

Impact of Covid-19 on the Efficiency of Nifty Pharma Companies

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Abstract

The current study examines the efficiency changes of Nifty Pharma firms before and during the Covid-19 pandemic. The sample has 17 selected pharmaceutical firms that represent a large fraction of pharmaceutical sector in India. Using Data Envelopment Analysis (DEA) the study reports an increase in overall efficiency in the years 2020 and 2021. Further, the improvement in scale of operations was reported among the sample of firms. Pre-pandemic surge in the number of production (pure) efficient firms subsided by the end of 2021, marking negative impact of Covid-19 on the allocation of inputs by pharmaceutical firms. It was found that production efficiency positively correlates with firm size and negatively with age. We recommend that inefficient companies optimize their scale efficiency through mergers and acquisitions, organic growth, restructuring, or outsourcing. Production efficiency can be achieved by minimizing salaries, wages, and bonuses, which presents a sensitive issue for managers to devise salary-cutting policies. Lastly, the study reports changing nature of reference companies, thus highlighting the importance of regular efficiency benchmarking.

Keywords

Covid-19, DEA, Nifty pharma and efficiency.

1. Introduction

India is the largest producer of generic drugs in the world. During the testing times of Covid-19 pandemic, the demand for low-cost affordable medicines was arguably at its peak. It was a challenge for the Indian pharmaceutical firms to keep producing at the growing rate to fulfil the world's demand for medicines. Further, the lockdown restrictions and growing covid cases among the labor force were major disruptions to keeping productivity up to demand. Another obstacle to the production was dependence of Indian pharmaceutical firms on Chinese drug makers for procuring active pharmaceutical ingredients (API) due to complete lockdown in China (Chatterjee 2020). However, it also opened avenues for Indian pharmaceutical industry to appear as a global leader in production of APIs but not without improving their supply chain (Ghosh et al., 2020). Discussing the above challenges, the current study aims to evaluate the efficiencies of Indian pharmaceuticals before and during Covid-19 times using the sample of firms listed on Nifty pharmaceutical index. The current literature has studies citing the shortfall of medicines during Covid-19 (Fox et al., 2020). Mittal and Sharma (2021) reported positive impact of Covid-19 pandemic on the stock returns of the pharma companies. Few studies discuss the supply chain and logistics issues in the pharmaceutical industry in India (Mishra, 2012). However, to the best of our knowledge, the present study is the first one to evaluate the trends of production efficiencies. The findings will explain the productivity response of Indian pharmaceutical firms to the growing demand and other Covid-19 challenges such as regulations, labor, and raw material shortage. It will also explain the efficiency changes with respect to firm age, fixed assets, raw materials, and salaries and wages of employees. The rest of the paper is followed by a literature review in section 2. Methodology and results are provided in sections 3 and 4, respectively. The article concludes in section 5 along with the limitations of the study.

2. Literature review

Covid-19 pandemic has created multiple challenges to the productivity of firms. The pharmaceutical industry was at the prime focus to tackle the Covid-19 pandemic. Indian pharmaceutical firms were the suppliers to the world to keep the requirement of medicines. India pharmaceutical industry responded positively to the growing demands in preventive and curative drugs segments along with face masks (Ahmed et al. 2020). The study also reported incentives from "Make in India" initiative to boost production in India. India emerged as the major vaccine and drug manufacturer in the world (Kaur et al. 2021). Aravind and Manojkrishnan (2020) reported that pharmaceutical firms had momentum against falling market trend. This means that majority of pharmaceutical firms were reporting growth in the Covid-19 pandemic period. Joshi et al. (2020) also emphasised the

opportunities during Covid-19 pandemic to attract market share on pharmaceutical production from Chinese firms. The above studies underline the need to examine production and scale efficiency in Indian pharmaceutical firms.

DEA is a non-parametric approach to analyse efficiency. Gascón et al. (2017) analyzed efficiency of thirty-seven large pharmaceutical firms during the period from 2008-2013 in the United States and European Union using data envelopment analysis. They reported that production is concentrated among large firms and efficient firms do more transactions on average in comparison the inefficient firms. Alam and Rastgi (2019) used DEA to analyze trends in cost efficiency and rank pharmaceutical firms in India. The study from Liu and Lyu (2020) used DEA to report higher impact of knowledge innovation in comparison to commercialization to innovation efficiency. Further, the analysis included forty-four listed pharmaceutical firms in India to explore relationship between growth rates and internal efficiencies. The study was analyzing the impact of The Trade Related Intellectual Property Rights System (TRIPS) post 2005 (Saranga and Phani, 2009). The present study applies DEA on the similar lines to analyze the impact of Covid-19 pandemic on the productivity of Nifty pharmaceutical firms in India. Various Indian studies have used DEA models to explore efficiencies in India (Mahajan et al. 2014, Mishra 2012, Pannu et al. 2011). Current study is the first one to explore the changes in efficiency among Nifty Pharma firms caused by Covid-19 pandemic by comparing efficiency scores before and during pandemic.

3. Methodology

This study is based on secondary data collected from the seventeen major firms included in the Nifty Pharma stock index. The research provides the efficiency scores of pharmaceutical companies for the four consecutive years, during 2018-2021. Data have been retrieved from the Ace Analyser database of companies in India. Ace Analyser is a comprehensive database having financials of 40,000 Indian firms which includes 7,000 listed and 33,000 non-listed firms. The database has been used by multiple studies to explore various research questions of Indian firms (Duppati et al. 2020, Sivashanmugam and Krishnakumar 2016, Soni et al. 2021).

We have identified three inputs and one output to look at the overall, pure, and scale efficiency of the leading pharmaceutical firms in India. Data envelopment analysis (DEA) as a technique of measuring efficiency has been used in several studies related to the efficiency of pharmaceutical firms (Saranga and Phani 2009; Pannu et al. 2011, Díaz and Sanchez-Robles 2020). The choice of inputs and outputs is determined by the research task. For instance, Saranga and Phani (2009) use the cost of production and selling, raw materials, wages, and salaries as inputs, and net sales as an output to measure the operational efficiency of 44 Indian pharmaceutical firms during 1992-2002. Pannu et al. (2011) used cost of material, cost of manpower, capital cost as inputs, and sales as output to estimate the efficiency and productivity of 146 Indian pharma firms between 1998-2007. Mahajan et al. (2014) estimated technical efficiency for 50 manufacturers during 2010-2011 using net sales as output, raw materials, salaries and wages, advertisement and marketing, and capital usage cost as inputs.

In line with the existing research on the efficiency of pharmaceutical companies, we have conducted DEA using net sales as an output, raw material consumption, salary, wages, and bonuses, and netblock as inputs.

The input oriented CCR and BCC models are represented in equations 1 and 2 as per Mahajan et al. (2014).

Input-oriented CCR (envelopment) model:

$$\text{Min } Z_k = \phi_k - \varepsilon(\sum_{i=1}^m s_{ik}^+ + \sum_{j=1}^s s_{jk}^-) \dots \dots \dots (1)$$

Subject to:

$$\begin{aligned} \sum_{r=1}^n \lambda_{rk} y_{ir} - s_{ik}^+ &= y_{ik} \quad \forall i = 1, \dots, m, \\ \sum_{r=1}^n \lambda_{rk} x_{ij} + s_{jk}^- &= \phi_k x_{jk} \quad \forall j = 1, \dots, s, \\ \lambda_{rk} &\geq 0 \quad \forall r = 1, 2, \dots, n, \\ \phi_k &\text{ is unrestricted is sign} \\ s_{jk}^-, s_{ik}^+ &\geq 0 \quad \forall j = 1, 2, \dots, s, i = 1, 2, \dots, m, \end{aligned}$$

Input-oriented BCC (envelopment) model:

$$\text{Min } Z_k = \phi_k - \varepsilon(\sum_{i=1}^m s_{ik}^+ + \sum_{j=1}^s s_{jk}^-) \dots \dots \dots (2)$$

Subject to:

$$\sum_{r=1}^n \lambda_{rk} y_{ir} - s_{ik}^+ = y_{ik} \quad \forall i = 1, \dots, m,$$

$$\sum_{r=1}^n \lambda_{rk} x_{ij} + s_{jk}^- = \phi_k x_{jk} \quad \forall j = 1, \dots, s,$$

$$\sum_{r=1}^n \lambda_{rk} = 1 \quad \forall r = 1, 2, \dots, n,$$

ϕ_k is unrestricted in sign, and
 $\lambda_{rk}, s_{jk}^-, s_{ik}^+ \geq 0 \quad \forall r, j, i,$

Min Z_k represents the input oriented CCR and BCC efficiency of k^{th} DMU, where s_{ik}^+ is slack in i^{th} output of the k^{th} DMU; s_{jk}^- is slack in the j^{th} input of the k^{th} DMU. The CCR and BCC models are interpreted as the maximum reduction possible in inputs for k^{th} DMU keeping reference technology unchanged. The constraints (ii) and (iii) represents the convex reference technology. $s_{ik}^+, s_{jk}^- \geq 0$ condition highlights non-negativity of slacks. The equation is solved to calculate efficiencies of k DMU's. If $\phi_k = 1$, The k^{th} DMU will be Pareto efficient having zero slacks i.e. $s_{ik}^+ = 0$ every i and $s_{jk}^- = 0$ every j . These Pareto efficient DMUs are positioned on the efficient frontier having input-orientation or output-orientation.

Non-parametric model specification and number of inputs and outputs have been considered following Cooper et al. (2007). We employ constant returns to scale (CRS) and variable returns to scale (VRS) models, which are commonly known as CCR and BCC models (Charnes et al.1978, Banker et al.1984). The CCR model estimates overall technical efficiency. The efficiency scores below 1 point out to inefficiencies in input/output utilization and firm size. BCC model estimates pure efficiency by isolating production efficiency from scale. Scale inefficiency occurs when CRS is less than VRS. We estimate an input-oriented efficiency to evaluate DMUs requiring optimisation of resources. Thus, CCR and BCC provide powerful instruments for detecting problems in business entities and allows managers to make correct decisions.

4. Results

Nifty pharma is a stock index which includes twenty best performing pharmaceutical companies in India and provides a reflection of the industry performance. In this section we analyse the efficiency of Nifty Pharma companies. Pharmaceutical firms listed in Nifty Pharma show significant heterogeneity in their total assets, net sales, number of employees as well as costs of labor, capital, and raw materials. Table 1 reports a descriptive statistics of Nifty Pharma companies during 2018-2021. All values provided in crores rupees.

Table 1. Descriptive statistics of Nifty pharma firms

Year	2018	2019	2020	2021
Mean				
Net Sales	8539.026	9598.088	10579.15	11343.59
Total Assets	11119.32	11868.89	12899.67	14346.72
No of Employees	11966.65	12055.82	12131.88	13326.12
Raw Material Consumed	2803.488	3225.968	3494.543	3945.712
Salaries, Wages & Bonus	1338.38	1487.711	1643.264	1766.144
Net Block	5124.944	5957.409	6070.274	6184.264
age	36.11765	37.11765	38.11765	39.11765
Standard deviation				
Net Sales	7025.701	7668.892	8590.559	8677.682
Total Assets	8766.043	9020.944	9384.028	9797.297
No of Employees	6720.498	6466.387	6526.485	7428.446
Raw Material Consumed	2142.471	2485.987	2615.216	2825.852
Salaries, Wages & Bonus	1201.87	1314.353	1397.676	1467.707
Net Block	4738.085	5512.407	5513.175	5172.35
age	18.29236	18.29236	18.29236	18.29236
Minimum value				
Net Sales	1684.62	2094.5	1915	2052.1
Total Assets	2638.8	2824.37	3146.18	3682.83
No of Employees	2507	2036	2608	2390

Raw Material Consumed	436.4	366.6	429.6	531.8
Salaries, Wages & Bonus	150.28	192.68	237.11	303.59
Net Block	776.73	944.25	1203.97	1332
age	8	9	10	11
Maximum value				
Net Sales	26415.54	29065.91	32837.5	33498.14
Total Assets	37129.71	38052.03	38747.21	39381.9
No of Employees	23610	22644	21650	24412
Raw Material Consumed	7193.98	8561.87	8929.6	9557.92
Salaries, Wages & Bonus	4708.29	5269.94	5639.22	6053.01
Net Block	18852.65	21836.54	22846.91	21552.98
age	83	84	85	86

The firm size measured by total assets varies significantly starting from 3683 crore rupees to 39382 crore rupees in 2021. Nominal values of total assets have been growing during 2018-2021. For net sales, the average trend was upward, however, minimum, and maximum numbers dropped during covid times. Minimum number of employees plummeted in 2019 and remained below the mark of 2018. In terms of firm age companies scattered widely, being operational between 11 and 86 years from the inception. In four years, companies' nominal net sales on average have grown by 32.8%, as compared to salaries and wages with 32% rise, and a modest 20.7% increase in capital expenditures. In contrast, raw materials expenses have gone up by 40.7% during 2018-2021.

To establish the effect of inputs on net sales, we conduct correlation and regression analysis. Table 2 reports high level of correlation between variables. Table 3 presents the results with significance levels for the four models. We employed variance inflation factor (VIF) to detect multicollinearity. VIF for all models did not exceed the acceptable range of 10.

Table 2. Matrix of correlations

	Net Sales	Raw Materials	Salaries	Net Block
Net Sales	1			
Raw Materials	0.9664	1		
Salaries	0.9713	0.8979	1	
Net Block	0.9127	0.82	0.9161	1

Table 3. Regression output

	(1)	(2)	(3)	(4)
Raw Materials	1.541*** (20.42)		2.099*** (20.74)	1.535*** (16.67)
Salaries & Wages	2.352*** (11.56)	5.008*** (11.77)		3.182*** (18.31)
Net Block	0.231*** (5.72)	0.219 (1.99)	0.564*** (11.44)	
Cons	-189.2 (-1.35)	932.6** (2.67)	-347.9 (-1.43)	-113.8 (-0.67)
N	68	68	68	68
R-squared	0.993	0.947	0.978	0.989
Mean VIF	7.30	6.22	3.05	5.16

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

All regression models show the high significance and can be used to predict firms' net sales. Further, we applied input-oriented DEA model to benchmark the efficiency of seventeen Indian pharmaceutical firms as a part of Nifty Pharma index. Table 4 reports number of efficient firms under constant and variable returns to scale, scale efficiency scores and number of firms achieving constant returns to scale for the period of 2018-2021.

Table 4. Number of Efficient Nifty Pharma companies for 2018-2021

	CRS TE	VRS TE	SCALE	RTS
2018	4	9	4	4
2019	5	13	5	5
2020	8	12	8	8
2021	9	10	9	9

Note: seventeen firms in the sample size

Data clearly point out that the number of overall technically efficient firms has doubled between 2018-2021. On the contrary, production (pure) efficiency grew substantially in 2019, however the onset of pandemic gradually reversed positive effects of efficient inputs utilization. More firms showed the ability to optimize the scale of their business. Scale efficiency is found to be detrimental contributor to overall technical efficiency. By the end of 2021 around 53% of companies managed to achieve constant returns to scale.

Table 5. Nifty Pharma average efficiency scores during 2018-2021

Year	CRS_TE	VRS_TE	NIRS_TE	SCALE
2018	0.8747	0.9492	0.9711	0.9204
2019	0.8916	0.9668	0.9651	0.9229
2020	0.9541	0.9660	0.9708	0.9875
2021	0.9376	0.9576	0.9603	0.9783
Pre covid average	CRS_TE	VRS_TE	NIRS_TE	SCALE
2018-2019	0.8831	0.9580	0.9681	0.9217
Covid average				
2020-2021	0.9458	0.9618	0.9656	0.9828
Change, %	7.099	0.397	-0.258	6.629

Table 5 report insights into the average efficiency scores. Efficiency scores reported by Mahajan et al. (2014) for a sample of 50 pharmaceutical firms can be a benchmark to judge about the validity of scores in the current study. They reported mean overall efficiency 0.75, pure efficiency – 0.86 and scale efficiency – 0.87. The discrepancies arise due to difference in sample size and inputs. Individual firms apart, high efficiency of Indian pharmaceutical industry can be inferred. The dynamic shifts represented by some stylized facts. For instance, average scale efficiency improved markedly from 0.92 in 2018 to 0.98 in 2021 (Table 6), while efficiency of inputs use increased marginally by 0.0084. During Covid-19 overall technical efficiency of Nifty Pharma companies soared by 7.1%, pure efficiency by 0.4% and scale efficiency – by 6.6%.

Table 6. The dynamics of returns to scale of Nifty Pharma companies in India

Year	Crs	irs	drs	No. of firms
2018	4	0	13	17
2019	5	1	11	17
2020	8	2	7	17
2021	9	3	5	17

Note: crs – constant returns to scale, irs – increasing returns to scale, drs – decreasing returns to scale

Table 7. Firm-wise description of returns to scale during 2018-2021

Firm	2018	2019	2020	2021
dmu:1	0	0	0	0
dmu:2	-1	-1	0	0
dmu:3	0	-1	0	0
dmu:4	-1	-1	-1	1
dmu:5	-1	-1	-1	-1
dmu:6	-1	0	0	0
dmu:7	-1	-1	-1	-1
dmu:8	-1	-1	-1	-1
dmu:9	0	0	0	0
dmu:10	-1	-1	1	1
dmu:11	-1	1	-1	0
dmu:12	-1	-1	0	-1
dmu:13	0	0	0	0
dmu:14	-1	0	1	1
dmu:15	-1	-1	-1	-1
dmu:16	-1	-1	-1	0
dmu:17	-1	-1	0	0

Note: RTS 0 – constant returns to scale, 1 – increasing returns to scale, -1 – decreasing returns to scale

Tables 6 and 7 describes changes in returns to scale that took place between 2018-2021. The tendency toward scale efficiency is apparent as companies navigated through the pandemic. In 2018 only 24% of firms were scale efficient, while in 2021 fraction has soared to 53%. The exemplary companies in terms of constant returns have been the Alembic Pharmaceuticals, Granules India, and Natco Pharma (DMU 1, 9, 13). Later, during 2020-2021 others could increase a scale of operations to achieve an optimal level, among them are Alkem Laboratories, Aurobindo Pharma, Divi's Laboratories along with Zydus Lifesciences (DMU 2, 3, 6, 17). Our analysis confirms a decline of number of firms operating under decreasing returns to scale from 13 in 2018 to 5 in 2021. A few companies, however, scaled up their business too much so the efficiency was lost. Among them are Biocon, Ipca Laboratories and Strides Pharma Science. (DMU 4, 10, 14). Two years of Covid-19 pandemic fostered the leading pharmaceutical companies in India to transform themselves into scale efficient businesses. Depending on the type of scale inefficiency firms might consider mergers and acquisition strategies, restructuring, or outsourcing to optimize the size of the business.

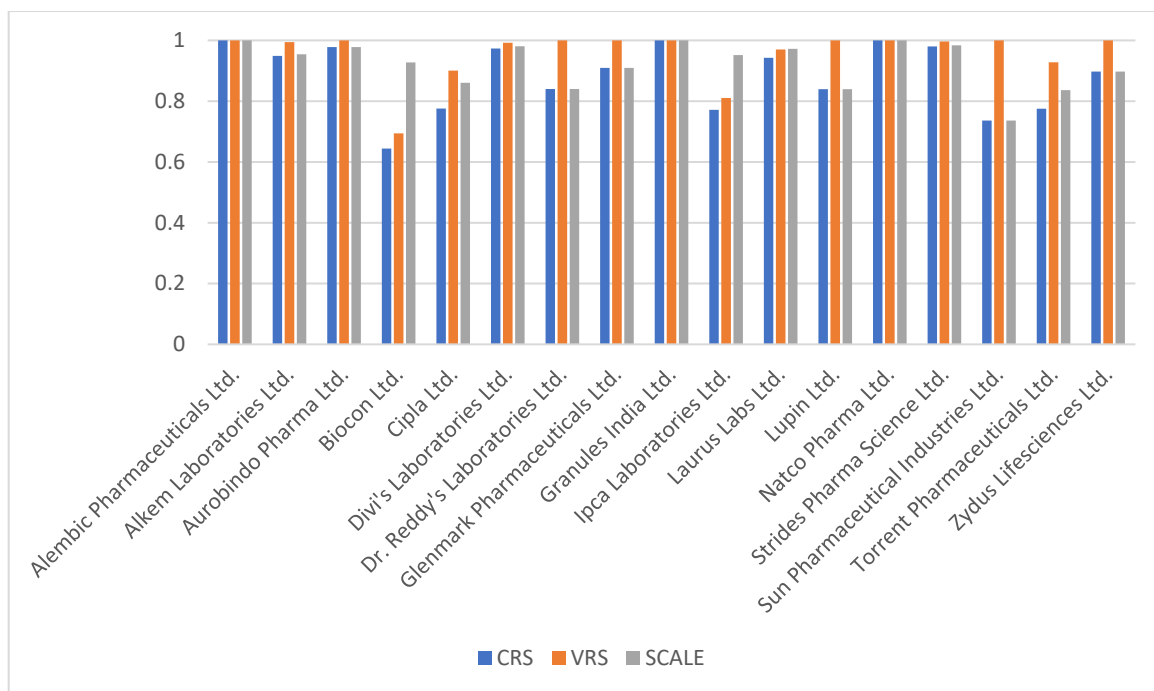


Figure 1. Average CRS, VRS and Scale Efficiency by Firms during 2018-2019

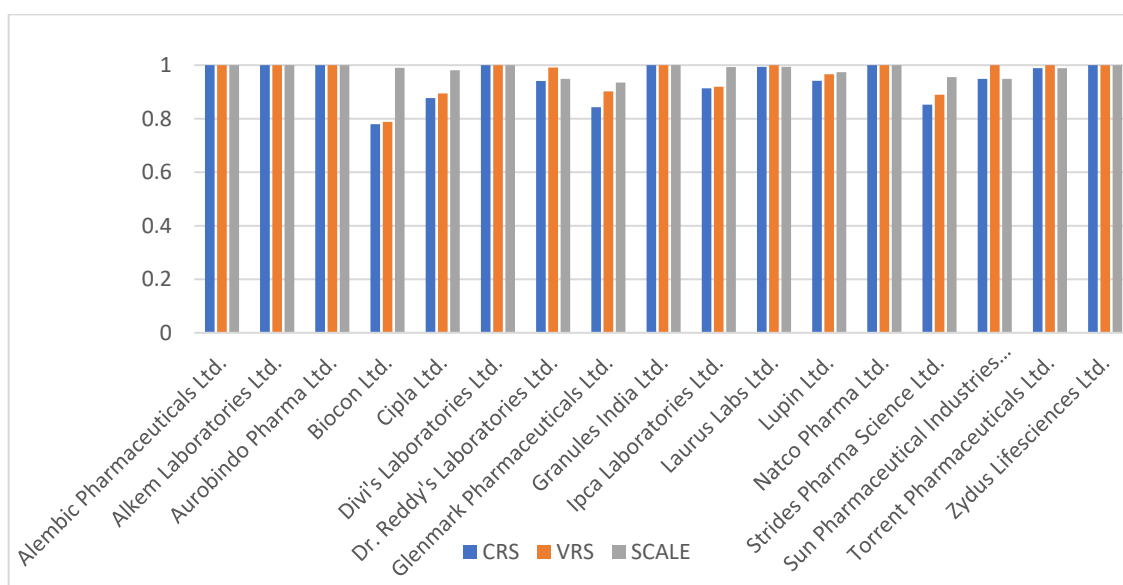


Figure 2. Average CRS, VRS and Scale Efficiency by Firms during 2020-2021

It can be seen from Figures 1 and 2 that average efficiency scores during pandemic for some companies improved significantly. Before pandemic average production efficiency was higher than scale efficiency, however, during 2020-2021 the situation reversed. Many companies from Nifty Pharma have made major strides toward achieving better scale efficiency.

Covid-19 induced greater efficiency among Nifty Pharma firms. Overall efficiency was greater in 2021 as compared to 2018 (Figure 3). Five companies, such as Alkem Laboratories, Divi's Laboratories, Laurus Labs, Torrent Pharmaceuticals and Zydus Lifesciences have managed to achieve efficiency frontier. Another eight companies have showed marginal positive shifts in their overall efficiency, although they are yet to achieve 100% efficiency. Among them are Biocon, Cipla, Dr. Reddy's Laboratories, Glenmark Pharmaceuticals, Ipca Laboratories, Lupin, Strides Pharma Science and Sun Pharmaceutical Industries. The remaining four firms have been performing efficiently throughout 2018-2021, except Aurobindo Pharma that became scale inefficient in 2019.

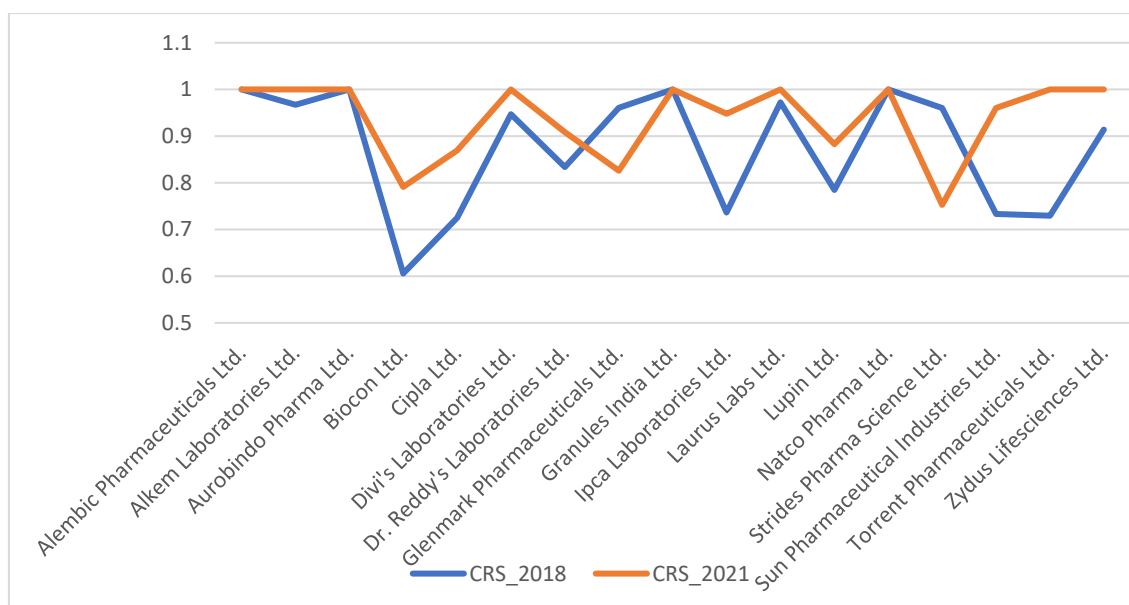


Figure 3. Changes in overall technical efficiency between 2018 and 2021

Further, we proceed with input slacks using VRS input-oriented two-stage model. Slacks pinpoint a target reduction in inputs that allow to maintain outputs at a constant level (in our case, will not reduce net sales). Appendix A highlights slacks in raw materials, salaries and wages and capital. Management of raw materials was found to be satisfactory. There were only three instances in 2018 where material inputs could be managed better, namely by Alkem Laboratories, Laurus Labs and Strides Pharma Science. On the contrary, high slacks in salaries and wages occurred in 2021. The majority of inefficient firm have a scope to minimise capital utilisation. Our data show that during pandemic companies were able to reduce slack of capital inputs from thousand crores to thousands of rupees. As an example, Divi's Laboratories and Torrent Pharmaceuticals with capital slacks of 313.9 and 3225.5 crores rupees in 2018 in subsequent years become overall technically efficient companies. Additionally, severe change in reference firms for companies with inefficient production can be observed. In 2018 among most frequent references were Natco Pharma, Aurobindo Pharma, Dr. Reddy's Laboratories, Granules India, and Lupin. Yet in 2021 reference point shifted to Alembic Pharmaceuticals, Aurobindo Pharma, Divi's Laboratories and Torrent Pharmaceuticals. In order to validate the power of efficiency scores we apply tobit regression. We regress the efficiency scores to company total assets and age (Saranga and Phani 2009).

Table 8. Tobit regression VRS efficiency scores for 2018-2021

vrs te	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]
lnTA	.059	.032	1.86	.068*	-.004	.122
age	-.005	.001	-3.99	0***	-.007	-.002
Constant	.704	.273	2.58	.012**	.16	1.249
Pseudo r-squared		0.635				
*** $p < .01$, ** $p < .05$, * $p < .1$						

Firm size has a significant positive impact on firms' pure efficiency in the pharmaceutical industry (Table 8). On average, larger firms tend to show better use of resources. On the contrary, company age has a negative significant impact on pure technical efficiency of pharmaceutical firms in India.

5. Conclusions and Limitations

This study explores changes in overall, pure and scale efficiency of 17 Indian pharmaceutical firms listed in Nifty Pharma during 2018-2021. The efficiency scores were estimated using input-oriented Data envelopment analysis. Raw materials, net block, salaries, wages, and bonuses were taken as inputs and net sales as an output of the model. Empirical results confirmed that efficiency indicators improved substantially during 2020-2021, period associated with the outbreak of Covid-19 pandemic. At the end of 2021 companies became much more efficient in terms of production and scale as compared to pre-Covid years. Scale efficiency surpasses production efficiency by 2%. Covid pandemic prompted companies to increase scale of operations toward the optimum level (constant

returns to scale) at a faster pace compared to input optimization. The dynamic nature of a business environment coupled with pandemic shock alters benchmarks and references for input optimization. Analysis has shown that greater production efficiency is positively associated with firm size and negatively with age. However, further improvement of production efficiency seems challenging as it involves compensation of employees. Notwithstanding the progress made by the firms, 7 companies from Nifty Pharma list need to improve production efficiency and 8 require certain scale adjustment.

Negative shock presented by Covid-19 pandemic has proven the agility of pharmaceutical business in India. On the other side the resilience could be created by the speculative demand, which triggered companies to increase output. It is to be examined further whether these firms will be able to keep the level of efficiency or opportunities presented by pandemic will vanish over time. The study can be elaborated by exploring the relationship between efficiency and stock prices of the above-mentioned companies.

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Appendix A. Slack analysis and Reference firms for inefficient companies

Year	DMU ID	Company Name	CRS TE	VRS TE	RTS	islack: raw materials	islack: salaries & wages	islack: netblock	Reference
2018	dmu:2	Alkem Laboratories Ltd.	0.96725	0.988672	-1	0.0001625			F1,3,8,13
2018	dmu:4	Biocon Ltd.	0.605754	0.656787	-1			249.335	F12,13,17
2018	dmu:5	Cipla Ltd.	0.724908	0.866341	-1			0.000312	F3,7,12,17
2018	dmu:6	Divi's Laboratories Ltd.	0.946886	0.984774	-1			313.877	F3,9,13
2018	dmu:10	Ipsa Laboratories Ltd.	0.736346	0.795016	-1		40.4079	0.000218	F7,13,15
2018	dmu:11	Laurus Labs Ltd.	0.972383	0.995926	-1	30.9084		553.627	F3,9,13
2018	dmu:14	Strides Pharma Science Ltd.	0.960315	0.992591	-1	0.00014		1440.75	F9,13
2018	dmu:16	Torrent Pharmaceuticals Ltd.	0.729353	0.856221	-1			3225.53	F7,12,13
2019	dmu:4	Biocon Ltd.	0.682382	0.731611	-1			0.000359	F3,6,12,13
2019	dmu:5	Cipla Ltd.	0.826592	0.93487	-1				F1,3,7,12
2019	dmu:10	Ipsa Laboratories Ltd.	0.80648	0.825659	-1			0.000267	F1,3,12,13
2019	dmu:11	Laurus Labs Ltd.	0.913675	0.943865	1			423.272	F9,13,14
2020	dmu:4	Biocon Ltd.	0.768015	0.784036	-1				F12,13,16,17
2020	dmu:5	Cipla Ltd.	0.884264	0.886934	-1			0.003003	F3,12,13,17
2020	dmu:8	Glenmark Pharmaceuticals Ltd.	0.860446	0.895236	-1		127.049	0.000217	F1,7,12
2020	dmu:10	Ipsa Laboratories Ltd.	0.879067	0.891126	1				F1,3,9,13
2020	dmu:14	Strides Pharma Science Ltd.	0.951751	0.964459	1			174.478	F6,9,13
2021	dmu:4	Biocon Ltd.	0.791257	0.791271	1			0.002697	F1,14,17
2021	dmu:5	Cipla Ltd.	0.869423	0.90119	-1			0.000985	F1,3,6,16
2021	dmu:7	Dr. Reddy's Laboratories Ltd.	0.908463	0.982686	-1		323.703		F1,3,16
2021	dmu:8	Glenmark Pharmaceuticals Ltd.	0.825783	0.90903	-1		232.097	0.000178	F1,3,16
2021	dmu:10	Ipsa Laboratories Ltd.	0.947845	0.948209	1			0.000342	F1,6,10,12
2021	dmu:12	Lupin Ltd.	0.882879	0.931684	-1				F1,3,6,16
2021	dmu:14	Strides Pharma Science Ltd.	0.752764	0.814418	1				F1,6,10,14