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Indian Meat Market and Industry: Structure, Conduct and Performance Analysis

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Indian Meat Industries contributes significantly in total livestock sector. Study of Meat Industry will help in formulating policy and making regulatory changes. The Structure, Conduct and Performance model is used for the study of Indian Meat Industry. The data was collected from the Prowess database of the CMIE, Mumbai. Dataset of 21 companies operating in India over the period from 2014 to 2022 was collected and the 2SLS method was applied for estimation. Result revealed that there exist strong inter-linkages amongst Market Structure, conduct of companies and their financial performance. Market share of company depends directly on assets base, selling intensity and past financial performance. Companies selling efforts vary directly with asset base, market share and financial performance significantly. Similarly, returns on assets of company vary directly with its market share, asset base and selling efforts. There exist bidirectional relationships between market structure of the companies and their financial performance. The same can be said in respect of conduct-performance relationships.

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1. INTRODUCTION

India's food processing industry is poised for significant growth, buoyed by its vast untapped resources and an increasing demand for processed products from its burgeoning middle-income group. With a population nearing 1.4 billion as of 2023, India stands as the world's most expansive market for food products. Rapid transformations in the socio-economic landscape have further propelled the emergence and expansion of the country's food processing market.

1.1 Scenario of Livestock / Poultry sector

The 20th livestock census (2019) of India revealed that the total livestock population as 535.78 million, comprising of 192.49 million cattle, 109.85 million buffalo, 148.88 million goats and 74.26 million sheep. According to Department of Animal Husbandry, Dairying and Fisheries, GOI, India ranks first in buffalo, second in goat and third in sheep population in the world.

India ranks first in the world in milk production, which went up to 220 million tonnes in the year 2022-23 from 17 million tonnes in 1950-51 and it is expected to grow continuously [1] per capita availability of milk has also increased from 112 grams per day in 1968-69 to 427 grams in 2020-21.

Indian poultry sector has made impressive progress during the last three decades, evolving from backyard venture to a full-fledged commercial agro-industrial business. The high trajectory growth of the Indian poultry industry placed India at third position in world's egg production with production of 129.60 billion eggs and eight position in meat production with a production of 9.29 million tonnes of meat. Egg and meat production are significant contributors in the Indian economy [2]. Broiler industry is well dominated in the southern parts of India with nearly 60-70 per cent total output of broiler coming from these states.

2. MARKET STRUCTURE

Market structure is commonly evaluated by examining the degree of seller concentration, which is crucial in understanding the level of imperfect competition within the market. The literature on industrial organization recommends several metrics for gauging market concentration. These include the market shares of individual firms, the n-firm concentration ratio, the Herfindahl Hirschman Index (HHI), price-cost margins, profitability, and more.

For this study, we employed three specific indices to assess market concentration within the Indian Meat sector:

Market Shares of Companies: This provides insights into the standing of individual meat companies within the broader market landscape.

Concentration Ratio: An aggregate measure, this reflects the cumulative market share of the top firms, indicating the overall degree of concentration.

Herfindahl Hirschman Index (HHI): This is a more comprehensive metric, accounting for the market share of all companies, and offers a robust measure of market concentration.

Additionally, this article delves into a company's size, as defined by its gross fixed assets. This serves to illustrate the scale at which a company operates. By also considering a company's revenue, we aim to gain insights into the prevailing market demand for its offerings and the underlying market conditions.

Table 1 presents the average market size and asset base of the companies under consideration. From 2014 to 2022, there has been an observable increase in both these metrics. Interestingly, despite this growth, there has not been a significant disparity in these values across different companies, indicating a consistent increase in market size and asset base for all the firms involved.

Turning to Table 2, the data shows that, on average, individual companies held a modest market share during the examined period. While there have been variances in market share among companies, the gap in these disparities has been narrowing over the years. The Herfindahl Hirschman Index (HHI) further underscores this, pointing out that market concentration within the sector has been relatively low. Moreover, although there has been a decrease in market concentration over the years, the decline has not been asserted.

Table 1. Basic condition of meat market in India

Year	Market size		Company size	
	Average	CV	Average	CV
2014	2.72	0.271	2.774	0.171
2015	2.8	0.244	2.811	0.175
2016	2.892	0.225	2.857	0.176
2017	2.987	0.218	2.905	0.178
2018	3.076	0.213	2.969	0.176
2019	3.158	0.209	3.025	0.18
2020	3.255	0.209	3.088	0.186
2021	3.306	0.212	3.132	0.195
2022	3.338	0.224	3.169	0.199

2.1 Conduct of the Meat Companies

In markets characterized by imperfect competition, a company's financial success is often influenced heavily by its selling endeavors. This encompasses advertising, marketing, and the establishment of distribution networks.

Advertising plays a pivotal role in financial outcomes by distinguishing a company's products/services from its competitors. It creates barriers for entry, solidifies the company's image, and can sway consumers to favor uniquely branded products. This differentiation makes demand more inelastic, bolstering a company's control over its market share. Furthermore, advertising can stymie new entrants. While new entrants can leverage advertising to gain market visibility, established companies can overshadow them with counter-advertising, limiting the newcomers' potential market share. These factors collectively diminish market competition, potentially augmenting the financial outcomes for established companies.

Additionally, investments made by companies in marketing and distribution infrastructure can have dual positive impacts on financial performance. Firstly, these expenditures amplify competitiveness by fostering extensive marketing and service networks, enhancing product/service appropriateness, and boosting operational efficiency. Secondly, such infrastructure can heighten a company's bargaining leverage.

In this study, companies' strategic behavior is evaluated through the lens of their selling efforts. Specifically, "selling intensity" (defined as the ratio of total selling expenses to income) is looked at to gauge the vigor of a company's selling endeavors, which includes expenses related to advertising, service promotion, and distribution network development. Data presented in Table 3 outlines the selling efforts of meat companies in India. The findings suggest that, on average, while selling intensity has remained relatively modest, there have been notable fluctuations over the years, with periods of increase followed by decrease. This suggests that meat companies in India have been strategic, periodically intensifying their selling efforts to cement their market positions. Yet, it is crucial to highlight that these selling strategies and intensities have shown considerable variation among different companies.

Table 2. Structure of meat market in India

Year	Market share		HHI
	Average	CV	
2014	0.033	1.464	0.001
2015	0.045	1.108	0.003
2016	0.042	1.103	0.005
2017	0.042	1.111	0.007
2018	0.044	1.091	0.009
2019	0.041	1.156	0.01
2020	0.041	1.203	0.012
2021	0.042	1.183	0.014
2022	0.044	1.131	0.016

2.2 Performance of the Meat Companies

When it comes to evaluating the financial performance of a company, two primary methods emerge: the stock market approach and profitability. The stock market approach relies on stock market valuations to gauge a company's financial health. Rooted in the belief of stock market efficiency, this method evaluates performance based on shifts in share prices, factoring in overall market movements and specific systematic risks. However, this approach has its pitfalls, especially when share prices embody random valuation errors. In such

instances, share price fluctuations might primarily stem from market corrections, making evaluations inaccurate. In contrast, the profitability approach is perceived as a more straightforward measure of financial performance [3, 4].

Table 3. Strategies of meat companies

Year	selling intensity	
	Average	CV
2014	0.046	1.28
2015	0.048	1.163
2016	0.052	1.018
2017	0.054	0.912
2018	0.054	0.88
2019	0.05	0.941
2020	0.048	1.035
2021	0.043	1.117
2022	0.043	1.258

This study adopts the profitability approach to analyze the financial performance of meat companies. We've determined three profitability metrics:

- Profitability: The ratio of Profit Before Interest and Taxes (PBIT) to total income.
- Returns on Assets: The ratio of PBIT to gross fixed assets.
- Returns on Capital Employed (ROCE): The ratio of PBIT to capital employed.

Furthermore, this paper examines companies' operational efficiency by assessing cost efficiency and the current ratio.

Data from 2014 to 2022 reveals fluctuations in companies' financial performances, with ROCE showing pronounced volatility (as seen in Table 4). When focusing on the ratio of PBIT to Income, there is evidence of steady improvement over the years. However, financial outcomes have varied among companies, with particularly significant disparities in terms of ROCE. This variability is also noticeable with the current ratio (the proportion of current assets to current liabilities), as illustrated in Table 5. Notably, there is a marked difference in total cost efficiency across different companies.

Table 4. Performance of meat companies

Year	PBIT/Income		ROA (PBIT/Assets)		ROCE (PBIT/Expenses)	
	Average	CV	Average	CV	Average	CV
2014	0.073	4.335	0.138	0.719	0.123	1.316
2015	0.083	2.621	0.134	0.696	0.118	1.09
2016	0.096	1.372	0.135	0.676	0.118	0.915
2017	0.117	0.693	0.143	0.606	0.127	0.786
2018	0.126	0.714	0.191	1.164	0.192	1.53
2019	0.12	0.795	0.184	1.229	0.186	1.611
2020	0.127	0.757	0.2	1.119	0.193	1.557
2021	0.117	0.796	0.153	0.459	0.131	0.933
2022	0.131	0.798	0.163	0.449	0.148	0.925

Table 5. Cost efficiency of meat companies

Year	Cost (Total Expenditure/Income)		Operating Expenditure/Income		Current Ratio	
	Average	CV	Average	CV	Average	CV
2014	1.1	0.42	0.25	1.49	4.16	1.61
2015	1.08	0.33	0.24	1.32	3.93	1.42
2016	1.03	0.21	0.21	0.79	4.33	1.29
2017	0.99	0.12	0.17	0.44	6.36	1.44
2018	0.95	0.09	0.18	0.44	8.14	1.61
2019	0.95	0.09	0.17	0.47	6.11	1.79
2020	0.94	0.09	0.16	0.51	4.82	1.68
2021	0.96	0.08	0.15	0.53	7.05	1.92
2022	0.95	0.08	0.16	0.56	7.03	1.93

The preceding discussions reveal intriguing dynamics pertaining to the market structure, strategic behavior, and financial outcomes of the Indian Meat sector. A few points of note are:
Company Dominance: Certain companies continue to exert significant influence, maintaining their dominant positions over the years.

Growth in Size and Market: Both the average asset base (size) of a company and its market size have displayed an upward trend from 2014 to 2022.

Market Concentration: Despite the implementation of several liberal policy measures aiming to diversify the market, there has been only a slight reduction in market concentration.

Strategies Under New Business Conditions: Companies are showing a preference for non-price competitive strategies, such as increased selling efforts. However, this shift has not substantially improved financial performance or efficiency.

These observations give rise to pertinent questions:

- Why have not policy reforms heightened the level of competition in the Indian meat sector?
- How do market structures and strategic choices influence the business outcomes of these companies?
- Is a company's market control, business strategy, or performance influenced by its ownership nature?

To address these questions, it is vital to pinpoint the factors shaping the market structure of the meat sector, understand the business strategies of various companies, and analyze their financial performance. This necessitates a comprehensive exploration within the context of a dynamic Structure-Conduct-Performance (SCP) framework. The subsequent section of the paper delves deeper into this analysis.

2.3 SCP Relationships in Indian Meat Sector: Model Specification

The existing literature on industrial organization (e.g., [5-8] proposes various econometric techniques to empirically analyze the SCP relationships. However, in the present paper, following [9,10], simultaneous equation approach is applied. This approach contains three different models assuming that each of structure (S), conduct (C) and performance (P) is a function of the other two aspects, i.e.,

$$S = f_1(C, P),\ C = f_2(S, P),\ P = f_3(S, C)$$

In the present article, market share (SHARE) is taken as a proxy for market structure, selling intensity (SELL) for conduct, and returns on assets (ROA) for financial performance (PER). While market share reflects both efficiency and market power [4,11,12], selling intensity can capture product differentiation with price competition [13,14]. On the other hand, return on assets is a much simpler and more widely used measure of financial performance of a company [3,4]. “However, market share of companies may be influenced by other structural aspects of the market like their market size (MSZ) and asset base (CSZ), whereas, returns on assets can be affected by their cost inefficiency (COST)” [10]. Similarly, selling efforts by the companies can be influenced by other business strategies as well. Hence, the system of equations mentioned above can be rewritten as:

$$SHARE = \phi 1(S', C, P),\ SELL = \phi(S, C', P),\ ROA = \phi(S, C, P')$$

In this analysis, the notation S’ represents a set of variables pertaining to market structure, excluding the market share of the companies. Meanwhile, C’ signifies behavior aspects excluding selling efforts, and P’ encompasses performance metrics other than returns on assets. Yet, as Kambhampati, (1996) suggests, these functional relationships might not always be immediate. There's a likelihood of delayed relationships among many of these variables. For instance, previous behavior and past performance might influence market concentration. Likewise, a company's conduct could be swayed by its past performance. Hence, an apt lag structure is integrated into the models. Integrating this lag structure not only accounts for the dynamics of the proposed relationships but also minimizes endogeneity concerns.

2.4 Determinants of Market Structure

We assume that market share of a company ($SHARE_{it}$) is a function of its current company size (CSZ_{it}), lagged market size ($MSZ_{i,t-1}$), lagged selling intensity ($SELL_{i,t-1}$), lagged returns on assets ($ROA_{i,t-1}$), i.e.,

$$SHARE_{it} = f_1 (CSZ_{it}, MSZ_{i,t-1}, SELL_{i,t-1}, ROA_{i,t-1}) \quad (1)$$

Here, $MSZ_{i,t-1}$ and CSZ_{it} are proxy for structural aspects of the market other than market share, $SELL_{i,t-1}$ for strategy, $ROA_{i,t-1}$ for performance. Assuming the functional relationship to be linear, (1) can be rewritten as,

$$SHARE_{it} = \alpha + \beta_1 CSZ_{it} + \beta_2 MSZ_{,i\ t-1} + \beta_3 SELL_{,i\ t-1} + \beta_4 ROA_{i,\ t-1} + u_{it} \quad (2)$$

Possible Impact of the Independent Variables Current Company Size (CSZ_{it}): Size of a company, measured in terms of its asset base, can be seen as a proxy for the scale of operation. It is expected that larger companies operate at higher scale. This helps the company to reap the benefits of economies of scale, and thereby to have greater share in the market. Hence, one may expect direct influence of asset base on market share of a company.

Lagged Market Size ($MSZ_{i,t-1}$): In the present paper, market size is used to proxy demand for services of a company, i.e., to indicate its absolute position in the sector. Given the size of the sector, the companies with greater demand for their services are expected to have larger share in the market. In other words, market share of a company is likely to vary directly with its market size. However, when market size of other companies also changes, the relative position of a particular company in the market may not necessarily alter.

Lagged Selling Intensity ($SELL_{i,t-1}$): On the one hand, a company disseminates information about its products and services as well as creates image advantage and barriers to entry through advertising. On the other hand, promotional efforts and widening of distribution networks help the companies in creating necessary complementary assets. All these give the company an opportunity to raise its market share. Hence, market share of a company is expected to vary directly with its selling efforts.

Lagged Return on Assets ($ROA_{i,t-1}$): In general, better financial performance raises the ability and willingness of a company to grow, and thereby can result in its higher market share. On the other hand, in the absence of entry barriers, better financial performance of the existing companies can encourage entry into the sector resulting in lower market share. Hence, the nature of impact of financial performance of a company on its market share depends on the relative strength of these diverse forces.

2.5 Determinants of Conduct

It is assumed that selling efforts of a company ($SELL_{it}$) is a function of its lagged market share ($SHARE_{i,t-1}$), current asset base (CSZ_{it}) and lagged financial performance ($ROA_{i,t-1}$), i.e.,

$$SELL_{it} = f_2 (SHARE_{i,t-1}, CSZ_{it}, ROA_{i,t-1}) \quad (3)$$

Here, $SHARE_{it}$, and CSZ_{it} control for structural aspects of the market and $ROAi_{,t-1}$, for companies performance. Assuming the functional relationship to be linear, (3) can be rewritten as,

$$SELL_{it} = \alpha + \beta_1 SHARE_{i,t-1} + \beta_2 CSZ_{it} + \beta_3 ROA_{i,t-1} + v_{it} \quad (4)$$

Possible Impact of the Independent Variables- Lagged Market Share ($SHARE_{it}$): A higher market share of a company may increase the threats of new entry as well as strategic competition from existing rivals. When it is so, the company needs to protect its market share through selling related efforts. Hence, the companies with higher market share are expected to have greater selling intensity.

Current company Size (CSZ_{it}): A larger company has greater ability to spend on selling. A larger company may also become complacent and, hence, may have lesser willingness to make selling related efforts. The nature of impact of company size on selling intensity, therefore, depends on how these diverse forces dominate each other.

Lagged Return on Assets ($ROA_{i,t-1}$): On the one hand, better financial performance can induce a company to spend more on selling to create entry barriers or image advantage in the market. On the other hand, better financial performance can make the company complacent and, hence, may restrict its selling related efforts. The nature of impact of financial performance on selling intensity, therefore, depends on the relative strength of these two opposite forces.

2.5 Determinants of Performance

It is assumed that the returns on assets of a company (ROA_{it}) depend on its current market share ($SHARE_{it}$), current company size (CSZ_{it}), lagged selling intensity ($SELL_{it}$), current cost intensity ($COST_{it}$), i.e.,

$$ROA_{it} = f_3(SHARE_{it}, CSZ_{it}, SELL_{it-1}, COST_{it}) \quad (5)$$

Here, $SHARE_{it}$, and CSZ_{it} control for structural aspects of the market, $SELL_{it}$ for conduct of the companies, $COST_{it}$, for their performance other than returns on assets.
Assuming the functional relationship to be linear, (5) can be rewritten as

$$ROA_{it} = \alpha + \beta_1 SHARE_{it} + \beta_2 CSZ_{it} + \beta 3 SELL_{it-1} + \beta_4 COST_{it} + \varepsilon_{it} \ldots\ldots\ldots \quad (6)$$

2.6 Possible Impact of the Independent Variables

Current Market Share ($SHARE_{it}$): It is commonly perceived that higher market share enables a company to enhance financial performance through greater efficiency and/or higher market power. However, when a company strengthens its position in the market through various incentives to the customers, financial performance may not necessarily improve, especially in the short-run. The nature of impact of market share on financial performance of a company, therefore, depends on the relative strengths of these diverse forces.

Current company Size (CSZ_{it}): A larger company can operate at a higher scale and, therefore, can reap the benefits of scale economies. This helps the company enhance its financial performance. However, if larger size of the company results in X-inefficiency, its financial performance may not necessarily improve. Hence, the nature of impact of asset base of a company on its financial performance depends on how these diverse forces dominate each other.

Lagged Selling Intensity ($SELL_{i,t-1}$): Product differentiation and image advantage through advertising and creation of marketing and distribution related complementary assets are expected to enhance profitability of a company. In other words, higher selling intensity of a company is likely to enhance its financial performance.

Current Cost Intensity ($COST_{it}$): In general, cost intensity of a company is likely to have a negative impact on its financial performance. The companies with higher cost intensity are expected to have lower returns on assets, particularly if it fails to cover the additional costs through greater services charges.

2.7 Estimation Techniques and Data

The outlined equations derive from an analysis of data from 21 companies based in India between 2014 and 2022. Some companies had to be omitted due to gaps in their data or unique operational systems. If there is not any simultaneity bias, utilizing the ordinary least squares (OLS) method produces consistent and efficient outcomes. However, should simultaneity issues arise within these relationships, the OLS estimates can become skewed and unreliable. The mentioned equations integrate independent variables of an endogenous nature, making it infeasible to consistently use the OLS estimation method. This challenge arises since a fundamental assumption of OLS is that explanatory variables should either be non-stochastic or, if they are stochastic, should operate independently from any stochastic disturbance. If these criteria are not met, the OLS estimates can deviate, and even with an extensive sample size, the results might never align with the actual values, as indicated by Gujarati [15].

In models that involve simultaneous equations, an endogenous variable from one equation might act as an explanatory variable in another part of the system. This configuration can cause the explanatory variable to become stochastic, typically leading to a correlation with the random disturbance term. As a result, the ordinary least squares (OLS) estimators may become inconsistent, as highlighted by [15]. To address this simultaneity issue, this study employs the two-stage least squares (2SLS) method. When confronted with simultaneity biases, both the 2SLS approach and instrumental variables can produce estimates that are both consistent and efficient.

In this study, several variables are considered. The endogenous variables encompass current market share, selling intensity, returns on assets, market size, company size, and cost intensity. Conversely, exogenous variables include factors like l

agged market size, lagged market share, lagged company size, lagged selling intensity, lagged profitability, and the nature of ownership.

Initially, all endogenous explanatory variables are regressed against the entire set of exogenous variables in the system. Following that, in the second phase, the predicted values procured

from the initial regression of the endogenous explanatory variables are then utilized as instruments for estimating the three fundamental equations. The incorporation of the lagged structure within these equations aims to address the potential endogeneity issues among the independent variables.

Furthermore, to facilitate analysis, all variables within the models are transformed using natural logarithms. This transformation serves two main purposes. Firstly, it translates the individual slope coefficients into their respective elasticity values, aiding in gauging the relative significance of the independent variables and making their impacts more directly comparable. Secondly, this transformation method aids in minimizing the scale differences in variable measurement, effectively tackling the potential heteroscedasticity issue.

This study relies on secondary data sourced from the Prowess database, managed by the Centre for Monitoring Indian Economy (CMIE) in Mumbai. This database has been a valuable resource since 1989-90 for several reasons. Firstly, Prowess provides a time-series dataset that captures financial metrics of meat processing companies, along with relevant ratios at the company level. The information in this database undergoes regular updates throughout the day, including intra-day and end-of-day refreshes.

Additionally, Prowess stands out for its normalization process. Data, originally coming from diverse sources, undergoes transformation to fit a standardized format, which enables meaningful comparisons across companies and over time. This standardization is crucial for ensuring data comparability.

To ensure the consistency and accuracy of the dataset, certain adjustments have been made. A technique involving a three-year moving average is employed for each variable to mitigate measurement errors and streamline the adjustment process. This means each variable is calculated as the simple average of values from the preceding three years, with the focal year serving as the starting point. By utilizing a moving average with a two-year lag, the study aims to minimize potential simultaneity biases in the proposed relationships.

3. RESULTS AND DISCUSSION

Table 6 shows the summary statistics of the variables included in the regression models. The regression results show that the F-statistic is statistically significant for all of the three estimated equations (Tables 7, 8, 9). This means that all the estimated equations are statistically significant. Furthermore, the value of the R2 is high for the equation on market structure and performance. However, it is very low for the equation on conduct, but this does not necessarily indicate that the estimated models are not acceptable.

In the estimated equation on the determinants of market structure, it is observed that the coefficients of CSZ_{it}, and $ROA_{i,t-1}$ are statistically significant. While the coefficients of $MSZ_{i,t-1}$, and $SELL_{i,t-1}$are not significant. Market share of a company ($SHARE_{it}$) is better explained by current company size (CSZ_{it}) and lagged return on investment ($ROA_{i,t-1}$). This means that the companies with larger asset base and better financial performance in the past have larger share in the market.

Table 6. Summery statistics of the variables included in regression models

Variable	Mean	Std. Dev	Min	Max
$Share_{it}$	0.044	0.0497	0.0011	0.1905
CSZ_{it}	3.1693	0.6308	1.3863	4.179
$SELL_{it}$	0.0334	0.04	0.0004	0.1312
ROA_{it}	0.163	0.0732	0.0375	0.2832
Nw_{it}	2.7785	0.7275	1.0134	3.7698
$Share_{i,t-1}$	0.0417	0.0493	0.0009	0.2062
$MSZ_{i,\ t-1}$	3.3063	0.7009	1.4199	4.5355
$SELL_{i,t-1}$	0.0359	0.0424	0.0004	0.1419
$ROA_{i,t-1}$	0.1528	0.0702	0.0331	0.2603
$NW_{i,t-1}$	2.7408	0.7249	0.7976	3.7146

Table 7. Determinants of market structure

Variable	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.25027	0.024333	-10.2855	1.85E-08
CSZ_{it}	0.100106	0.007727	12.95559	6.73E-10***
MSZ_{t-1}	0.001763	0.005005	0.352176	0.729302
$SELL_{t-1}$	0.309774	0.074181	4.175921	0.000714***
ROA_{t-1}	0.27583	0.044777	6.15998	1.37E-05***
F	62.58439			
R Square	0.939926			
Adjusted R Square	0.924907			

Table 8. Determinants of market conduct

Variable	Coefficients	Standard Error	t Stat	P-value
Intercept	0.744425	0.069554	10.70284	5.67E-09
$Share_{t-1}$	2.59913	0.295775	8.787519	9.94E-08***
ROA_{t-1}	0.639066	0.108438	5.893348	1.77E-05***
CSZ	0.28623	0.0289	9.90405	1.78E-08***
F	34.04362			
R Square	0.8573			
Adjusted R Square	0.832117			

Table 9. Determinants of market performance

Variable	Coefficients	Standard Error	t Stat	P-value
Intercept	-0.11393	0.115137	-0.98951	0.337144
$SELL_{t-1}$	0.300763	0.164704	1.826086	0.086557*
Cost	0.48641	0.076265	6.37792	9.16E-06***
Share	2.44618	0.256684	9.52992	5.34E-08***
CSZ	0.26254	0.02788	9.416636	6.3E-08***
F	43.73501			
R Square	0.916204			
Adjusted Square	0.895255			

The direct relationships are well expected. The companies that are larger in size can reap the benefits of scale economies and hence can raise their market share. A positive association between company size and market share is consistent with experiences from other sectors. For example, in the context of Indian pharmaceutical industry, [16] found a positive impact of asset base of the firms on their market shares, and the impact of selling efforts was also not statistically significant.

"Similarly, the companies with better financial performance in the past have higher ability as well as greater willingness to grow and raise market share. On the other hand, it is generally perceived that better financial performance of the incumbents attract new entrants into the market. But, in many cases, better financial performance of the incumbents can also act as an entry barrier and may discourage the potential entrants from entering into the market. This is so particularly when the potential entrants do not have the capability to enhance their financial performance to the level of that of the incumbents. When it is so, better financial performance of the incumbents are likely to result in higher their market shares in future" [10].

"However, the coefficient of $MSZ_{i,t-1}$ is not statistically significant. This means that increase in demand for products and services of a company does not necessarily result in its greater market share. Although it is generally expected that the companies with larger demand for products and services will have higher market shares, the finding of no statistically significant relationship between the two in the present paper is not surprising. A possible explanation for such finding may be the way the two variables are defined. While market size measures absolute presence of a company in the sector, market share refers to its relative position. Therefore, when market size of other companies in the

sector also increases, market share of an individual company may not necessarily enhance, despite the rise in its own market size. However, any definite conclusion in this regard requires further exploration" [10].

Hence, the market structure in Indian meat sector measured in terms of market shares of the companies depends on other structural aspects of the market like their asset base, conduct like selling efforts, and past financial performance. In other words, the SCP relationship in Indian meat sector is not unidirectional, as it was suggested by [17], where market structure influences performance via conduct. Instead, market structure is influenced by conducts of the companies and their financial performance, in addition to other structural aspects of the market. Since lagged selling efforts and lagged financial performance have significant impact on market share, the relationships are not instantaneous, and hence should be viewed in a dynamic context. Further, significant impact of company size on market share suggests that different aspects of market structure are interdependent, and therefore, should not be considered in isolation of one another.

As regards the determinants of conducts, it is observed that coefficient CSZ_{it} is statistically significant while $SHAREi_{,t-1}$ and $ROAi_{,t-1}$ are not. This implies that the companies, which have larger asset base make greater selling efforts. Lagged market share, and lagged financial performance do not contribute much in the companies conduct. The larger companies (i.e., the companies with larger asset base) spend more towards selling as they have greater ability to spend for this purpose.

The results of the regression model on the determinants of financial performance show that the coefficients of all the variables are statistically significant. This means that the returns on assets are higher for the companies with larger market share, larger company size and more selling efforts and better cost efficiency.

From the regression results it is, therefore, evident that financial performance of the companies is influenced by various structural aspects of the market structure, conducts of the companies and their past performance level. It is observed that higher shares of the company in the market results in larger returns on assets either through greater efficiencies, or higher market power, or both. This is contradictory to the findings of [18, 19] that do not find evidence in support of the traditional SCP hypothesis that market concentration directly influences company's financial performance in Indian context. However, such a positive relationship between market share and financial performance is consistent with the findings of [4, 20-26].

On the other hand, statistically significant coefficients of company size and selling intensity indicates that larger the size better will be the efficiency, and hence better will be the level of financial performance [27-30]. Similarly, greater selling efforts results in enhanced financial performance of the companies. The companies are creating image advantage and effective entry barriers through advertising. However, any definite conclusion in this regard requires further research.

Thus, like market structure and conduct, financial performance of the companies is also determined by a variety of variables relating to Market Structure, conducts of the companies, and other aspects of performance. This means that there are strong inter-linkages between market structure, business strategies and financial performance in Indian meat sector. Not only financial performance of the companies is influenced by their conducts and Market Structure; there are also strong feedback effects from performance to conduct and from conduct to structure [31-33]. In Indian context, all these essentially make the SCP relationships multidirectional and dynamic in nature.

4. SUMMARY FINDINGS AND CONCLUSIONS

Amidst the backdrop of economic reforms and shifts in policies and regulations specific to the meat industry, this study seeks to understand the structure-conduct-performance (SCP) dynamics within India's meat sector. The post-reform landscape reveals alterations in the market structure, company behaviors, and performance outcomes of the industry. Although these changes might not always be substantial, there is an evident interconnection between market structure, company behaviors, and their financial outcomes.

A company's market share is closely tied to its asset base and historical financial outcomes. While a company's selling initiatives align directly with its asset base, its market share and financial outcomes do not showcase a significant

relationship. Conversely, a company's asset return rate correlates positively with its market share, asset foundation, and selling endeavors.

This analysis suggests that the SCP dynamics within India's meat sector are not strictly linear. A company's market share is both a factor and a result of its financial performance. In essence, the relationship between a company's market structure and financial performance is bidirectional. However, this bidirectionality does not extend to the link between company behaviors and performance; while performance can be influenced by behavior, the reverse does not hold true.

The conclusions drawn here carry several policy implications. While an elevated market share can bolster financial outcomes, it is vital to prevent companies from leveraging their dominant market positions to set monopolistic service prices. Instead, the focus should be on prompting companies to bolster efficiency as a means to enhance their financial standing. To ascend in market share, companies would benefit from intensifying their selling endeavors, establishing a distinguished brand identity, and setting barriers to market entry.

COMPETING INTERESTS

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES

1. Deshmukh SS, Paramasivam R, Forecasting of milk production in India with ARIMA and VAR time series models. Asian Journal of Dairy & Food Research. 2016;35(1).
2. Deshmukh SS, Palanichamy NV, Sivakumar SD, Supply Chain of poultry industry in India – The structural overview. Trends in Biosciences. 2015;8(11): 2834-2837.
3. Rhoades SA, Market share as a source of market power: Implications and some evidence. Journal of Economics and Business. 1985;37(4): 343-363.
4. Evanoff DD, Fortier DL, Reevaluation of the structure-conduct-performance paradigm in banking. Journal of Financial Services Research. 1988;1(3):277-294.
5. Bain JS, Relation of profit rate to industry concentration: American manufacturing, 1936-1940. The Quarterly Journal of Economics. 1951:293-324.
6. Gupta VK, A simultaneous determination of structure, conduct and performance in Canadian manufacturing. Oxford Economic Papers. 1983;35(2): 281-301.
7. Schmalensee R, Inter-industry studies of structure and performance. Handbook of Industrial Organization. 1989;2:951-1009.
8. Baker JB, Woodward PA, Market power and the cross-industry behavior of prices around a business cycle trough.: Bureau of Economics, Federal Trade Commission; 1998.
9. Kambhampati US, Industrial concentration and performance: A study of the structure, conduct, and performance of Indian industry: Oxford University Press, USA; 1996.
10. Mishra P, Sahoo D, Structure, conduct and performance of Indian Banking Sector. Review of Economic Perspectives. 2012;12(4): 235-264.
11. Smirlock M, Evidence on the (non) relationship between concentration and profitability in banking. Journal of Money, Credit and Banking. 1985;17(1): 69-83.
12. Frame WS, Kamerschen DR,The profit-structure relationship in legally protected banking markets using efficiency measures. Review of Industrial Organization. 1997;12(1):9-22.
13. Hannan TH. The functional relationship between prices and market concentration: The case of the banking industry, in Empirical Studies in Industrial Organization. Springer. 1992;35-59.
14. Chiappori PA, Perez-Castrillo D, Verdier T, Spatial competition in the banking system: Localization, cross subsidies and the regulation of deposit rates. European Economic Review. 1995; 39(5): 889-918.
15. Gujarati DN. Basic econometrics. Tata McGraw-Hill Education; 2009.
16. Mishra P, Chandra T, Mergers, acquisitions and firms' performance: Experience of Indian pharmaceutical industry. Eurasian Journal of Business and Economics. 2010;3(5):111-126.
17. Bain JS, Barriers to new competition. 1956. Industrial Organization; 1959, 1979.
18. Bhattacharya K, Das A, Dynamics of market structure and competitiveness of the banking sector in India and its impact on output and prices of banking services.

Reserve Bank of India Occasional Papers. 2003; 24(3):123-159.
19. Verma, S. and R. Sainir, Structure Conduct and Performance of commercial bank in India. Prajnan. 2010;39(2):83-108.
20. Edwards FR, Concentration in banking and its effect on business loan rates. J. Reprints Antitrust L. & Econ. 1973;5: 49.
21. Phillips A, Evidence on concentration in banking markets and interest rates. Federal Reserve Bulletin. 1967; 916-926.
22. Brucker E. A microeconomic approach to banking competition. The Journal of Finance. 1970; 25(5):1133-1141.
23. Vernon JR, Separation of ownership and control and profit rates, the evidence from banking: Comment. Journal of Financial and Quantitative Analysis. 1971; 6(01): 615-625.
24. Fred, A., *Studies of bank market structure and competition: A review and evaluation.* Journal of Money Credit and Banking. 1984;16: 617-644.
25. Molyneux P. Thornton J, Determinants of European bank profitability: A note. Journal of banking & Finance, 1992;16(6): 1173-1178.
26. Katib MN. Market structure and performance in the Malaysian banking industry: A robust estimation. in 8th capital markets conference, Indian Institute of Capital Markets Paper; 2004.
27. Available:http://www.halalinindia.com/meat.php
28. Available:http://www.fao.org/docrep/article/agrippa/665_en-01.htm
29. Available:http://nmppb.gov.in/PAGE/Exports.htm
30. Available:http://nmppb.gov.in/PAGE/Meat%20and%20Meat%20Products%20Sector/Meat%20and%20Meat%20Products%20Sector.htm
31. Available:http://www.apeda.gov.in/apedawebsite/SubHead_Products/Poultry_Products.htm
32. Available:http://www.oerafrica.org/ftpfolder/Agshare/Marketing%20and%20Price%20Analysis/the_structureconductperformance_paradigm.html
33. Available:http://www.createadvantage.com/glossary/structure-conduct-performance

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