Has tax reforms in India been effective in tobacco control: Evidences on affordability of cigarette after introduction of Goods and Service Tax

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ABSTRACT

Background: Taxes are the most cost-effective mechanism to deter tobacco consumption. However, the tobacco tax system has not been favorable in India. India introduced Goods and Service Tax (GST) in 2017 to make the tax system uniform. This paper seeks to examine the role of the newly rolled out tax system on cigarette prices and affordability and hence consumption. Methods: We used secondary data from different government publications and conducted simple statistical analysis – to present price changes, affordability of cigarette in pre and post GST regime. Affordability was estimated comparing per capita income with price index of cigarette. Results: The findings suggest that the tax structure has not been simplified with multiple taxes imposed based upon the length of cigarettes. The relative WPI of cigarettes is increasing suggesting higher increase in cigarette prices than general price. Affordability though declined in the initial two years as compared to WPI and per capita income, it remained neutral in the post GST regime. Conclusions: The findings suggest that tax reform should aim at influencing affordability adequately so that it deters consumption of cigarette.

Keywords: Cigarette affordability, cigarette price variation, cigarette tax, Goods and Services Tax
were taxed differently. Adding to this anomaly, specific excise duty based on the weight of tobacco/length of the stick/filter or non-filter was imposed on cigarettes whereas, most smokeless products attracted ad valorem tax. In July 2017, India introduced Goods and service tax (GST) by subsuming multiple taxes to one.

Several studies both in India and other developed countries have shown the responsiveness of demand for tobacco products due to changes in price. Studies indicate cigarette price and its consumption are inversely related and cigarette consumption reduces by 4% in high income countries and around 4-8% in low- and middle-income countries when there is a 10% rise in the inflation adjusted price of cigarettes. Further, studies indicate demand for tobacco products is more responsive to price in low- and middle-income countries. However, decline in taxes did not necessarily exhibit a drop-in price. Earlier studies on price elasticity of tobacco products in India showed that price elasticity of cigarettes was -0.38 in rural and was -0.196 in urban India. While another study on own and cross price elasticity of cigarettes estimated -0.15 in rural and -0.30 in urban areas. Own price elasticity of cigarettes estimated by economic quintile classes was highest (-0.832) in the poorest tertile and lowest (-0.0913) in middle tertile. On the contrary another study suggested price change did not affect the consumption pattern of the smokers.

Furthermore, another important policy measure is to increase inflation adjusted excise tax rate in order to reduce consumption of tobacco products, therefore, reduce affordability due to growing income. Affordability of cigarettes is a crucial factor for cigarette demand as increase in income might crumble the effect of price of cigarettes as well as the taxes applicable by making cigarettes more affordable. Evidence shows rise in affordability of tobacco products in India in comparison to per capita GDP due to the low rate of increase in tobacco taxes compared to GDP. Tobacco tax in India is low and not regularly inflation adjusted and has become more affordable over time. Another recent study also suggests cigarettes are more affordable since 2000. Further, in spite of the rising current price, affordability of cigarettes remained constant.

Rationale

After the introduction of GST, taxes have become uniform for all tobacco products. Tobacco is placed in the highest tax slab of 28%. Earlier studies suggested the tobacco tax has been ineffective in reducing consumption in India because of its complex structure. GST is supposed to minimize these anomalies and it is expected that cigarette price will increase more to offset the rise in per capita income making it unaffordable. Though two years have passed after the introduction of GST, there are limited evidences available on increase in price of cigarettes across product categories and whether the affordability has changed due to implementation of GST. Recently, one study suggested GST and along with compensation cess will increase cigarette prices by 0.18%, reducing the weighted average consumption by 0.3% and increase tax revenue by 0.17%. Further, another study showed there was no change in affordability of bidi and cigarette after the GST was introduced while chewing tobacco has become affordable. This study has been undertaken to add to the limited knowledge on affordability of cigarettes in India and across states. Moreover, this evidence will contribute to influence the fiscal policy to strengthen the tobacco control efforts of India.

Given this, the objectives of this study are to:

- Examine the tax structure and changes in price of cigarette across states in India in the pre and post GST period
- Examine the affordability of cigarettes in pre and post GST period.

Methods

We used secondary data from different government publications and conducted statistical analysis – to present price changes, affordability of cigarettes in pre and post GST regime. The pre-GST period is defined as from June 2015 to May 2017 and post GST -June 2017–May 2019, 1st July 2017 being the cut point when GST was introduced.

Data source

Tax structure data was obtained from Central Board of Excise and Customs, Government of India. Data on Wholesale Price Index (WPI) and the state wise cigarette price was obtained from the Office of Economic Adviser, Department of Promotion of Industry and Internal Trade, Government of India. Over time, WPI undergoes structural changes periodically, therefore WPI of base year 2004-05 is considered. Retail Price Index (RPI) base 2001 = 100 annual data was acquired from the Labour Bureau, Ministry of Labour and Employment, Government of India. WPI and RPI for the last four years from June 2015 to May 2019, was considered to analyze the behavior of price change of cigarettes across the country.

Analysis

Cigarettes are produced under different lengths, therefore, the state and all India average of cigarette price was estimated from the retail price, for all brands, for both non-filter and filtered (<70 mm). Affordability was estimated at the national level by comparing the price index of cigarettes with the general price index. The relative WPI of tobacco products was obtained by dividing the WPI of cigarettes, food and tobacco by the WPI of all commodities in a given year, separately for each of the three commodities. Similarly, the relative Retail Price Index (RPI) of tobacco products was estimated to show whether price increase was similar to increase in general prices. Further, the price increase was compared with the growth of per capita income over four years at the national level to capture the affordability. Specifically, the ratio of the cigarette (RPI) to per capita GDP (at current prices) and WPI to per capita GDP were estimated. The GDP data was obtained from the
Ministry of Statistics Government of India- Statement Per capita income.[23]

Results

Tax structure overview
As revealed from Table 1, the pre-GST excise tax on tobacco products comprises basic excise duty (BED), National Calamity Contingent Duty (NCCD) and health cess. VAT was imposed on the price of the tobacco product at the state level.

After the introduction of GST, 28% GST is imposed on cigarette which is uniform across all tiers of cigarette. In addition to NCCD and GST, compensation cess was introduced for a period of 5 years to provide compensation to states in view of revenue losses under GST. Basic excise duty was nonexistent after the GST; however, it was again introduced in 2019-20 budget.[23] Further, the compensation cess has two components- specific and ad valorem of 5% for cigarettes up to 75 mm length and 36% on others [Table 1]. It was also observed that there was a large variation in the tax rates in the filtered and non-filter cigarettes.

Trend of cigarette price change across states in India
State wise aggregate of cigarette price is presented in Table 2 for a pack of 10 cigarettes, irrespective of the brand and whether filter or non-filter (cigarette <70mm). The price change is gradually observed to increase from 2015 to 2019. However, the average cigarette price over four years (2015-2019) in Haryana was the highest at Rs. 70.65, followed by Chandigarh, Rajasthan, Himachal Pradesh, Punjab and Delhi. On the contrary, the lowest average price in Assam was at Rs. 38.11. Average change in the price of cigarettes is 5.98% in the post GST over the pre-GST period.

State level variations in price of tobacco products
Price of cigarettes (pack of 10 sticks) for different brands is not uniform across different states of India. For the same brand, price varies across states. For instance, per stick price of Bristol filter cigarette was highest in Karnataka Rs. 5.38 in 2015-16. The scenario changed and from 2016-17, the unit price became more in Andhra Pradesh. Similarly, for Charms filter another brand, the unit price was lowest in Assam and highest in Bihar and Jharkhand each. However, for Four Square, the variations in prices is least across states in comparison to other brands while this is higher for charms filter [Table 3].

Trends of relative WPI and RPI of cigarettes and food
Relative WPI of cigarettes to all commodities is increasing from 2014-15 to 2018-19 as compared to the relative WPI of food and tobacco to all commodities. There was a steep increase in the WPI of cigarettes to all commodities in 2016-17, which was higher than the WPI of food and tobacco to all commodities. However, the relative WPI of food was higher than the relative WPI of all tobacco during 2014 to 2016-17 and after that the difference between the two was reduced and in 2018-19 it was almost equal [Figure 1]. Further, there is a sudden increase in relative RPI of cigarettes in 2017-18 which was almost unaltered from 2014-15 until 2016-17. However, in 2018-19 there was a minor decline in value from 1.68 to 1.66 [Figure 2].

Affordability of cigarettes
There were contrasting findings in the ratio of WPI/RPI to per capita income. The ratio of WPI to per capita income showed a decrease from 2015-16 to 2016-17. There was a slight increase in the year 2017-18 indicating a decline in affordability. After introduction of GST, the ratio of WPI to per capita income was almost constant from 2017-18 to 2019-20 showing neutrality in affordability. Moreover, the ratio of RPI to per capita income showed a gradual decrease in each year from 2015-16 to 2019-20. The declining trend in RPI indicates an increase in affordability of cigarettes [Figure 3].

Discussion
This study using secondary data from different sources has produced evidence on the role of GST on price and affordability of cigarettes. GST was introduced to reduce the complexities in the tax structure, according to the findings of this study, many inconsistencies in the tax structure are still noticed. For instance,
complexities of the tax system. Further, the re-introduction of specific basic excise duty in the 2019-20 budget is good from a cigarette consumption point of view, however, it needs to be inflation adjusted. Another evidence with similar observations shows that GST has increased the complexity in tax structure.[18]

Five different product tiers of cigarettes continue to exist which are taxed differently based on length. It gives an edge to the manufacturing companies to tweak the tax system by manufacturing different lengths to keep the total demand intact in the event of a price change. An earlier evidence suggested that ITC, the largest manufacturer of cigarette in India, introduced new brands with lowest tax slab (<65 mm) in order to keep its demand intact in the event of an increase in tax of higher slabs.[24]

To our knowledge, there are limited evidence on the unit prices of different brands of cigarette and its variations across states. The findings from this study showed that the price of cigarettes varied for different brands of cigarettes in different states across India. For instance, the unit price was as high as in states – Gujarat, Goa and Delhi to low in Assam and West Bengal. Further, the price change was significant after GST was introduced.

One of the reasons for the variation in prices across states for the same brand could be transportation cost from manufacturing states to the consuming states. Another study also suggested a large variation is observed in the retail price of tobacco products across states. This study presumed variations in prices could be due to differences in income across states.[19] An international study

| Table 2: State and country average of cigarette price (filtered/non-filtered) |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| State           | 2015-2016       | 2016-2017       | 2017-2018       | 2018-2019       | Average Price 2015-2019 |
| Andhra Pradesh  | 42.86           | 47.26           | 50.45           | 54.6            | 48.79               |
| Assam           | 36.77           | 37.4            | 38.69           | 39.58           | 38.11               |
| Bihar           | 47.75           | 50              | 52.67           | 58              | 52.11               |
| Chandigarh      | 56.67           | 58              | 63.25           | 69              | 61.73               |
| Chhattisgarh    | 51.63           | 52.47           | 61.46           | 64.69           | 57.56               |
| Delhi           | 54              | 58.5            | 61.92           | 67.33           | 60.44               |
| Goa             | 54.36           | 57.78           | 60.17           | 67.17           | 59.87               |
| Gujarat         | 51.58           | 51.82           | 61.57           | 64.69           | 57.42               |
| Haryana         | 65.08           | 69              | 72              | 76.5            | 70.65               |
| Himachal Pradesh| 55              | 57.51           | 62.4            | 67.24           | 60.54               |
| Jammu and Kashmir| 40             | 40              | 40.7            | 41.67           | 40.59               |
| Jharkhand       | 48.01           | 48.78           | 53.88           | 58              | 52.17               |
| Karnataka       | 45.45           | 45.5            | 49.86           | 52.86           | 48.37               |
| Kerala          | 45.48           | 45.48           | 48.99           | 53.37           | 48.33               |
| Madhya Pradesh  | 49.92           | 51.09           | 62.73           | 64.69           | 57.11               |
| Maharashtra     | 49.06           | 51.61           | 60.05           | 64.69           | 56.35               |
| Odisha          | 48              | 47.83           | 48.25           | 48.5            | 48.15               |
| Puducherry      | 47.36           | 52.35           | 57.34           | 59.83           | 54.22               |
| Punjab          | 55              | 57.61           | 62.44           | 67.47           | 60.63               |
| Rajasthan       | 57.39           | 58.25           | 62.47           | 67.78           | 61.47               |
| Tamil Nadu      | 51.86           | 52.18           | 59.76           | 65.05           | 57.21               |
| Tripura         | 48              | 49.54           | 48.53           | 48.8            | 48.72               |
| Uttar Pradesh   | 48.6            | 49.37           | 50.29           | 52.2            | 50.12               |
| West Bengal     | 44.25           | 44.95           | 46.15           | 46.93           | 45.57               |
| Country Average | 49.75           | 51.43           | 55.66           | 59.19           | 54.01               |

*Price of pack of 10 cigarettes <70 mm irrespective of brand and filter or non-filter. Duration from June 2015 to May 2019.

| Table 3: State wise variation of cigarette price for a particular brand |
|-----------------|--|--|--|--|
| Year             | 2015-2016 | 2016-2017 | 2017-2018 | 2018-2019 |
| Bristol, filter  |          |          |          |          |
| Chhattisgarh     | 5.16     | 5.25     | 6.15     | 6.47     |
| Gujarat          | 5.13     | 5.18     | 6.17     | 6.47     |
| Karnataka        | 5.38     | 5.31     | 6.11     | 6.48     |
| Madhya Pradesh   | 5        | 5.11     | 6.27     | 6.47     |
| Andhra Pradesh   | 5.15     | 6.06     | 6.45     | 7        |
| CV %             | 2.65     | 7.18     | 2.19     | 3.59     |
| Charms, filter   |          |          |          |          |
| Assam            | 2.78     | 2.95     | 3.1      | 3.2      |
| Bihar            | 4.87     | 5        | 5.27     | 5.8      |
| Jharkhand        | 4.79     | 4.86     | 5.31     | 5.8      |
| West Bengal      | 4.21     | 4.38     | 4.63     | 4.65     |
| CV %             | 23.24    | 21.80    | 22.57    | 25.37    |
| Four Square Premier, filter | | | | |
| Andhra Pradesh   | 5.47     | 5.8      | 6.13     | 6.67     |
| Chandigarh       | 5.67     | 5.8      | 6.33     | 6.9      |
| Rajasthan        | 5.45     | 5.8      | 6.27     | 6.77     |
| Uttar Pradesh    | 5.37     | 5.57     | 5.8      | 6.68     |
| CV %             | 2.32     | 2.0      | 3.86     | 1.58     |
Rout and Parhi: Affordability of cigarettes in India after introduction of GST

The findings of this study suggested that the affordability of cigarettes declined slightly from 2015-16 to 2017-18 when compared with WPI with per capita income except in 2016-17. Thereafter there was no change in the affordability of cigarettes in the post GST and the ratio of WPI to per capita income was almost constant for three consecutive years from 2017-18 to 2019-20. This implied there was hardly any effect of GST on the affordability of cigarettes. As per an earlier study, there was an increase in affordability of cigarettes during 2006 to 2011 when WPI was compared with the per capita income, however, this declined in the next two years due to more increase in tax compared to per capita income. Another recent study also made similar observations which indicated cigarette affordability remained almost unchanged after the introduction of GST however, this varied across states, with decline in affordability in some states and increase in others. Affordability of tobacco products shows increasing for all tobacco products including cigarettes and it is more pronounced in the case of bidis as indicated by another study. The introduction of GST was supposed to influence affordability as the cigarette was kept at the highest bracket of 28% with compensation cess and ad valorem component. However, observing no changes in affordability in the post GST regime is somewhat not a good practice from tobacco control point of view.

As there is a strong public health justification for reducing the consumption of cigarette, pricing and tax measures as suggested by WHO’s FCTC should be used effectively. Many primary care physicians may be aware of various non price measures of tobacco control as suggested by FCTC, however, they should be informed about the price and tax measures which are equally important. As suggested by this study affordability should decline on a regular interval and the role of taxation is crucial in this direction. These findings will build perspective of the primary care physicians on the role of economic measures and hence, contribute to influence tobacco control policies.

Conclusion

The present study suggests that introduction of GST has not simplified the complex tax structure largely. Manufacturers have wider choice to tweak the tax system due to production of multiple brands with various lengths of cigarette. This practice of manufacturing multiple lengths of cigarette should be discouraged for making tax system effective. Though relative WPI and RPI of cigarettes have gone up in the post GST regime, no change in the affordability in the post GST regime seems to be disquieting from tobacco control point of view. Therefore, the compensation cess should be increased so as to offset the increase in income in future. Further, there was no uniformity in the unit price of cigarettes for a particular brand in different states. This could influence the consumption pattern. Policy should aim at reducing the discrepancies in the cigarette prices and influencing affordability sternly.

Further, this study suggests that there is an increasing trend in the relative WPI of cigarettes to all commodities since 2014-15, which is higher than the WPI of food and tobacco to all commodities. This suggests that the introduction of GST led to more increase in the relative WPI of cigarettes. It was also observed that the relative WPI of food was higher than the relative WPI of all tobacco before the introduction of GST, indicating there was an increase in food prices in comparison to cigarettes. Gradually, the gap was bridged in the post GST regime. WPI of all Tobacco and food prices were at par in 2017-18 and became almost equal in 2018-19. The reason being the introduction of GST increased taxes on tobacco and hence price of cigarettes increased. An earlier study showed that the WPI of all tobacco products (smoking and smokeless) showed an increasing trend during the time period 2005-06 to 2012-2013. However, the increase was consistently low as compared to essential commodities like food items.

on price variability indicates cigarette prices vary by brand and industry strategizes. There are studies in India which indicate cigarette prices were higher than any other tobacco product (for both smokeless or smoked). Earlier studies on price elasticity of cigarettes which are based on representative cross-section of households show cigarette price variation based on urban and rural regions. While another study showed variation in cigarette price was higher in rural areas as opposed to urban areas, reason being the compensatory cess introduced. The findings of this study suggested that introduction of GST has not simplified the complex tax structure largely. Manufacturers have wider choice to tweak the tax system due to production of multiple brands with various lengths of cigarette. This practice of manufacturing multiple lengths of cigarette should be discouraged for making tax system effective. Though relative WPI and RPI of cigarettes have gone up in the post GST regime, no change in the affordability in the post GST regime seems to be disquieting from tobacco control point of view. Therefore, the compensation cess should be increased so as to offset the increase in income in future. Further, there was no uniformity in the unit price of cigarettes for a particular brand in different states. This could influence the consumption pattern. Policy should aim at reducing the discrepancies in the cigarette prices and influencing affordability sternly.

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Summary of Key Points
- GST has not simplified the complex tax structure on cigarette as desired.
- Manufacturers tweak the tax system producing multiple brands with different lengths keeping their total volume of sales unchanged.
- Affordability of cigarette has remained unchanged even though cigarette was kept under the highest tax slab after introduction of GST. Tax policy should aim at making cigarettes unaffordable.
- Cigarette prices are not uniform for a particular brand or length across states and vary widely.

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Conflicts of interest
There are no conflicts of interest.

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