Impact of GST on the Indian corporate sector

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Motivation

- India embarked on a new tax regime from July 1, 2017.
- There has been a a growing interest to understand the impact of the new regime on the business activity and on the economy.
- There are specific surveys to assess the impact of GST on sectors e.g. FMCG, textiles etc.
- Impact on specific stakeholders–Temporary shock to exporters: Delays in input tax credit adversely affected the working capital of firms (Tomar et.al, 2018).

Motivation .. contd

GST and supply chain efficiency

- One of the perceived benefits of the GST roll out is that it will help lower cost of logistics through faster and cheaper movement of goods across the country.
- Introduction of GST can reduce the long queues at border check points and other entry points within and between the States.
- Another channel leading to reduced cost is that the cost on maintenance of warehouses and other logistical infrastructure will come down. This will reduce the inventory cost as a percentage of sales of companies leading to supply chain efficiency.
- How do we assess this question from the firm-level database and what does it tell us?

Part I

Literature review

Survey of traders and manufacturers to analyse the impact of GST

Survey conducted by PHDCCI in July 2020

- Impact on transaction costs: There has been a significant reduction in the transaction cost. Earlier, interstate transactions costs was more than 3% of value of goods moving in interstate zones, which has now come down to less than 1%. GST has eased the inter-state movement of goods and services.
- Reduced cost of raw materials:
- Impact on sales: One Nation one tax, has given traders and manufacturers freedom to choose the vendors, suppliers, among others with the best prices irrespective of the location. This has resulted in increase in efficiency and supply.
- Faster delivery and improved labour efficiency: Logistic effort and time is saved as GST has ensured removal of multiple checkpoints and permits at state border checkpoints, resulting in faster delivery and increased efficiency.

Impact of GST on supply chain management

- Paper by Dhar and Khandelwal (2021) analyse the impact of GST using a survey of 519 respondents from Indian companies comprising 8 different sub-sectors.
- Conceptual framework of Supply Chain Management to study the impact
- Survey findings reveal significant impact of GST on:
  - Inbound logistics: Reduced turnaround time for trucks, reduction in transportation paper work, reduction in transportation costs
  - Operations: Greater flexibility in manufacture scheduling, better forecasting, improved demand planning, reducing instances of over stocking
  - Outbound logistics: Consolidation of demand at warehouses, decrease in number of warehouses, reduction in variability in demand at warehouses.
  - Productivity: Lowering the effective cost of raw materials, reduced production complexities.
- A report by the Road Transport Ministry has shown that the distance travelled by trucks per day has increased by at least 30% post the rollout of goods and services tax (GST).

Gap in the literature

- Most of the studies on the impact of GST on supply chain efficiency are survey based.
- How do we gather hard evidence on the impact on supply chain?
- We look at the firm level database to study the working capital cycle of firms and its components.
- We also look at some key indicators of firm performance pre and post GST.

Part II

Data and stylised facts

Data

- Balanced panel data consisting of 727 manufacturing and non-financial services firms between the time period FY 2016-21.
- Firm-year observations categorised by ownership, age, quoted status and by Industry for better comprehension
- Size (measured with respect to turnover and investment in GFA) to assess the impact on smaller and larger firms.
  - Turnover threshold: Small (Less than Rs. 250 cr)
  - Investment in GFA threshold: Small (Less than Rs. 50 cr)

Sample of firms

Year	Small (Count)	Large (Count)	Total (Count)	Small (Share)	Large (Share)
Ownership					
Government	7	45	52	13.5	86.5
Private	185	563	748	24.7	75.3
Age					
Before 1991(Old-aged)	67	336	403	16.6	83.4
After 1991(New-aged)	125	272	397	31.5	68.5
Quoted					
Un-listed	153	305	458	33.4	66.6
Listed	39	303	342	11.4	88.6
Manufacturing					
Food & agro-based products	16	58	74	21.6	78.4
Textiles	10	27	37	27.0	73.0
Chemicals & chemical products	42	134	176	23.9	76.1
Consumer goods	12	42	54	22.2	77.8
Construction materials	10	46	56	17.9	82.1
Machinery	22	57	79	27.8	72.2
Metals & metal products	18	63	81	22.2	77.8
Transport equipment	27	86	113	23.9	76.1
Miscellaneous manufacturing	4	20	24	16.7	83.3

Sample of firms

Year	Small (Count)	Large (Count)	Total (Count)	Small (Share)	Large (Share)
Mineral					
Coal & lignite		6			
Minerals	4	11	15	26.7	73.3
Electricity					
Electricity generation	2	9	11	18.2	81.8
Non-financial services					
Wholesale & retail trading	27	50	77	35.1	64.9
Hotels & tourism	1				
Communication services	1	1	2	50.0	50.0
Miscellaneous services	10	17	27	37.0	63.0
Construction					
Industrial construction	5	12	17	29.4	70.6
Year					
2015-16	173	554	727	23.8	76.2
2017-17	156	571	727	21.5	78.5
2017-18	143	584	727	19.7	80.3
2018-19	134	593	727	18.4	81.6
2019-20	143	584	727	19.7	80.3
2020-21	147	580	727	20.2	79.8

Firm performance: Pre and post GST

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Output						
Net sales (Rs. Lakh crore)	21.45	22.94	25.63	29.73	27.79	27.23
Net sales (YoY Change)		6.9	11.7	16.0	-6.5	-2
Profitability						
Operating profit (Margin)	13.4	14.2	13.8	13.8	12.7	15.2
Operating profit (Rs. Lakh crore)	2.87	3.26	3.54	4.10	3.54	4.15
Operating profit (YoY Change)		13.6	8.6	15.8	-13.7	17.2
Net profit (Rs. Lakh crore)	1.32	1.6	1.71	2.14	1.74	2.3
Net profit (YoY Change)		21.2	6.9	25.1	-18.7	32.2
Efficiency						
Sales to GFA ratio (Times)	1.78	1.74	1.78	1.89	1.59	1.44
Leverage						
Debt-equity ratio (Times)	0.53	0.52	0.48	0.46	0.47	0.43
Solvency						
Interest coverage ratio (Times)	4.28	4.77	5.54	6.53	4.97	6.45
Count	727	727	727	727	727	727

Summary

- Output saw the fastest expansion in FY 2018-19, while the following two consecutive years it saw a contraction.[1]
- Operating and Net profit saw considerable jump in the FY 2018-19, followed by a decline in FY 2019-20 and an uptick in the FY 2020-21 however below the FY 2018-19 levels.
- Asset utilisation ratio showed a steep jump in FY 2018-19 before falling to lower levels in the subsequent years.
- Leverage saw a declining trend with lowest ratio witnessed in FY 2018-19, before increasing marginally in FY 2019-20 and then finally reducing in FY 2020-21.
- Interest Coverage Ratio saw a visible improvement in 2018-19 before declining in 2019-20.

[1] Real GVA of manufacturing sector declined by 3 percent. (Goldar, 2022)

Part III

Working capital cycle

Working capital cycle and its components

The gross working capital cycle is expressed in terms of length of time between the acquisition of raw materials and other inputs and the flow of cash from the sale of finished goods. This is termed as the 'gross working capital cycle'. Gross working capital cycle is derived as sum of days:

1. Raw-material cycle: number of days the stock of raw materials remains in the company's warehouse before it is introduced in the production process
2. Stock work-in-progress cycle: number of days the stock of raw materials remains in the production process before it is finally converted into finished goods
3. Finished good cycle: number of days the stock of finished goods remains in the warehouse of a company before it is finally sold and dispatched to customers
4. Debtor days: number of days a company takes to collect cash from its debtors.

Categories of the working capital cycle across the years

Mean and median

Items	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Mean						
Gross working capital cycle	231.2	235.9	237.0	221.5	277.1	368.0
Raw-material days	108.8	105.0	108.6	99.3	130.5	163.9
Stock-WIP days	27.8	29.3	28.2	24.8	37.2	94.8
Finished goods days	35.9	34.8	32.3	32.6	37.6	39.5
Debtors days	63.1	71.7	72.5	69.1	78.5	87.5
Median						
Gross working capital cycle	163.7	164.8	163.9	159.1	177.3	188.1
Raw-material days	54.4	54.3	54.1	52.3	60.6	70.0
Stock WIP days	8.1	8.2	8.0	8.0	8.7	8.8
Finished goods days	21.2	22.5	20.3	19.6	22.7	22.6
Debtors days	48.7	50.8	53.4	53.1	54.4	57.1

Significant difference exists across various categories: Mann Whitney Test

	Mean			Median		
Size	Large	Small	Significance	Large	Small	Significance
	215.8	439.9	***	164.9	190.5	***
Quoted	Listed	Unlisted	Significance	Listed	Unlisted	Significance
	253.5	268.4	*	171.5	167.5	*
Ownership	Government	Private	Significance	Government	Private	Significance
	399.8	251.6	***	211.3	168.8	***
Age	New aged	Old aged	Significance	New aged	Old aged	Significance
	305.9	220.4	***	164.7	173.6	***

Working capital cycle: By Size and by Year

Year	Mean		Median	
	Small	Large	Small	Large
2015-16	301.9	209.1	180.4	159.7
2016-17	344.6	206.2	180.2	161.3
2017-18	326.2	215.2	190.0	159.0
2018-19	330.3	196.9	184.2	155.8
2019-20	453.6	233.9	210.5	171.6
2020-21	900.8	233.0	219.3	182.3

Working capital cycle: By Listing status and by Year

Year	Mean		Median	
	Un-listed	Listed	Un-listed	Listed
2015-16	233.3	228.5	160.9	169.1
2016-17	227.8	246.1	161.6	166.7
2017-18	232.2	243.1	162.8	165.7
2018-19	228.7	212.6	157.9	160.1
2019-20	305.9	241.1	176.9	178.3
2020-21	382.8	349.5	188.6	188.1

Working capital cycle: By Ownership and by Year

Year	Mean		Median	
	Government	Private	Government	Private
2015-16	433.2	216.3	221.6	161.7
2016-17	388.2	224.7	210.8	163.3
2017-18	388.4	225.9	191.4	162.9
2018-19	335.7	213.1	166.1	159.0
2019-20	400.1	268.0	215.1	176.5
2020-21	453.1	361.7	211.9	186.9

Working capital cycle (Mean): By Industry and by Year

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Manufacturing						
Food & agro-based products	194.2	205.1	194.0	200.6	199.6	217.6
Textiles	158.0	164.6	164.1	165.5	176.0	222.8
Chemicals & chemical products	219.9	225.6	232.3	238.2	250.0	267.5
Consumer goods	174.6	169.9	184.6	177.1	200.7	229.3
Construction materials	198.7	203.7	184.8	171.1	201.6	212.5
Machinery	212.4	196.5	285.4	200.9	297.5	264.9
Metals & metal products	176.9	253.7	178.1	159.8	265.0	197.8
Transport equipment	140.6	134.5	128.8	121.2	141.0	167.3
Miscellaneous manufacturing	184.4	196.8	210.6	217.1	239.3	300.3
Mining						
Minerals	292.1	230.0	226.3	238.1	249.2	283.2
Coal & lignite	131.0	156.8	151.6	119.9	137.8	166.5
Electricity						
Electricity generation	775.4	751.5	539.5	547.4	627.2	673.4
Construction						
Industrial & infrastructural construction	374.3	622.9	592.9	430.5	916.6	3665.7
Non-financial services						
Wholesale & retail trading	418.8	413.2	461.7	380.1	540.0	518.0
Miscellaneous services	917.7	549.6	581.8	667.5	782.1	622.5

Next steps

- Supplement the findings from the data (rise in working capital cycle post 2018-19) using econometric techniques to control for slowdown in the manufacturing sector, impact of Covid etc.
- Deflate the data to control for the impact of prices.
- Implication on exporting firms: Was the impact on exporting firms different from non-exporting firms?

Thank you