to the expected political instability prevailing in the country coupled with the weak economic outlook in many global economies.

Size of the firm had a significant impact on export performance for both the industries as expected and this indicates that economies of scale of large firms favour the efforts towards export performance.

Further to OLS regression, we employed quantile regression to investigate the nuanced relationships between dependent and predictor variables (Li, 2015). As can be observed from Table 6 and Table 7, we find that all the variables except import of capital goods have shown a significant impact in different quantiles ranging between 0.1 and 0.9 for the pharmaceutical industry. In case of the automobile industry, all the variables except profitability intensity and current ratio have shown a significant impact. The quantile regression results indicate that

quantile regression method is a comprehensive strategy that enables researchers to obtain a complete regression picture for data with heavy-tailed distributions and can a useful tool for future international business research.

Tables 6 & 7 here

5. IMPLICATIONS AND CONCLUSION

Even post-independence in 1947, India rarely encouraged free entry and exit, expansion of scale and induction of technology in its industrial and economic policies. As a result, companies stagnated and became less competitive, relative to global trends. At the same time, the policy of licensing regulated global corporations from entering into or expanding in India. On a helpful side, process patent policies (as in other countries) ensured freedom for domestic players to reverse-engineer global products for Indian markets. The Indian automobile and pharmaceutical industries became, for example, the epitome of low-scale, domestic-oriented direct to market fragmented industrial structures of the 1960s and 1970s. Entrepreneurs and corporations were rid of controls and certain industries started becoming global leaders in certain sectors from the 1990s. Increasing confidence in Indian competencies and policies from the 2000s and post-patent harmonization assurances led to great global interest in India with a better awareness of the competitiveness of Indian enterprise. Simultaneously, Indian industrial groups and larger Indian companies became globally aggressive, entering overseas markets, acquiring overseas units and marquee brands. Our study was an attempt to present the role of various firm resources on the export performance two vibrant Indian industries namely pharmaceutical and automobiles. The results of our study indicate that different firm resources have varied relative importance in case of the Indian pharmaceutical and automobile firms. The findings of our study can help industry practitioners to appreciate the role of different firm resources that have a significant impact on export performance.

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Table 1 : Review of Indian Studies on Determinants of Export Performance

Author (Year) & Industry (Sample Size)	Dependent Variable	Determinants of Export Performance with Significant Impact
Aggarwal (2002); Multi-industry (916)	Export Intensity	Firm size; R&D expenditures; Import of raw materials; Import of capital goods
Bhaduri & Ray (2004) Pharmaceuticals (72) & Electronics (52)	Export Sales	Firm size; R&D expenditures;
Bhat & Narayanan (2009) Basic Chemicals (121)	Export Intensity	R&D expenditures; Firm size; Import of raw material; Choice of technology; Advertising;
Chadha (2009) Pharmaceuticals (131)	Export Sales	Technology (R&D) investments; Firm Size; Profitability
Jauhari (2007) Electronics (164)	Export Intensity	Firm size; Capital-output ratio and FDI
Kumar & Siddharthan (1993) Multi-industry (640)	Export Intensity	R&D expenditures (four industries); Technology imports (four industries); Firm size (seven industries); Advertising intensity (five industries); Capital intensity (two industries); Profitability (four industries)
Lall (1983) Multi-industry (100)	R&D Intensity	Firm size; Firm age; Foreign equity; Royalties paid for technology;
Lall (1986) Engineering Firms (100) & Chemicals (45)	Export Intensity	Size; R&D expenditures; subsidies and licenses (for engineering firms); R&D expenditures; subsidies and licenses; advertising intensity; foreign equity(for chemical firms)

Lall & Kumar (1981)	Export	Profitability; R&D expenditure; Firm size
Multi-industry (100)	Intensity	
Majumdar (2010)	Export	R&D expenditure
Information Technology (112)	Intensity	
Pradhan (2007)	Export	Firm size; Outward FDI; R&D expenditures;
Multi-industry (3951)	Intensity	capital goods imports; raw material imports
Pradhan (2011)	R&D Intensity	R&D investments
Multi-industry (5237)		
Raut (2003)	Export	R&D expenditures; Firm size
Multi-industry (415)	Intensity	
Siddharthan & Nollen (2004)	Export	FDI; Technology imports; Capital imports; Firm
Information Technology (145)	Intensity	size; Import of raw materials
Singh (2009)		Domestic sales; R&D expenditure; Advertising
Multi-industry (3542)	Export Sales	expenditure

Table 2: Definitions of Dependent and Independent Variables

S. No.	Variables	Description
Dependent Variable		
1	Export Intensity	Export Earnings / Sales
Independent Variables		
1) Knowledge-based resources		
a) Technological resources		
1	R&D Intensity	Research & Development Expenses / Sales
2	Import of Capital Goods Intensity	Import of Capital Goods / Sales
3	Import of Raw Materials Intensity	Import of Raw Materials / Sales
4	Royalty Intensity	Royalties Paid / Sales
b) Marketing resources		
1	Marketing Intensity	Marketing Expenses (Promotional expenses) / Sales
2	Advertising Intensity	Advertising Expenses / Sales
3	Distribution Intensity	Distribution Expenses / Sales
2) Property-based resources		
a) Internally generated financial resources		
1	Capital Intensity	Sales / Net Fixed Assets
2	Current Ratio	Current Assets / Current Liabilities
3	Profitability Intensity	Profit After Tax / Sales
b) Externally generated financial resources		
1	Foreign Equity	Foreign Equity Participation in percentage
Control Variable		
1	Size	Natural Logarithm of Sales

Table 3: Correlation Matrix and Descriptive Statistics – Pharmaceuticals (2005-2014)

	EXPIN	SIZE	RDIN	ADVI	DISTI	PATIN	CR	CAPI	ICGIN	IRMI	ROYI	MKTI	FE
EXPIN	1												
SIZE	.483**	1											
RDINT	.068**	.083**	1										
ADVINT	-.048*	.127**	.006	1									
DISTINT	.291**	.280**	-.006	.094**	1								
PATINT	.020	.048*	-.017	.005	-.425**	1							
CR	.244**	.398**	.032	.021	.150**	.021	1						
CAPINT	.330**	.501**	.105**	.066**	.246**	-.014	.250**	1					
ICGINT	.046*	.047*	.800**	-.011	.041*	-.014	-.018	.130**	1				
IRMINT	.469**	.392**	.117**	-.044*	.060**	.007	.154**	.228**	.108**	1			
ROYINT	.064**	-.006	-.002	-.006	.083**	-.025	.006	.037	-.008	-.007	1		
MKTI	.096**	.353**	.033	.052**	.189**	.014	.158**	.121**	.012	-.017	.014	1	
FE	.000	.196**	.030	.090**	.051**	.005	-.026	-.062**	.000	.006	.019	.042*	1
Mean	18.91	5.00	1.45	0.83	1.35	-14.92	1.74	24.29	1.10	7.31	0.12	2.37	3.22
S.D.	26.23	3.44	10.06	3.86	2.17	756.48	2.10	20.52	8.08	12.93	1.15	3.98	13.03

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Note: EXPINT=Export intensity; RDINT=R&D expenses intensity; ADVINT=Advertising expenses intensity; DISTINT=Distribution expenses intensity; PATINT=Profitability intensity; CR=Current ratio; CAPINT=Capital intensity; ICGINT=Import of capital goods intensity; IRMINT=Import of raw materials intensity; ROYINT=Royalties payments intensity;

Table 4: Correlation Matrix and Descriptive Statistics – Automobiles (2005-2014)

	EXPIN	SIZ	RDIN	IRMIN	ADVIN	DISTIN	MKTIN	ICGIN	ROYIN	CAPIN	CR	PATIN	FE
EXPIN	1												
SIZE	.183**	1											
RDINT	-.001	.123	1										
IRMIN	.225**	.309	.093**	1									
ADVIN	.049*	.149	.429**	.083**	1								
DISTIN	.395**	.445	.043*	.243**	.102**	1							
MKTIN	.114**	.295	.068**	.101**	.075**	.231**	1						
ICGIN	.110**	.032	.003	.326**	-.002	.041*	.000	1					
ROYIN	-.023	.299	.015	.208**	.109**	.068**	.022	.026	1				
CAPIN	.015	.022	-.001	.009	.002	.034	.017	-.001	.007	1			
CR	.006	-	-.004	-.003	-.004	.000	.005	-.001	-.009	.002	1		
PATIN	-.194**	.082	-.120**	-.077**	-.154**	.000	-.012	-.080**	.012	.000	.007	1	
FE	-.045*	.262	.030	.091**	.075**	.083**	.079**	.001	.216**	-.001	-	.039*	1
Mean	10.75	5.55	0.26	6.76	0.28	1.26	1.09	1.76	0.25	7.24	2.39	1.80	3.74
S.D.	20.41	3.71	1.50	12.57	1.26	1.57	2.06	15.34	0.67	169.75	27.4	29.69	13.3

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Note: EXPINT=Export intensity; RDINT=R&D expenses intensity; ADVINT=Advertising expenses intensity; DISTINT=Distribution expenses intensity; PATINT=Profitability intensity; CR=Current ratio; CAPINT=Capital intensity; ICGINT=Import of capital goods intensity; IRMINT=Import of raw materials intensity; ROYINT=Royalties payments intensity;

Table 5: Regression Results (fixed effects) with Export intensity as the dependent variable (2005-2014)

Variable	Pharmaceuticals	Automobiles
	Coefficient	Coefficient
R&D Intensity	-0.050 (0.05)	-0.461* (0.22)
Import of Capital Goods	0.037 (0.07)	0.008 (0.02)
Import of Raw Materials	0.370*** (0.03)	0.115*** (0.03)
Royalty Intensity	1.399*** (0.25)	-1.311* (0.58)
Marketing Intensity	-0.147 (0.10)	0.851*** (0.19)
Advertising Intensity	-0.323*** (0.09)	-0.508 (0.34)
Distribution Intensity	1.591*** (0.19)	3.492*** (0.30)
Profitability Intensity	0.002*** (0.00)	-0.135*** (0.01)
Current Ratio	0.245 (0.17)	0.002 (0.01)
Capital Intensity	0.070** (0.02)	-0.001 (0.00)
Foreign Equity	0.072 (0.05)	-0.010 (0.04)
Size	2.544*** (0.17)	0.997*** (0.13)
C	-0.514 (0.62)	-0.045 (0.62)
R ²	0.77	0.63
Adj. R ²	0.75	0.59
F-statistic	29.23	14.87
DW-statistic	1.18	1.73

Note: standard errors in parentheses

† if p < 0.10, * if p < 0.05; ** if p < 0.01; *** if p < 0.001.

Table 6: Quantile Regression Estimates – Pharmaceuticals (2005-2014)

	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
R&D Intensity	0.00	0.02	0.07	0.21	1.13	1.57*	1.94*	1.88	0.75
	0.10	0.04	0.06	0.76	1.21	0.75	0.86	1.39	0.98
Import of Capital Goods Intensity	-0.04	-0.03	-0.10	-0.10	-0.13	0.06	0.21	0.20	0.40
	0.05	0.06	0.08	0.08	0.12	0.40	0.16	0.17	0.54
Import of Raw Materials Intensity	0.13***	0.42***	0.66***	0.95***	1.07***	1.12***	1.19***	1.31***	1.00***
	0.03	0.07	0.06	0.06	0.10	0.07	0.09	0.11	0.16
Royalty Intensity	0.00	0.02	0.04	0.13	0.20	1.19***	0.90***	0.67***	2.63
	0.14	0.16	0.16	0.16	0.17	0.09	0.12	0.15	2.17
Marketing Intensity	0.00	-0.01	-0.09*	-0.24***	-0.27***	-0.35***	-0.50***	-0.77***	-1.03***
	0.03	0.03	0.04	0.06	0.08	0.10	0.12	0.13	0.17
Advertising Intensity	0.00	0.00	-0.03	-0.19*	-0.35***	-0.45***	-0.49**	-0.59***	-0.42***
	0.02	0.02	0.02	0.08	0.09	0.12	0.18	0.11	0.05
Distribution Intensity	0.00	0.10	0.51†	2.28***	3.56***	4.52***	5.42***	5.97***	5.81***
	0.08	0.10	0.27	0.57	0.39	0.31	0.36	0.49	1.60
Profitability Intensity	0.00	0.00	0.00†	0.00***	0.00***	0.01***	0.01***	0.01***	0.01***
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Current Ratio	0.00	-0.02	-0.08	0.00	0.00	0.00	0.96	2.14***	3.19***
	0.07	0.08	0.09	0.09	0.09	0.12	0.72	0.50	0.93
Capital Intensity	0.00	-0.01	0.00	0.00	0.00	0.00	0.02	0.10	0.37***
	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.08	0.09
Foreign Equity	-0.01	-0.01	-0.05***	-0.09***	-0.13***	-0.13***	-0.14***	-0.08	0.00
	0.01	0.01	0.01	0.02	0.03	0.03	0.03	0.06	0.06
Size	0.00	0.07	0.30***	0.45***	0.66*	0.97**	1.15*	1.44	2.85**
	0.06	0.08	0.09	0.13	0.29	0.35	0.50	0.92	0.93
C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.10	0.12	0.12	0.11	0.10	0.08	0.09	0.13	0.14
Pseudo R ²	0.01	0.06	0.12	0.21	0.30	0.37	0.41	0.42	0.40
Adj R ²	0.01	0.05	0.12	0.21	0.30	0.37	0.41	0.42	0.40

Note: standard errors in parentheses

† if p < 0.10, * if p < 0.05; ** if p < 0.01; *** if p < 0.001.

Table 7: Quantile Regression Estimates – Automobiles (2005-2014)

	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
R&D	0.03	-0.01	-0.04	-0.06†	-0.09*	-	-0.18*	-	-
	0.03	0.03	0.03	0.04	0.04	0.05	0.07	0.14	0.12
Import of	0.00	0.00	0.00	0.10	0.08	0.14**	0.13**	0.09**	0.05*
	0.01	0.01	0.01	0.15	0.05	0.01	0.01	0.03	0.02
Import of	0.00	0.00	0.02	0.03	0.05	0.08	0.13	0.37*	0.62**
	0.01	0.01	0.02	0.04	0.04	0.05	0.08	0.17	0.17
Royalty	-0.05	-0.22*	-	-0.44	-0.19	-0.15	-0.19	-	-
	0.08	0.10	0.12	0.31	0.39	0.47	0.77	0.45	0.42
Marketin	0.03	0.12†	0.14*	0.09	0.03	0.00	0.12	0.49	0.87
	0.05	0.06	0.06	0.07	0.08	0.09	0.23	0.50	0.64
Advertisi	0.04	0.19*	0.25*	0.18*	0.22*	0.17*	0.08	-0.09	0.60
	0.09	0.07	0.07	0.08	0.06	0.07	0.11	0.14	0.37
Distributi	0.4**	1.26*	2.45*	3.53*	4.55*	5.64**	6.54**	7.24**	8.12**
	0.14	0.21	0.28	0.21	0.26	0.26	0.40	0.57	1.04
Profitabil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Current	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.74
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.92
Capital	0.00*	0.00*	0.00*	0.00*	0.00*	0.00**	0.00	0.00**	0.00**
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Foreign	0.01	0.01	0.00	-0.02†	-0.03†	-	-	-	-
	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04
Size	-0.02	-0.03	-0.03	-0.02	0.02	0.14*	0.36**	0.93**	1.78**
	0.02	0.03	0.04	0.04	0.05	0.06	0.09	0.16	0.36
C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.07	0.13
Pseudo	0.01	0.06	0.11	0.17	0.22	0.25	0.27	0.27	0.28
Adj R ²	0.01	0.05	0.11	0.17	0.22	0.25	0.26	0.27	0.28

Note: standard errors in parentheses

† if $p < 0.10$, * if $p < 0.05$; ** if $p < 0.01$; *** if $p < 0.001$.