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FIRM LEVEL IMPACT OF FDI: EMPIRICAL EVIDENCE FROM INDIAN AUTOMOBILE INDUSTRY

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Abstract

Many studies have investigated the impact of FDIs on the host economy. Some studies point out that the European capital in the first-wave of globalisation made the United States of America the modern economic power house (Solimano and Watts, 2005). The debate on the advantages and disadvantages of FDI is an ongoing one (Reuber et all 1973, Lall and Streeten 1977). The effect from FDI seems to vary from country to country and for some countries FDI can even adversely affect the growth process (Balasubramanyam et al., 1996; Borensztein et al., 1998; De Mello, 1999; Lipsey, 2000 and Xu, 2000). However, not many studies have concentrated on the impact of FDI at firm level, even though FDI is a firm level phenomenon.

This article aims to study the impact of FDI at firm level. For this purpose, Indian automobile industry has been studied by making a comparative analysis between companies with FDI and companies without FDI on two aspects a) total factor productivity and b) DuPont Analysis. Total factor productivity of both the groups was studied over a period of 15 years from 1995-96 to 2009-10 and DuPont Analysis was carried out for a period of 10 years between 2000-01 and 2009-10. The results show that the two groups have similar performance on both the parameters showing that FDI do not have any impact on the performance of the companies.

Key words: Foreign Direct Investments, Firm Level Impact of FDIs, FDI Impact, FDI and Firm Efficiency, Indian Automobile Industry, Total Factor Productivity

Introduction

We find vast literature onimpact of foreign direct investments on an economy at macro level and also on the automobile industry as whole; however, the impact of FDIs at micro level or firm level is not studiedwell, thus a necessity of this paper. To meet this end, select companies with foreign direct investments and without foreign direct investmentswere studied.

Hymer(1978)explained that firms invest in foreign firms to acquire competitive advantages (such as patented technology, insights over the path of learning curve, managerial skills, marketing skills, exposure to international markets, and of course globally recognizable brand names)they possess over firms in the host country and that FDI is their preferred mode. Companies have been adopting various methods to benefits from the advantages that the external markets offer. These methods include licensing agreements, contracting and exports which are not as efficient as FDI. No other method of operation offers host country knowledge as efficiently as FDI, thus firm knowledge tends to be imperfect. In addition, other forms of operations in foreign country do not let firms to control the operations to the level required to exploit the advantages. Hymer'sthoughts on the subject further gave birth to other theories like transactions costs and internalisation theories (Buckley and Casson, 1991). Hymerargues that in the process of globalization firmscreate strong backward and forward linkages in the international marketsthat effectively counter host country imperfections.

Fdi And Spillovers

Dunning (1979) amalgamated these in the renowned eclectic paradigm or popularly known as the OLI explanation of FDI.OLI is framework that analyzes FDIs, based on advantages that FDI is expected to provide

in comparison with other forms of foreign operations: Ownership, Location, and Internalization (Dunning (1979). FDI = O + L + I,

"O"- Ownership Advantages or Firm Specific Advantages;

"L" - Location Advantages or Country Specific Advantages;

"I" - Internalizing Advantages.

For the host country FDI is touted to be an investment without downside. "In terms of foreign investment, it is the direct investment that should be actively sought for and doors should be thrown wide open for foreign direct investment. FDI brings huge advantages (new capital, technology, managerial expertise, and access to foreign markets) with little or no downside," claimed Bajpai and Sachs (2000).

It is accepted that FDIs form an integral part of a firm's expansion strategy and that FDIs help companies achieve both economies of scale and efficiencies in production (Hymer 1960 and Caves 1971). A number of studies have examined this axiom across countries taking companies with foreign ownership. Li and Guisinger (1991) found that the firms with foreign ownership in the United States have outperformed the domestically owned companies, especially business failure rate of foreign owned companies was found to be significantly lower compared to companies without FDI. Li and Guisinger associated the success of foreign owned companies to ownership advantages. However, evidence from China suggests otherwise. Xu, Pan, Wu and Yim (2006) compared the performance of foreign and domestic companies to conclude that in some categories Chinese owned companies performed better than their foreign owned counterparts. In case of India, Chhibber and Majumdar (1999) studied the first generation companies after economic reforms and suggested that foreign ownership has differing impact on performance of companies. But they also suggested that FDIs resulted in relatively superior performance, when controlled for different variables that might affect a company's performance.

The body of FDI literature identified that technological spillover from FDI in the host economy occurs through four channels (Kinoshita, 2001; Halpern and Muraközy, 2005).

First, the indirect channel of non-FDI (domestic) companies imitatingcompanieswith FDI and acquiring superior technology over a period of time.Second, training and skill augmentation of domestic human capital.However, empirical evidence in this regard is mixed, as is in the case of many aspects of FDI. Based on meta-analysis, Görg and Strobl (2002) opined that managers trained in domestic firms offer industry-specific skill set but not firm-specific skill set to multinationals companies, which provide intra-industryspillovers.

Further, foreign firms contribute to growth of competition in the domestic market. However, this impact of FDI on domestic competition is determined by a) the extent of technology gap and b) entry and exitbarriersin the host economy.Lastly, the spillovers that connect and enable value exchange. Efficiency and quality of output of the host country firms will be enhanced as they buy from or sellto foreign firms. Thus, the enhanced quality of intermediategoods may create international specialization creating further demand. The increased demand results in increasing returns to scale in production which coupled with international specialization will result in productivitygrowth.

Quality Of Fdiin Manufacturing

UNCTAD's World Investment Report (2006)postulates "quality FDI" as "thekind that would significantly increase employment, enhance skills and boost the competitiveness of localenterprises."Ireland's Industrial Development Agency, says that "the value of inward investment mustnow be judged on its nature and quality rather than in quantitative measures or job numbers alone." UNCTAD World Investment Report (2001) notes that, "In the primary sector, the scope for linkages between foreign affiliates and local suppliers is often limited. The manufacturing sector has a broad variation of linkage intensive activities. In the tertiary sector the scope for dividing production into discrete stages and subcontracting out large parts to independent domestic firms is also

limited."Even the service sector do not provide enough linkages to have a broader impact on the economy as it also suffers from same limitations as the tertiary sector.

Objectives Of The Study

This article is aimed at studying the impact of FDIs at the firm level in the Indian automobile industry on financial and operational performance of companies that have FDIs and the ones without FDI. The hypothesis tested in this chapter include, that there is no impact of FDIs on the financial performance of companies and that there is no impact of FDIs on the operational performance of companies.

Importance

In case of irreversible FDIs, extractive industries offer limited linkages to the broader economy and thus studying the role of FDIs in those industries in the context of economic growth might not be worthwhile. In manufacturing industries, the focus was on automobile industry, for two reasons:

a) Automobile industry is an industry where inflows of FDIs have been among the largest and where globalization of production has been most extensive (Moran, 1998) – which means that country specific factors will have little role in outcomes.

b) In India, automobile industry attracts highest FDI in the manufacturing sector. Top 20 sectors attracting FDI have accounted for about 85% of the total inflows between 2000 and 2011. Of these services sector tops the list with 20.82% followed by computer software & hardware (8.27%); telecommunications (8.16%); housing & real estate (7.43%); construction activities (7.08%); automobile industry (4.57%); power (4.55%); metallurgical industries (3.26%); petroleum & natural gas (2.43%); chemicals (other than fertilizers) (2.23%); trading (2.14%); hotel & tourism (1.83%); electrical equipments (1.83%); cement and gypsum products (1.81%); information & broadcasting (including print media) (1.67%); drugs & pharmaceuticals (1.45%); consultancy services (1.41%); ports (1.26%); agriculture services (1.07%) and industrial machinery (0.97%).

Often, global automobile companies build their plants to strengthen their competitive positions in international markets. Therefore, parent companies build their plants to capture all economies of scale using latest technologies and highest quality control systems. The parent companies upgrade technology and quality procedures in their foreign plants continuously.

From a theoretical point of view, the global automobile companies provide jobs in host country paying more than other employers and generate huge exports. They also create backward linkages and spillovers by insisting on whole or majority of ownership in their foreign operations (to limit leakage of technology and management procedures) and work closely with suppliers in host country to increase their productivity and minimize rejection rate of inputs and lower prices over time. Most of the times MNCs in automobile industry provide direct assistance to their suppliers in host country (by providing financial assistance to improve technology, for example); and by subjecting the suppliers to positive productivity shock, such as insisting on quality certification to handover supplier contracts. To help host country suppliers attainnecessary economies of scale, foreign automobile companies provide export advice (Moran, 2005).

Data And Methodology

Sampling

Firm level impact of FDI could have been better measured by analyzing the choosing the companies in which foreign investors have bought equity and then measuring their performance difference between pre FDI period and post FDI period. However, it has two problems that render such measurement unfulfilling, environment specific changes and firm specificchanges.

A) Environment Specific: Measuring performance during pre FDI and post FDI period, means measuring the company's performance before and after liberalization of the Indian economy. Not just these, numerous variables in the changed environment would have affected operational and financial performance of companies. Some other variables would have negatively affected the performance, for instance entry of foreign brands, and controlling performance of companies for all such variables would be nearly impossible.

B) Firm Specific: The changed environment also has affected individual companies. For instance, output and expansion limits were withdrawn post liberalization and that will have a telling effect on the performance due to scale and related effects or technology imports were highly liberalized, which would have altered the production process of a company. These changes mean thatcomparative performance measurement during two eras with vastly divergent environments will not be, theoretically, possible.

Instead, the best way to assess the firm level FDI impact would be to compare the performance of companies with FDI and companies without FDI. Here also, proper care has to be taken to compare appropriate companies as auto industry is highly capital and technology intensive, where scale of operations will have a huge impact on performance. Therefore comparison must be between companies that are likely to haveequal opportunities to compete for resources, technology and market. For this study, judgment sampling or purposive sampling or deliberate sampling method is employed as the universe is quite small.

The sample of firms was chosen as per market share data givenby CMIE (March, 2011) for the year 2010-11.The sample is arepresentative sample, covering more than 60% market share in each and every industry segment.Market share in the Indian automobile industry is highly concentrated, with 6 firms controlling more than 65% market share and the rest 35% is highly fragmented.

Economies of scale play a crucial part in the performance of auto companies as automobile industry is highly capital intensive and technology is often the differentiating factor among the companies' performance. It is established that the companies must have a definite market share relative to other players to achieve economies of scale.Therefore, analyzing companies with marginal market share often leads to misconceptions. Also, size was important as several studies suggested that smaller companies cannot be compared against foreign companies (Lall andMohammad (1983), Jenkins (1990), Kumar and Agarwal(2000).

Other important consideration while choosing the sample was availability of data. All most all the date has been taken from annual reports of companies or from Prowess Database. Due to this listing of companies becomes important and some firms, even with greater market share,not listed on NationalStock Exchange (NSE) or Bombay Stock Exchange (BSE) were excluded. The sample was first drawn from each segment, namely pasenger cars,

For instance, in passenger car and MVU segments Toyota KirloskarMotor Pvt. Ltd. (0.7% in passenger car segment and 19.7% in MUV segment), General Motors India Ltd. (3.3% and 6.1%) and Ford India Pvt. Ltd.(4% and 0.9%). Though, Honda Seil Motors and Hyundai Motors are not listed on NSE or BSE, some data was still available on Prowess, but they had to be excluded inthe study, as their balance sheets pertaining to Indian operations are not available.And thus, their inclusion would have leadto inconsistent results.Similarly, though Piaggio Vehicles had 30.26% market share in three-wheeler segment, it was not included as data was availability. In the twowheelersegment Honda Motorcycle & Scooter (7.97%) and Yamaha Motor India Pvt.Ltd. (2.91%) were not considered due to lack of data.

Though, Mahindra & Mahindra had significant market share in commercial vehicle segment and three wheeler segment, the company do not provide separate balance sheet for automotive operations. Therefore Mahindra & Mahindra was also excluded.Table 2 provides the companies considered for the study along with theirrespective market share.

Table – 2 Sample Companies and Their Market Share in 2010-2011

Criterion	**Company**	**Total Vehicles Sold (units)**	**Market Share**

			(%)
Companies with FDI	Hero Honda*	46,00,130	30.66
	MarutiSuzukiLtd.	12,71,005	8.47
	AshokLeylandLtd.	94,105	0.63
Companies without FDI	Bajaj Auto Ltd.	29,48,601	19.66
	TataMotorsLtd.	8,03,373	5.36
	EicherMotorsLtd.	91,589	0.61
	Others**	51,92,457	34.61
	Total	1,50,01,260	100.00

* Changed to Hero Motor Corp. Ltd., subsequent to demerger from Honda in 2010. However, for 2011 almost all the vehicles were sold under the brand Hero Honda.

** Others include 32 companies from all the segments. And that should indicate the level of fragmentation of the industry.

It is ensured that:

a) All the segments in the industry are included
b) Largest companies in each segment are included
c) Oldest companies in each segment are included, as age of the company plays a crucial role in achieving efficiencies
d) The selection makes for accurate and meaningful comparison between companies with and without FDI

A gestation period of five years from liberalizing the economy, in 1991,was necessary for companies to adaptand thus, the data was constructed on the basis of theperformance between 1996 and 2011. The FDI companies comprised foreign-controlled firms with more than 10%foreign equity.

All the nominal data thus obtained was converted to 1999-2000 price levels, using GDP deflator, to ensure that altering inflation levels do not mislead. To measure the financial efficiency DuPont model has been employed and total factor productivity has been used to measure operational efficiency.

Measurement Of Financial Efficiency

It has been well established in the literature that, financial performance of a company can either make or break its fortunes. "Poor financialpractices"as proved by Dun & Bradstreet's Business Failure Records (1994) are next only to "economic conditions"causing business failures. Since the beginning of financial management as a new discipline, many studies have concluded that poor financial management to be the chief cause of businesses failures (Meech,1925;Lauzen,1985; Bruno et al, 1987; Wood,1989;Gaskilland Manning 1993).

Efforts have been made to develop models that measure financial health of a company accurately, and warn a corporation over an approaching calamity well in advance. Of these models, DuPont Model and Altman Z-Scores are famous and are widely accepted models to gauge the financial health of a company (Boyd, 1989; Blumenthal, 1989; Firer, 1999; Isberg, 1998; Kelly, 2005).

The use of financial ratios has been widely acknowledged in the literature (Horrigan,1965; Edmister, 1972;Osteryoungand Constand,1992; Devine and Seaton, 1995;Burson,1998). If the strategies are not faring well relative to other companies in the same industry or over the years management can get a clear understanding of what needs to be done to improve the performance through ration analysis (Liesz and Maranville, 2008).

Dupont Methodology

After being first proposed by Donaldson Brown, an electrical engineer, in 1918, three distinct versions of DuPont model have been used to help unravel the underlying drivers of profitability (Liesz and Maranville, 2008; Little, et al 2009; LESE, 2009, Bernhardt).

In essence, the DuPont Model assesses profitability and efficiency of firm through five ratios. These are:

1. Operating profit margin: (Earnings Before Interest & Taxes or EBIT / sales)

2. Capital turnover: (sales / invested capital)

3. Financial cost ratio: (Earnings Before Taxes or EBT / EBIT)

4. Financial structure ratio: (invested capital / equity)

5. Tax effect ratio: (Earnings After Taxes or EAT / EBT)

Measurement Of Operational Efficiency

Factor Productivity

In the literature, productivity has been defined as a measure of efficiency of converting physical inputs into physical outputs. At its simplest form, productivity is measured in terms of number of units of output achieved per unit of input or output per unit of factor input. The firm that has relatively higher productivity measure can be said to be more efficient among its peers. Productivity is measured as output per unit of input employed – labour, capital and/or materials.

Total factor productivity is generally regarded to be an appropriate productivity indicator as it measures the change in output net of the changes in all inputs (Liberman, Lau and Williams, 1990).

Index Number Approach

Lipsey and Carlaw (2001) gave the Cobb-Douglas aggregate function as:

$Y = AL^{\alpha} K^{\beta}$, where, $\alpha + \beta = 1$

Y represents the total aggregate output. The index of aggregate labour inputs and aggregate capital are represented by L and K respectively.

While Y, L and K are actual measurements; A, α and β are estimations.

Index of the aggregate state of technology called total factor productivitywas represented as A.

However, for the purpose of this study, total factor productivity is measured as residual (Solow, 1957; Griliches and Jorgenson, 1967) as has been used by Liberman, Lau and Williams (1990) while measuring the productivity differences between Japanese and American automobiles. Under this, total factor productivity is the growth of real output i.e., by factoring in the growth of factor inputs. In this method production function is expressed as

$Q(t) = A(t)\, f[K(t), L(t)]$ **-- Equation. 1**

Where *(Q(t))* output or value added,

(K(t)) is capital,

(L(t)) is labour at time *(t)*.

When the inputs variables are held constant, output changes at a rate equal to that of *A(t)*. Thus, *A(t)*is a measure of total factor productivity.

Logarithmic derivative of equation 1, we have,

$$\frac{\dot{Q}}{Q} = \frac{\dot{A}}{A} + e_k \frac{\dot{K}}{K} + e_l \frac{\dot{L}}{L} \quad \text{-- Equation. 2}$$

where dots are the time derivatives of e_k and e_l

e_k and e_l measure production elasticities of capital and labor:

$$e_k = \frac{\partial Q}{\partial K}\frac{K}{Q}, \quad \text{-- Equation. 3}$$

$$e_l = \frac{\partial Q}{\partial L}\frac{L}{Q} \quad \text{-- Equation. 4}$$

The rate of total factor productivity growth can be calculated as

$$\frac{\dot{A}}{A} = \frac{\dot{Q}}{Q} - e_k \frac{\dot{K}}{K} - e_l \frac{\dot{L}}{L} \quad \text{-- Equation. 5}$$

if we have growth rates of output, capital and labor and the production elasticities. Where growth rates of output, capital and labor can be directly calculated, production elasticities need to be the estimates assuming constant returns to scale, i.e., $e_k + e_l = 1$. For this study this assumption had been maintained.

In the competitive factor and output markets (which Indian auto industry offers), theoretically, incomes of capital and labor are equal to marginal products. In other words, production elasticities, e_k and e_l, are equal to the income share of capital and labor, s_k and s_l.

Labor income share, s_l, is available. Under the constant returns to scale assumption, capital income share can be calculated as $s_k = 1 - s_l$.

By substitution s_k and s_l in **Equation.5**, we have,

$$\frac{\dot{A}}{A} = \frac{\dot{Q}}{Q} - (1 - s_l)\frac{\dot{K}}{K} - s_l \frac{\dot{L}}{L} \quad \text{-- Equation. 6}$$

Approximating the continuous growth rates on the right hand side of Equation. 6, by annual difference in the naturallogarithms of the variables, we have,

$$\dot{A}/\dot{A} \cong [\ln Q_t - \ln Q_{t-1}] - (1 - \bar{s_l})[\ln K_t - \ln K_{t-1}] - \bar{s_l}[\ln L_t - \ln L_{t-1}], \quad \text{-- Equation. 7}$$

where, $\bar{s_l} = \frac{1}{2}(s_{l,t} + s_{l,t-1})$. This representation of total factor productivity is referred to as Tornquist index.

Variables And Data Description

As explained in preceding sections, the sample covers three companies that have FDI and three companies that do not have FDI. For DuPont analysis 10 year data has been used from 2000-01 to 2009-10. For the purpose of measuring total factor productivity, 16 years data from 1995-96 to 2009-10, has been taken and the measurement was done for 15 years from 1996-97 to 2009-10, taking 1995-96 as the base year.

The sample covers companies with FDI: MarutiSuzuki (1995-96 to 2009-10), Ashok Leyland (1995-96 to 2009-10), Hero Honda (1995-96 to 2009-10) and companies without FDI: Tata Motors (1995-96 to 2009-10), Baja Auto (1995-96 to 2009-10) and Eicher Motors (1995-96 to 2009-10). All the data has been converted to 1999-2000 prices, using GDP deflator taken from RBI.

Dupont Variables

For calculating DuPont ratios, all the necessary variables as explained in earlier sections were taken from annual reports of the companies. No calculations for arriving at any particular variable was necessary, however, all the values have been converted to 1999-2000 prices, using GDP deflator taken from RBI.

Factor Productivity Variables

Output Measurement

The output measure *(Q)* used for calculating total factor productivity is the total value-added by each firm in each fiscal year in constant prices, where value added = sales – raw materials used.

Labour and Capital Input

Labour was taken as total number of employees for each firm during each fiscal year, multiplied by average working hours per employee per year. Average working hours per day per employee was taken to be 8, as it is the government norm. Labour hours, thus are not firm specific.

Perpetual inventory capital adjustment method is used to calculate real stock of capital for each firm using the equation

$K_t = (1- \delta) K_{t-1}$ + deflated gross investment

where, an increase in a company's gross property, plant and equipment, plus expenditure on tooling was defined as gross investment. The gross investment thus obtained has been converted to constant prices (1999-2000) prices,

and δ (assumed at 10%) is rate of economic depreciation as shown by Hulten and Wykoff (1981) using weighted average over asset categories. The capital stock estimates are for the beginning of each fiscal.

Factor Shares

Income shares method was used for this study. Labour share of income was taken as total labour compensation in each fiscal divided by value-added in respective fiscal. Capital share of income was taken as residue as $\alpha + \beta$ was assumed to be equal to 1, under constant returns to scale.

Results And Findings

Table –3

DuPont Analysis - Return on Equity

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10

Companies without FDI										
Eicher*	0.57	0.40	0.69	0.22	0.26	0.61	0.12	0.13	0.09	0.12
Bajaj	0.20	0.19	0.17	0.21	0.19	0.24	0.23	0.20	0.37	0.69
Tata	-0.31	-0.02	0.12	0.29	0.33	0.31	0.31	0.25	0.10	0.16
Companies with FDI										
Hero Honda[#]	0.78	0.69	0.74	0.72	0.60	0.54	0.37	0.35	0.38	0.60
Ashok Leyland	0.16	0.08	0.12	0.19	0.24	0.25	0.26	0.23	0.07	0.12
Maruti	-0.20	0.04	0.05	0.16	0.21	0.24	0.25	0.22	0.13	0.23

** Eicher altered its reporting period since April 2008 from April – March to January - December. Hence, 2008 represents 9 months from April 2008 to December 2008, subsequent period represent operations for calendar year.*

[#] Hero Honda demerged in 2010, since then Hero Motor Corp. began representing interests of Indian ownership whereas its Japanese counterpart started operations under the name Honda Motorcycle & Scooter India (Pvt.) Ltd.

Hero Honda is the company utilizing its assets most efficiently, as can be seen from the above table. However, when it comes to the distinction between companies with and without FDI the results are not varying vastly to conclude which group is efficient. One interesting aspect comes out from the above table: age of the company seems to be affecting the asset utilization ratio.

However,analyzing any further would be difficult as the comparison among individual companies would not say much about the effectiveness of foreign investments. Further, multiple companies in two groups with observations for multiple years would make it impossible to statistically analyze the data. To overcome this hurdle we can calculate the combined return on equity of companies with FDI and companies without FDI and then compare the two groups using a statistical tool. The results are as presented below.

Table – 4 CombinedReturn on Equity of Companies with FDI and Companies Without-FDI

Year	**Companies Without-FDI**	**Companies WithFDI**
2000-01	-0.07	0.03
2001-02	0.08	0.15
2002-03	0.15	0.18
2003-04	0.25	0.27
2004-05	0.26	0.30
2005-06	0.29	0.30
2006-07	0.27	0.28
2007-08	0.23	0.25
2008-09	0.13	0.17
2009-20	0.23	0.28

Table – 5 ANOVA Results and Descriptive Statistics

SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
Companies Without-FDI	10	1.832	0.183	0.012		
Companies WithFDI	10	2.204	0.220	0.007		
ANOVA						
Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.006	1	0.006	0.689	0.417	4.413
Within Groups	0.180	18	0.010			
Total	0.187	19				

Descriptive Statistics

	Companies Without-FDI	Companies With-FDI
Mean	0.183	0.220
Standard Error	0.035	0.027
Median	0.232	0.258
Standard Deviation	0.111	0.086
Sample Variance	0.012	0.007
Kurtosis	2.085	1.144
Skewness	-1.474	-1.230
Range	0.362	0.273
Minimum	-0.071	0.031
Maximum	0.290	0.304
Sum	1.832	2.204
Count	10	10
Confidence Level(95.0%)	0.079	0.062

A yearly average of the DuPont ratio is calculated for both the groups of automobile companies (Automobile companies with FDI investment and Automobile companies without FDI). This is done by combining the Profit and Loss account and balance sheets of the companies in each of the groups. As explained, Bajaj Auto, Eicher and Tata Motors are taken into the sample for Non FDI Companies and Maruti, Hero Honda and Ashok Leyland constitute the sample for the automobile companies with FDI.

A comparative look into the average DuPont ratio of the FDI sample with the non FDI sample for the 10 year period 2000 – 2001 to2009 – 2010 reveals that performance of automobile companies with FDI was marginally better than the performance of the non – FDI automobile companies during the period of study. The average ROE for the non – FDI automobile sample was 0.183 (or 18.3%) and that of the sample of automobile companies with FDI were 0.220 (or 22%). The average was 4% higher in favour of the sample with automobile companies with FDI investment.

The comparative performance of the FDI based automobile companies was better when compared to the non – FDI automobile companies in the year 2000 – 2001 when the difference between both the samples was more than 10%. Though there was also significant difference between the samples in the years 2001 – 2002 (7%) and in the years 2008 – 2009 (4%) and in the year 2009 – 2010 (5%), the difference in performance was not much in the other years. In the years 2005 – 2006 and in the year 2006 – 2007 the difference between both the samples was only 1% in favour of the automobile companies with FDI investments.

A deeper look at the DuPont Return on Average Equity shows that the net profit margin is almost the same in both the samples.However, the consistency in the performance of the FDI invested automobile sample gave it a slight edge over the non FDI invested automobile sample. The FDI infused automobile sample clocked consistently 6% for 4 years between the years 2004 to 2008. Whereas the net profit margin of non – FDI automobile sample fluctuated between 6 to 8% in this period.

Overall though the difference between the performance of FDI sample was marginally better when compared to the non – FDI sample, there was no significant differences between both these samples as reflected in the ANOVA Test based on the single factor – DuPont Return on Average Equity.

As per the ANOVA results we reject the null hypothesis when calculated*F* value is less than *F critic*. From the above table it is evident that the calculated *F* value is less than *F critic*at 95% confidence level or we can say that statistically there is no difference between thefinancial performance of the companies with FDI and the companies without FDI. In other words it can be concluded, as per the data, that FDI did not any significant impact on the financial performance of the automobile companies in India.

It is further evident from the mean of the two groups. Mean of ROE of the companies without FDI is 0.18 while the mean ROE of the companies with FDI is 0.25 at 95% confidence level. The data shows that the two groups are performing almost equally and that there is not much give and take between the two groups.

Productivity

Table 6Total Factor Productivity

Year	**Companies with FDI**				**Companies without FDI**		
	Ashok Leyland	**Hero Honda**	**Maruti**		**Eicher**	**Bajaj**	**Tata**
1995-96	0.11	0.35	0.24	1995-96	0.11	-0.24	-0.03
1996-97	0.02	-0.43	0.27	1996-97	0.28	0.13	0.06
1997-98	-0.18	0.38	0.20	1997-98	-0.08	-0.10	-0.36
1998-99	0.25	0.02	-0.49	1998-99	0.11	-0.07	-0.16
1999-00	0.11	0.25	-0.29	1999-00	-0.12	-0.13	-0.08
2000-01	0.19	0.09	-0.17	2000-01	0.30	-0.25	0.14
2001-02	-0.06	0.49	-0.01	2001-02	-0.32	0.20	0.22
2002-03	0.37	0.17	0.15	2002-03	0.04	0.52	0.25
2003-04	0.08	0.04	0.43	2003-04	-0.22	0.10	0.49
2004-05	0.13	0.40	0.17	2004-05	0.22	0.12	0.23
2005-06	0.04	-0.10	0.22	2005-06	0.07	0.22	0.08
2006-07	0.16	-0.17	-0.29	2006-07	0.30	-0.02	0.20
2007-08	-0.06	0.01	-0.11	2007-08	-0.01	-0.45	-0.54
2008-09	-1.00	-0.33	-0.21	2008-09	1.21	-0.03	-0.42
2009-10	-0.09	0.22	0.06	2009-10	-0.94	0.35	0.18

Maruti Suzuki appears to be displaying superior performance in utilizing its factors of production most efficiently. However, when it comes to the distinction between companies with and without FDI the results are not varying vastly to conclude which group is efficient. Here too we face the same hurdle as in the case of financial performance. Analyzing any further would be difficult as the comparison among individual companies would not reveal much about the effectiveness of foreign investments. Further, multiple companies in two groups with observations for multiple years would make it impossible to statistically analyze the data. To overcome this hurdle we can calculate the combined total factor productivity of companies with FDI and companies without FDI and then compare the two groups using a statistical tool. The results are as presented below.

Table 7CombinedTotal Factor Productivity of Companies with FDI and Companies Without-FDI

Year	**Companies With FDI**	**Companies Without-FDI**
1995-96	0.271	-0.047
1996-97	0.105	0.097
1997-98	0.109	-0.246
1998-99	-0.208	-0.094
1999-00	0.005	-0.060
2000-01	-0.069	0.080
2001-02	0.080	0.212
2002-03	0.195	0.293
2003-04	0.237	0.336
2004-05	0.232	0.207
2005-06	0.081	0.120
2006-07	-0.097	0.184
2007-08	-0.101	-0.492
2008-09	-0.345	-0.262
2009-10	0.093	0.180

Table 5.8 Anova Results and Descriptive Statistics

SUMMARY						
Groups	*Count*	*Sum*	*Average*	*Variance*		
Companies WithFDI	15	0.589	0.039	0.030		
CompaniesWithout-FDI	15	0.508	0.033	0.053		
ANOVA						
Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	0.0002	1	0.0002	0.0051	0.9431	4.195
Within Groups	1.185	28	0.0423			
Total	1.185	29				

Descriptive Statistics

	Companies With FDI	**Companies Without-FDI**
Mean	0.039	0.033
Standard Error	0.045	0.059
Median	0.081	0.097
Standard Deviation	0.175	0.232
Sample Variance	0.030	0.0538
Kurtosis	0.050	0.286
Skewness	-0.708	-0.883
Range	0.616	0.829
Minimum	-0.345	-0.492
Maximum	0.271	0.336
Sum	0.589	0.508
Count	15	15
Confidence Level (95%)	0.097	0.128

Total Factor Productivity is calculated for both the sample groups (Automobile companies with FDI investment and Automobile companies without FDI). This is done by combining the all the variables (viz., value added, labour and capital) of the companies in each of the groups. As explained, Bajaj Auto, Eicher and Tata Motors are taken into the sample for Non FDI Companies and Maruti, Hero Honda and Ashok Leyland constitute the sample for the automobile companies with FDI.

Conclusion

The results reveal that average labour share of income,for the 15 year period between 1995 and 2010, is higher in FDI companies at 41.3% compared to that of Non-FDI companies with 38.4%. Thus it can be stated that FDI companies have been giving higher wages compared to Non-FDI companies, as is expected. The difference is more startling when we take absolute average number of workers per year: the FDI companies used on an average 22,664 employees for an output (value added in this case) of Rs. 7, 057 croreper annum during the study period, while the Non-FDI companies used on an average 39,685 employees to produce Rs. 8,908 croreper annum worth output. This also says that the FDI companies were having superior employee productivity. Average productivity per employee at FDI companies was Rs. 31 lakhs per annum in the study period compared to Rs. 22 lakhs per annum. That is a wide margin in favour of FDI companies.This huge margin in productivity means that FDI companies are more technology oriented, while the Non-FDI companies are labour oriented.

Among all the companies, Maruti Suzuki has the highest productivity per employee at an average of Rs. 83 lakhs per annum, while Ashok Leyland has the lowest at an average of Rs. 9 lakhs per annum. Maruti Suzuki

employed 5,110 persons per annum on an average during the study period to produce an average of Rs. 4,252 croreoutput per annum. At the same time, Ashok Leyland employed an average of 13,244 persons per annum and its average value added per annum was Rs. 1,230crore. Average per employee productivity has not been varying so much in the companies without FDI. The highest per employee productivity was that of Tata Motors' at Rs. 28 lakhs and the lowest was of Bajaj Auto's at Rs. 13 lakhs.

However, when examined for total factor productivity, FDI companies have outperformed Non-FDI companies in the first five years with a wide margin. But from 2000-2001 onwards, the Non-FDI companies have exhibited superior performance.

As per the ANOVA results we reject the null hypothesis when calculated*F* value is less than *F critic*. From the above table it is evident that the calculated *F* value is less than *F critic*at 95% confidence level or we can say that statistically there is no difference between the operational performance of the companies with FDI and the companies without FDI. It is further evident from the mean of the two groups. Mean of total factor productivity of the companies without FDI is 0.033 while the mean total factor productivity of the companies with FDI is 0.039 at 95% confidence level.

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