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Join hands or walk alone? Evidence on lobbying for trade policy in India

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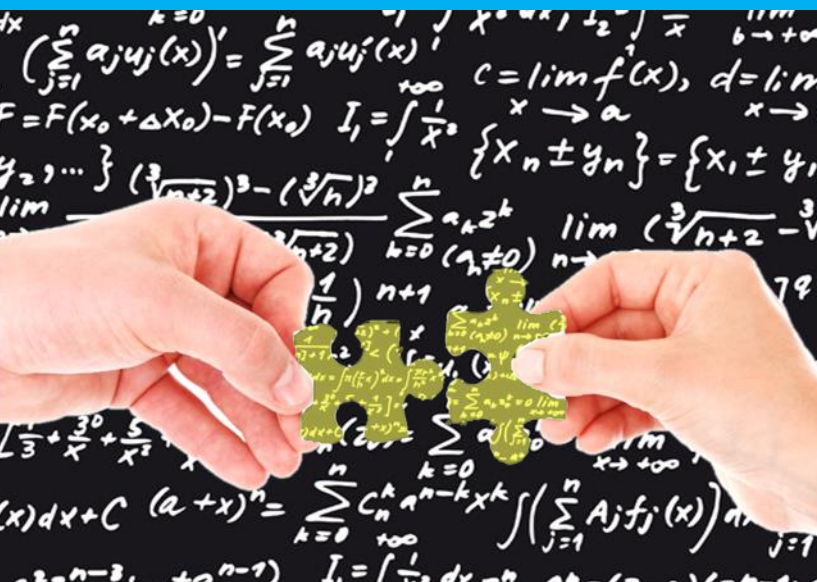
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Join hands or walk alone?
Evidence on lobbying for
trade policy in India



Amrita Saha

ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

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ASIA-PACIFIC RESEARCH AND TRAINING NETWORK ON TRADE

WORKING PAPER

Join hands or walk alone? Evidence on lobbying for trade policy in India

Amrita Saha^{*}

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Abstract

Using primary evidence for 146 Indian manufacturing firms, I examine the types of lobbying strategies for trade policy influence and what drives firm choice for these strategies. Firms can lobby collectively in a group (Join Hands), lobby individually as a single firm (Walk Alone), or adopt a dual lobbying strategy that is a unique combination of collective and individual lobbying. The findings are a first for India, and suggest the following: First, Indian manufacturing firms join hands (lobby using a collective strategy) when targeting sector-wide outcomes in the nature of public goods; firms join hands while walking alone (dual strategy) when targeting product-specific outcomes. Second, the likelihood of adopting a dual lobbying strategy is higher in sectors that are characterized by low concentration (dispersion is higher) such that firms increase their chances of trade policy influence. This suggests a strong competition effect (driving cooperation and individual lobbying) over any free-riding that drives firm strategy to lobby for trade policy influence in India. Finally, availability of resources and lobbying time are significant drivers for the type of strategy undertaken.

Key words: lobbying strategy, trade policy, India

JEL codes: F13, F14, F5

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1. Introduction

The choice of lobbying strategy includes collective lobbying (*Join Hands*) by a group of firms or individual lobbying (*Walk Alone*) by a single firm¹. The existing literature on lobbying has identified the two strategies as a means of influence² for the policy choice of the government³. However, the analytical evidence on this specific choice is limited, with one useful framework outlined in Bombardini and Trebbi (2012) (BT henceforth) that provides evidence for the United States⁴, while there are limitations in examining such specific questions on lobbying for developing countries mainly due to the lack of data. The objective of this paper is to address the gap in the context of lobbying in developing countries by investigating the choice of lobbying strategy for trade policy influence in India. The paper seeks to answer the following questions:

- What lobbying strategies do firms use for trade policy influence?
- How does firm choice of lobbying strategy link to specific trade policy outcomes?
- What drives firm lobbying strategy for trade policy influence?

Collective lobbying can provide the advantage of lower costs to each firm⁵ and greater legitimacy especially in developing countries as also observed for India by Narlikar (2006). An individual lobbying strategy on the other hand is expected to be more viable when fixed costs are low and the output includes product-specific policy across firms. The literature hints at the possibility of undertaking both collective and individual

¹ Lobbying is defined in terms of attempts to communicate information to political actors following de Figueiredo and Richter (2014) and Grossman and Helpman (2001).

² Grossman and Helpman (2001) suggest that campaign contributions in the US can be made to obtain access to officeholders, affect the likelihood that a candidate is elected, or influence on policies. This paper considers lobbying in India only as a means of influence.

³ Examples include the work of Stigler (1971) and Olson (1994).

⁴ Related literature that has examined firm lobbying strategies includes Gawande (1997), Hojnacki and Kimball (1998), and Berry (1997) among others.

⁵ The fixed cost of collective lobbying is the membership fees of an association. Once the fixed cost is paid, there is a variable cost shared by the members that cooperate to lobby as a group.

lobbying (BT, Hojnacki and Kimball (1998)⁶). I argue that certain firms with higher stakes in the specific trade policy, adopt what I term as a *Dual Strategy*, i.e. a unique combination of collective and individual lobbying⁷.

Examining lobbying strategies with regard to specific trade policy derives from the argument that each policy outcome requires a group to convey to policy-makers different types of information. Hojnacki and Kimball (1998) argue that while collective lobbying helps communicate preferences of a group (in my case the industry), direct interactions on the other hand allow interest groups to provide specialized and discrete information to policy-makers. This suggests there are differences between the use of each lobbying strategy. The premise of such differences between the use of each single strategy and a dual strategy lends itself to examine the use of lobbying strategies across trade policy choices. An understanding of the factors that affect the choice of lobbying strategy for trade policy has important implications for democratic policy-making by offering evidence to recognize the types of lobbying strategies and their influence across different instruments of trade policy.

While public discussion on lobbying for trade policy in India is widespread⁸, academic research has been limited owing to little or no data. The model of *Protection for Sale*(PFS) by Grossman and Helpman (1994) estimated by Bown and Tovar (2011), Cadot et al. (2014), and Saha (2017) provides some political economy evidence for India⁹, but it remains an open question as to what extent the existing studies reflect actual lobbying in India.

In the absence of data on lobbying specifically for trade policy in India, I designed and implemented a primary survey to collect original information across 146 manufacturing firms interviewed from the period of July 2013 to November 2014. There are two prior

⁶ Hojnacki and Kimball (1998) provide empirical evidence to show that when lobbying for change in a policy, groups are likely to lobby using both kinds of lobbying, while a single strategy is sufficient to defend an existing policy.

⁷ The exact combination of the two will be linked to the type of target trade policy outcome and firm and industry characteristics.

⁸ Saha (2013) draws attention to lobbying in India.

⁹ As observed in related work, no actual lobbying data is available for India. Bown and Tovar (2011) used data on organizations from World Guide to trade associations in 1995 and identify an industry in India is organized if it lists at least five organizations, while Cadot et al. (2014) and Cadot et al. (2007) identify politically organized industries using trade and production data in a multi-stage iterative procedure.

surveys that attempt to capture general industrial lobbying in India. First, Yadav (2008) provides a useful examination of the various stages of the lobbying process. However, a limitation to her study is that she interviews only members of business associations. Second, the *World Bank Enterprise Survey* (WBES) in 2005 asked one question on membership to industry associations which does not however directly imply actual lobbying. I begin by outlining the survey, following which I use the primary data to examine the choice of lobbying strategy for manufacturing firms.

Findings suggest that Indian firms manufacturing firms lobby using a collective strategy when targeting sector-wide outcomes in the nature of public goods, and adopt a dual strategy when targeting product-specific outcomes. Second, the likelihood of adopting a dual lobbying strategy is higher in sectors that are characterized by low concentration (dispersion is higher) such that firms increase their chances of trade policy influence. This suggests a strong competition effect (driving cooperation and individual lobbying) over any free-riding that drives firm strategy to lobby for trade policy influence in India. Finally, availability of resources and lobbying time are significant drivers for the type of strategy undertaken.

The remainder of this paper is organized as follows. Section 2 outlines the motivation and specific details on the survey. Section 3 outlines stylized facts on the choice of manufacturing firms to lobby the government for trade policy. In Section 4, I present the theoretical framework and outline the hypothesis for analyzing the survey data. This is followed by Section 5 that presents the empirical analysis. Section 6 outlines the broad findings, section 7 summarizes policy implications and finally, section 8 concludes the paper.

2. Survey

de Figueiredo and Richter (2014) in a comprehensive review on empirical research in lobbying discuss the key advantage of survey data as the flexibility to investigate wider topics in lobbying. Their discussion points to surveys with lobbyists and interest groups in studies that include Baumgartner and Mahoney (2008), Yadav (2008); Nelson and Yackee (2012) among others. This flexibility in collecting information on lobbying is even

more useful in the case of studying lobbying activities in specific countries. Thereby, I implemented a multi-stage stratified random sampling to collect the data. The *Confederation of Indian Industries* (CII) was the starting point for my survey. A list of target firms was provided from the member directories of the CII. A questionnaire was designed carefully incorporating views from preliminary interviews with industry associations and a pilot survey. I initiated the survey with a pilot for 20 firms¹⁰. Preliminary findings were recorded and changes made to the sample questionnaire incorporating certain additional elements. Sensitive questions can discourage respondents from answering openly such that any questions on informal payments were also dropped. Finally, the survey asked the firms their responses on lobbying in a typical year across 2010-2014 in particular, and how lobbying evolved for them since liberalization in 1991. The survey scheme comprised five stages in total.

Table 1 presents a summary of each stage along with the criteria followed. It begins with a sampling reference and then undertakes stratified sampling. The attempt was to make the sample representative to include both association members (this stands for the national trade association CII henceforth) and non-members. The sampling procedure is randomized and the final target sample consists of 250 firms that eventually gave 146 eligible responses¹¹.

¹⁰ No specific criteria was used for the pilot and these interviews were not included in the final interviews. The 20 firms were taken from the lists provided by CII.

¹¹ This is arguably a reasonable representation of the population of firms I am studying, the sample being roughly ten per cent of the population.

Table 1: Survey summary

Stage	Numbers	Sources/Task	Criteria	Target precision (Reduce possible bias)
Sampling reference	508+913=1421	Lists from associations & phone directories	Sectoral weights from World Bank Enterprise Survey	By economic sectors
Stratification	1032	Comparison of lists	Drop overlapping firms (389)	By association members & non- members
Randomization	508+524=1032	Lists re-arranged in descending order	Distribution of firms by size.	By firm size (Number of workers)
	350	Random selection	Draw one firm at fixed intervals of size + budget (optimum allocation)	By strata
E-Mails	320	Potential respondents	Sectoral weights from World Bank Enterprise Survey (30 Firms dropped)	By economic sectors
Final appointments	250	Target Coverage	Follow-ups + Contribution to economic activity + budget	By economic sectors
Actual interviews	146	Actual Coverage	Complete and eligible responses	By economic sectors

Note: Table 1 shows the summary of sampling scheme for the survey. It outlines the detailed steps for undertaking the survey with the criteria adopted and precision targeted.

2.1 Survey design and sampling reference

Lists from associations have been traditionally used for lobbying surveys as in Yadav (2008). However, there is a potential drawback in interviewing only association members. I aimed to target a more representative sample of firms that would include

both members and non-members of trade associations. This is important as the objective of my study was to examine different strategies of lobbying, these being collective and individual lobbying. While, association members can lobby individually in addition to their collective membership, it is important to include non-members who might decide to lobby the government only individually. In this light, while the members directories of CII is a good starting point, I aimed to capture other firm lobbying behavior usually left out in existing studies. Following this, a systematic sampling procedure was chosen with two strata, the list from CII and list of non-members from phone directories in major cities in India.

With the assistance of carefully monitored and trained local survey teams based in New Delhi, details regarding the survey were sent out via personalized emails to potential respondents. The target respondents were trade specialist officers at the firms such that they were fully aware of lobbying strategies of their organization. Not all firms in my sample had specialist officers dealing with trade activities. In those cases, the high-level managers were targeted. Appointments were then sought for face-to-face interviews. Interviews in Delhi and NCR were conducted in person, for the remaining geographical locations, we used telephone conversations and voice over internet protocol (IP) to avoid transportation costs.

The first contact emails were sent in late May 2014 followed by telephone conversations to brief the respondents about the nature of the survey. Reminders were sent two weeks later for those who had not yet responded to the requests. There were follow-ups when appointments were made and interviews carried out. Guarantees of anonymity were provided to the firms and thorough advance information supplied in all cases.

2.2 Stratified sampling

The first step was to create a reliable reference for the sampling. The closest and most relevant reference in my case was the WBES conducted in India in 2005. The distribution of firms across the 20 sub-sectors was taken as the reference for the sampling. The selection of these sectors in the WBES is claimed as representative of the largest

manufacturing sectors in India in terms of employment and output shares by 2005. The aim was to sample the same proportions such that the count distribution of firms in each sector was taken as the reference estimate for the proportion of firms to be drawn across the sectors. This count distribution is attached in **Table A1** in the Appendix for reference.

Following this reference, I constructed a base list of firms distributed across the 20 manufacturing sub-sectors of the WBES classification. For this I used stratified sampling using two strata, first the list from CII and second the list based on various phone directories. I began with a list of 508 firms that was provided by CII, compiled as a random sample based on the WBES count distribution of firms in each sector. I believe this sample is a reasonable representation of the population of firms who are members of associations, the sample drawn being roughly ten per cent of the population of firms. Second, the phone directories in the major cities of India were used to build another list. The second list was constructed by an initial draw of a list of firms from the phone directories, of which 913 were kept based on the criteria of working contact details¹². This was followed by dropping any overlapping firms as there was the possibility that the ones from the phone directories could be members of associations. Overlapping firms were dropped from the second list (389 firms were dropped) that finally consisted of 524 member firms that were not on the CII lists. Therefore, each stratum was made mutually exclusive. The purpose of using these two lists was to attempt to draw a representative sample of firms such that the broad target population comprised both the association members and non-members. Using this stratified sampling frame as the base, the next objective was to enable random selection of a sample of firms to be included in the survey.

The two lists together consisted a total of 1,032 firms. Note two important points about the final list of firms. First, the manufacturing sector is complicated by firms that are active in more than one sector for more than one product. For this analysis, all the designated sectors of activity and products were used when compiling the final list of

¹² This included a working phone number. In several cases, where the phone number was not working, an internet search for an e-mail address and/or a website was done.

firms. Therefore, multi-sector firms can appear more than once in a few cases¹³. Second, I adopted a disproportionate random sampling technique as there was no *a priori*¹⁴ for the distribution of firms across the two strata in my survey. This means that the sampling fraction for each stratum will be different such that the criteria are discussed in the next section.

2.3 Randomization

Following this broad sampling procedure, in the third stage the complete list of firms were arranged in descending order of firm size expressed in terms of number of workers. The sampling was then randomized such that firms were selected at random from the re-arranged lists. One firm was drawn at fixed intervals (ranking size) from the entire distribution to create a target list for the survey interviews. This enabled random selection and covered the entire range of firms in terms of size (in my list) than mostly from any one end of the distribution. This was done to deal with the potential problem of large firms being over-represented in the sample.

I use a disproportionate sampling procedure outlined in **Table A2** in the Appendix. This consists of using a different sampling fraction to each stratum. Following this approach, I set the final sample size (distributed across the two different strata) taking into account two important aspects of costs and precision. The precision is targeted at the level of economic sub-sectors and contribution to economic activity. Using optimum allocation, the number of elements selected from each stratum were made directly related to the standard deviation of the firm size in the stratum. The greater the variability in the stratum, higher sample size of the stratum should be. Moreover, taking into account data collection costs, the higher the data collection costs of a stratum, the lower the targeted sample size. Note that data collection costs were lower for firms in member directories than in the phone directories¹⁵. Costs (c) for the two lists were 20 USD and 5 USD per firm respectively. The distribution of the sample

¹³ Roughly 10 per cent of the firms appear more than once.

¹⁴ To the best of my knowledge there is no existing survey that interviews members and non-members of associations on lobbying in India.

¹⁵ Interviews with member directories were facilitated by CII and did not incur a very high cost.

sizes for the two strata takes into account these varying data collection costs. Standard deviations of size (s) were 6.4 and 5.2 for member directories and phone directories each. The resulting list consisted of 350 firms drawn randomly from the distribution of firms.

2.4 Potential and target respondents

Of the randomly selected firms, local survey teams were instructed to target a total of 320 potential respondents. 30 firms were dropped based on the WBES count of firms across all the sectors discussed above. This enabled coherence with the reference for the sampling frame in stage one of the sample selection procedure. Following this, the local survey teams sent out personalized e-mails with the survey details to the potential respondents. Appointments were sought and follow-ups were done with all potential respondents. Finally, of the 320 potential respondents, 250 were finalized for the interviews. This target was based on the following criteria, first being the responses from the follow-ups and second based on contribution to economic activity from All India Survey of Industries (ASI) for 2010¹⁶.

The process so far was therefore based on the following set of criteria. First, being the budget and response to the e-mails and follow-ups. Not all firms responded to the e-mails and telephone calls. Reasons being unavailability of the high-level officers for interview. The response rate remained fairly even across all the follow-ups such that for every five firms that responded there was on average one non-responsive firm¹⁷. Second, the distribution of the initial 350 firms between the two stratum were based on optimum allocation for disproportionate sampling discussed above. Third, the distribution of the final 320 potential respondents is based on the WBES count across sectors. Finally, the target sample size was set at 250 firms across the manufacturing sectors based on the contribution to economic activity and response to follow-ups.

¹⁶ The data on contribution to economic activity across the ASI sectors were adjusted for the scope of the sectors in the survey (this was done using correspondence between the 20 sectors in the World Bank with the National Industrial Classification sectors for India). The primary reason for this is that the sampling reference is based on the WBES that was conducted in 2005 while my interviews were done in 2013-2014. Therefore, in an attempt to update the distribution in light of changes across the years I use this criterion.

¹⁷ I find no significant differences between responsive and non-responsive firms by firm size and economic sector.

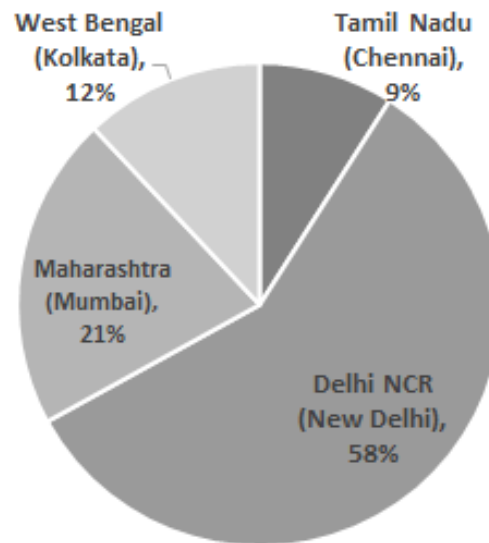
2.5 Final sample and limitations

At this stage, there were incomplete and no responses to questions in a few cases such that some interviews did not give usable information. In total, the survey rendered 146 useful responses, representing a final response rate of 58 per cent (146/250)¹⁸. I find some firms were unwilling to divulge part or full information on lobbying strategies and refused to participate in the survey. The reasons given for this were lack of willingness to reveal information to a foreign university student, refusal to comment on few questions and lack of knowledge. I believe these reasons were unrelated with the lobbying behavior of the firms and thus should not bias the results¹⁹. The sectors recording lowest responses were Electrical Appliances, Auto Components and Sugar. Owing to these reasons, some responses were not obtained and others were incomplete and could not be used. While, 23 responses were not obtained, 81 were dropped.

¹⁸ **Table A3** in the Appendix contains a comparison of the target and actual coverage to examine the response rates across the sectors.

¹⁹ Based on the response rates, I test the null hypothesis that there is no statistically significant difference in the response rates across economic sectors (responses and economic sectors are independent). Using the Pearson chi-square test, I find a p-value of 0.880 for the range of expected and actual response rates that suggests that the non-response rates are independent of the sector identity.

Figure 1: Geographical distribution of sample



Note: Figure 1 shows the distribution of the sample across the cities of India.

Geographical distribution of the final sample was in four main cities of India and its periphery, Delhi and National Capital Region (NCR), Mumbai (Maharashtra), Kolkata (West Bengal) and Chennai (Tamil Nadu). The surveyed firms were broadly located in the large cities and the periphery of small towns across the states. 58 per cent of the interviewed firms had a presence in New Delhi. It is likely that firms have corporate offices in the capital city of Delhi owing to commercial significance of location²⁰. The distribution of the sample across the cities is shown in Figure 1.

Finally, I consider any possible bias in terms of the distribution of the realized sample across the two initial strata. This is important as one aim of the study was to obtain a representative sample and interview both members and non-members of associations which is a potential contribution to the lobbying literature. I used a disproportionate stratified sampling that provides the advantage to study responses of both sub-groups accounting for the fact that firms drawn from phone directories were harder to reach for appointments. A proportionate sample in this case would give a smaller sample than 250

²⁰ This is also the case in the WBES and in Yadav (2008).

firms. Also, it is important to re-iterate that members of associations can also lobby individually, I refer to phone directories to include representation for firms that lobby only individually without membership to an association. Thereby, total firms interviewed will be representative of the lobbying strategies and a disproportionate sampling will provide more accurate responses. On the whole, in spite of the potential limitations of the data, information from the survey helps reveal important lobbying phenomena for trade policy across Indian manufacturing firms that has been non-existent so far.

3. Stylized findings on lobbying for trade policy in India

At present, there exists an effective but quite informal mechanism on government-industry consultations for trade policy-making in India. I find that the sample of firms surveyed stressed the rise in their lobbying efforts from the 1990s as the government became more responsive to industry. Also, I find while policy issues such as MFN (Most Favored Nation) tariffs, import licenses and Non-tariff measures were primary issues of approaching the government in late 90s, instruments such as special consignments at the border²¹ and preferential tariffs became quite important by the end of 2000s. In this paper, I examine the data for MFN and special consignments.

Before exploring the mechanism of this interaction, I attempt to assess how often firms interact with the government for lobbying for trade policy in India. In my survey, firms were asked a general question about their overall decision to lobby the government, measured as: *Does your firm undertake activities for lobbying the government for trade policy?* Responses are binary coded as 0 = no and 1 = yes based on firm lobbying in a typical year during the period 2010-2014. 137 of the 146 firms in my sample reported to be lobbying, such that I find 94 per cent of the manufacturing firms in my sample decided to actively lobby the government in a typical year in that period. This means that most Indian firms interact with the government on trade issues.

²¹ A question on special consignments was added to the survey following the pilot interviews that revealed consignments at the border being an important lobbying objective for the firms. In this case, I found that firms might face specific issues related to incoming imports at the border which relate to custom delays and procedures.

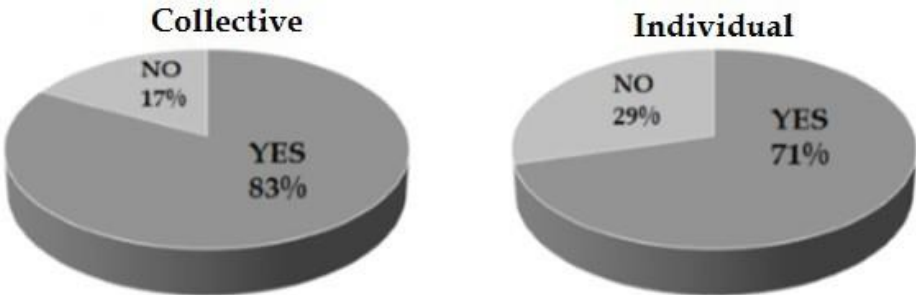
However, it seems that the exact form of government-industry interactions for the trade policy-making process is not very well-defined. There exist industry associations that often facilitate these interactions. At the same time, Indian firms can choose to approach the government by themselves. The argument that associations are allowed to operate officially and openly as legal entities but lack a confirmed status to be heard is found in Sen (2004). Further, Saha (2013) has also repeated that while there are no regulations governing lobbying in India, it is not deemed an illegal activity either. Also, there seems to be an absence of a set criteria or standards for access or acceptance of industry suggestion in these consultations as in most developing countries. There are no formal laws like in the United States and Europe where it is mandatory to disclose the amounts invested in lobbying and neither is there a disclosure body that allows sharing of such information.

In this light, an understanding of lobbying strategies followed by Indian firms can motivate a clear mechanism for both associations and firms to interact with the government. Overall decision on lobbying differs from pursuing different strategies to lobby, such that I also ask questions to measure the firm decision on the different choices again based on a typical year during the period 2010-2014. Being a member of an association does not necessarily mean actual lobbying and it arguably covers only the fixed membership cost of lobbying. Therefore, I will also examine what can potentially account for the marginal cost component such that I ask firms about their actual lobbying activities using their decision to lobby via the membership. Primarily two kinds of choices were quoted by the sample of 146 firms: Collective lobbying via trade associations and individual lobbying using direct contact with officials.

First, lobbying strategy was examined as a binary variable **LOBBYING**: Collective lobbying is denoted as **Collective** when the firm is coded as 1 if it lobbies collectively and 0 otherwise, individual Lobbying is **Individual** that assigns the firm a value of 1 if it engages in individual lobbying and 0 otherwise. I find on average 83 per cent of Indian manufacturing firms lobby using membership to associations as a possible strategy to lobby the government particularly for trade policy. In terms of individual Lobbying, an

average of approximately 71 per cent firms lobby individually. The number of firms that adopt each choice are outlined in Figure 2 below.

Figure 2: Firm decision on lobbying

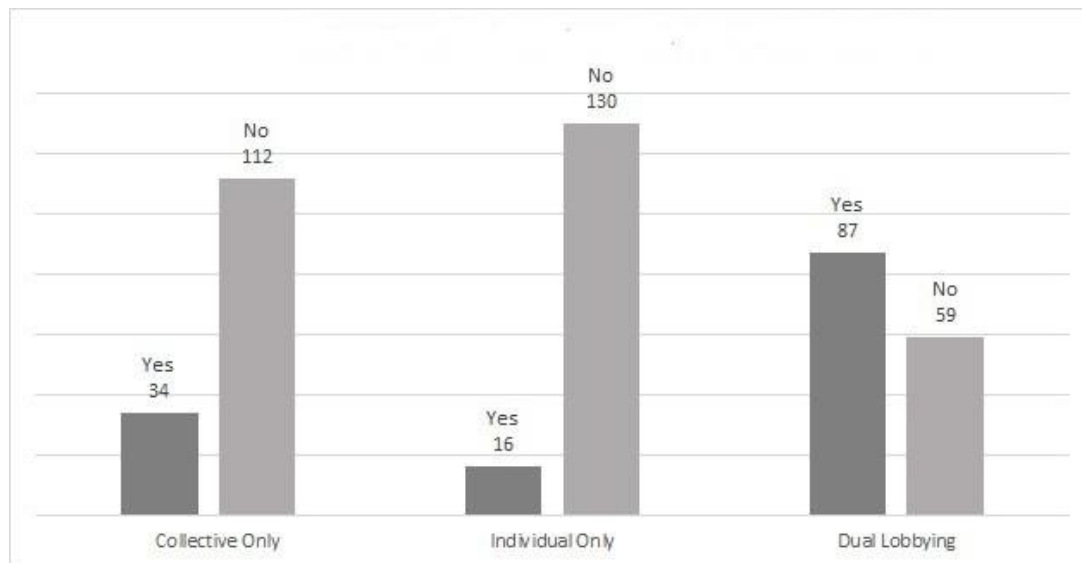


Note: Figure 2 shows the number of firms by the lobbying decision choices. Compiled by author based on information across 146 manufacturing firms in a typical year during the period 2010-2014. The survey was carried out from the period of July 2013-November 2014. 121 firms (83 per cent) reported to have adopted a collective strategy in SBRs while 103 (71 per cent) reported to have undertaken an individual strategy.

Second, I identify firms that choose the exclusive use of each single strategy and a dual one, using **LOBBYING STRATEGY** such that I identified firms that adopt the exclusive use of each lobbying choice and the dual use of both to include: Lobbying only collectively (=2), Lobbying only individually (=3) and Lobbying both collectively and individually (=4) as outlined in Figure 3 below as exclusive choices²². The figures suggest the dual strategy as the preferred choice to lobby for trade policy influence.

²² No Lobbying (=1) is for firms that don't lobby, but these are dropped when studying the multinomial choice variable

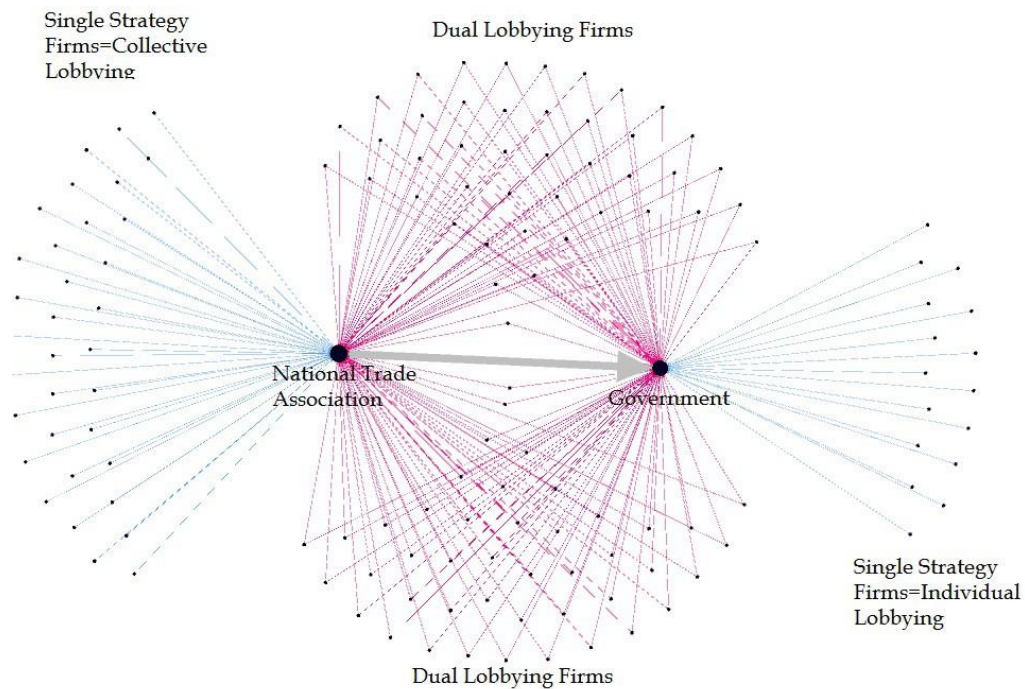
Figure 3: Lobbying strategy



Note: Figure 3 shows the number of firms by Lobbying Strategy, the categories are mutually exclusive. Compiled by author based on information across 146 manufacturing firms in a typical year during the period 2010- 2014. The survey was carried out from the period of July 2013-November 2014. 34 firms use the single strategy of lobbying only collectively, while only 16 firms use the other single strategy being lobbying only individually. 87 firms use a dual strategy that is some combination of lobbying collectively and individually.

Visualizing these links between firms, the association and the government in Figure 4 reaffirms the preferred choice of Indian firms is a dual strategy to lobby for trade policy. Only 34 firms use the single strategy of lobbying collectively; only 16 firms use the other single strategy lobbying individually; while 87 firms use the dual strategy. Examining these links accounting for the intended trade policy outcomes is of importance as the literature has documented that collective lobbying and individual firm lobbying serve different functions, with associations mainly dealing with sector-wide issues and firms mainly dealing with product-specific outcomes (Godwin and Seldon (2002)).

Figure 4: Links by lobbying strategy



To examine the differences in lobbying strategy by outcomes, I ask the firm questions on their intensity of lobbying activity for specific trade policy outcomes. Termed as *Lobbying Activity*, firms were asked about various trade policy outcomes²³, but in this paper I compare the case of MFN and Special Consignments (SC).

The intensity of lobbying in the survey is captured as measure of lobbying activity for each outcome of MFN and Special Consignments (SC, henceforth): "On a scale of 1 – 4, where 1 shows not active and 4 shows very active, how active would you say your firm was in lobbying with regard to the following: MFN Tariff Protection, Special Consignments?" (1 = Not active, 2 = Moderately active, 3 = Fairly Active, 4 = Very Active).

This question asked separately for collective and individual lobbying reveal firm preferences such that I find 58 (39.7%) firms use a dual strategy when lobbying for the public good MFN while 47 (32.2%) firms use the single strategy of individual lobbying when targeting special consignments shown in Tables 2 and 3 below. These numbers for

²³ This includes preferential tariffs, import licenses and non-tariff barriers

the choice of each strategy (by outcome) motivates an empirical analysis of lobbying strategies by different trade policy outcomes.

Table 2: MFN by lobbying strategy

	Individual				
Collective	1	2	3	4	Total
1	0.014	0.007	0.027	0.055	0.103
2	0.000	0.068	0.096	0.000	0.164
3	0.000	0.089	0.397	0.000	0.486
4	0.007	0.000	0.164	0.075	0.247
Total	0.021	0.164	0.685	0.130	1.000

Note: Table 2 shows the relative frequencies of firms based on responses to the question "On a scale of 1 – 4, where 1 shows not active and 4 shows very active, how active would you say your firm was in lobbying with regard to the following: MFN Tariff Protection?" (1 = Not active, 2 = Moderately active, 3 = Fairly Active, 4 = Very Active) for Collective and Individual Lobbying

Table 3: SC by lobbying strategy

	Individual				
Collective	1	2	3	4	Total
1	0.034	0.000	0.322	0.048	0.404
2	0.007	0.000	0.075	0.041	0.123
3	0.014	0.000	0.068	0.068	0.151
4	0.007	0.000	0.137	0.178	0.322
Total	0.062	0.000	0.603	0.336	1.000

Note: Table 3 shows the relative frequencies of firms based on responses to the question "On a scale of 1 – 4, where 1 shows not active and 4 shows very active, how active would you say your firm was in lobbying with regard to the following: Special Consignments?" (1 = Not active, 2 = Moderately active, 3 = Fairly Active, 4 = Very Active) for Collective and Individual Lobbying

In addition, I ask firms questions specific to their lobbying strategy. Firms were asked about lobbying resources in terms of: Financial Resources to pay Membership Fee (of the Association), Specialist Officers Activity for Lobbying, and Having a Lobbying Team. Table 4 shows the average response of firms for the resources by each strategy. Financial Resources to pay the Membership Fee was identified using firm response to: "Did your firm pay the membership fee for the association?". Specialist Officers Activity for Lobbying was recorded using: "How many meetings per month approximately does the specialist officer engage in for lobbying the Government?" (1 = None, 2 = Less than 5, 3 = Between 5-10, 4 = More than 10)". The firm having a Lobbying Team was

derived from the firm response on: "Does your firm have a lobbying team that targets trade policy influence?". The stylized findings are that dual strategy firms are likely to pay membership fees and have a lobbying team, while single strategy firms (collective and individual) are less likely to invest in lobbying teams.

Table 4: Lobbying resources

LOBBYING STRATEGY	Membership Fees*	Specialist Officer**	Lobbying team
Collective Only	0.147	0	0.147
Individual Only	0.063	2.250	0.125
Dual	0.494	2.115	0.885

Note: Table 4 shows the average response of firms by strategy and resources. The response for Financial Resources to pay the Membership Fee and having a Lobbying Team are binary where 1=Yes and 0=No. For Specialist Officers Activity for Lobbying, the question was: "How many meetings per month approximately does the specialist officer engage in for lobbying the Government?" (1 = None, 2 = Less than 5, 3 = Between 5-10, 4 = More than 10)". *Financial resources to pay Membership Fees, **Activity For lobbying.

The time spent in individual lobbying by the firm was measured using the response to the question: "In a typical month, what percentage of time of your firm is spent in dealing directly with government for Lobbying?" (1 = None, 2 = Less than 10%, 3 = Between 10-40%, 4 = More than 40%). The figures suggest that individual and dual lobbying firms spent the most time in direct interactions with the government, while collective lobbying firms barely spend much time in direct interactions.

Table 5: Direct lobby time

LOBBYING STRATEGY	1	2	3	Total Firms
Collective Only	32	2	0	34
Individual Only	2	14	0	16
Dual	2	66	19	87

Note: Table 5 shows the number of firms by the percentage of spent in dealing directly with government for Lobbying, where 1 = None, 2 = Less than 10%, 3 = Between 10-40%. None of the firms reported to (4) More than 40%.

The findings above suggest heterogeneity in the type of resources and lobbying time in interactions with the government. These can be summarized in Figure 5 below. Overall, dual lobbying firms have more resources and spend substantial amount of time interacting directly with the government, while single strategy firms

are less endowed but with differences between collective and individual strategy firms. Firms that pursue only individual lobbying appoint specialist officers to approach the government, while firms that lobby only collectively via their membership to associations spend no time in direct interactions.

Figure 5: Lobbying strategy by resources & time

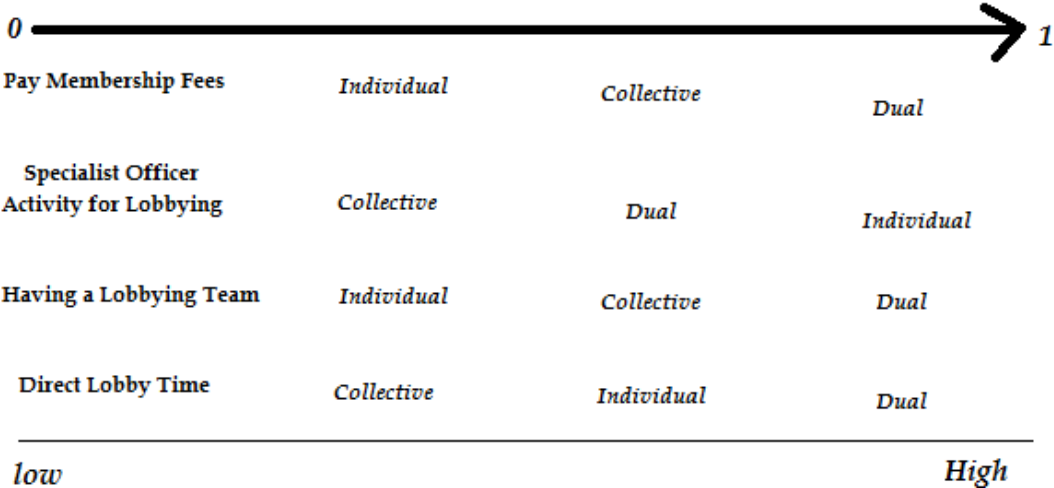


Figure 5 suggests differences by strategy that has a likely impact on firm choice of lobbying strategy. Therefore, variation at the level of the alternative can be an important driver of firm lobbying strategy. These resources will determine the capacity across different strategies where some resources accrue to a specific strategy better than others as also argued in Hojnacki and Kimball (1998).

Further, I ask about another alternate specific variable, perceived lobbying effectiveness that has been an unexplored question for firms in India; I ask firms about their perceived **Lobbying Effectiveness** as a sector. It is measured using the perception of firms on their ability to influence trade policy based on firm-level responses to the following question: "On a scale of 1 to 4, how successful would you rate a typical firm in your sector in lobbying the government for trade policy influence?" (1 = Not effective, 2 = Moderately Effective, 3 = Effective, 4 = Very Effective). This question asked separately for collective, individual and dual lobbying reveal perceptions on effectiveness by lobbying strategy. On the whole, firm perception on lobbying effectiveness is higher for collective lobbying through associations in comparison to individual lobbying. It can

thereby be inferred that firms are confident in using association lobbying when channeling their lobbying efforts.

4. Theoretical framework

Firms seek trade policy influence by lobbying the government, this is undertaken collectively via trade associations or individual firms lobby themselves. I consider the possibility that firms can lobby using a dual strategy i.e. some combination of collective and individual lobbying.

In terms of lobbying strategies, BT show that if firms decide to lobby collectively, there is no individual lobbying. The underlying assumption being that sector-wide trade policy is a substitute for the product-specific outcome when firms decide to lobby. So, firms choose to either lobby collectively for sector-wide outcome or lobby individually for a product-specific one²⁴. I consider the possibility that firms can lobby for both trade policy outcomes at the same time using a dual strategy. Each trade policy outcome requires firms to convey different types of information to policy-makers. Hojnacki and Kimball (1998) argue that while collective lobbying helps communicate preferences of a group (in my case the industry), direct individual interactions on the other hand allow interest groups to provide specialized and discrete information to policy-makers. I assume there is an imperfect trade-off between lobbying collectively and individual lobbying that in turn depends on the type of trade policy. This creates the possibility of adopting a combination of individual and collective lobbying strategies.

Further, it can be intuitively argued that firms lobby to defend existing policy when lobbying for a sector-wide trade policy such as MFN that does not change often. While, firms would react quickly when they need respond to capitalize on a change in the political

²⁴ In their model, it implies corner solutions only such that firms can lobby via only one of the two strategies. This suggests that firms lobbying collectively are either unwilling or unable to make a trade-off between the sector-wide outcome and the product-specific outcome. However, in terms of actual trade policy, it is hard to argue that a sector-wide trade policy outcome will substitute for a product-specific outcome. Also, the implicit assumption that firms lobby only collectively for a sector-wide outcome and lobby only individually for the product-specific one might not hold for actual policy when firms often lobby individually for a sector-wide outcome and lobby collectively to target product-specific ones.

status of a product-specific policy. Therefore, I assume that the combination of individual and collective lobbying would depend on the specific trade policy instrument and the degree of substitutability of these strategies for that instrument. Industry-wide associations usually lobby for policies that keep the median firm happy, therefore if firms have heterogeneous goals in terms of product-specific trade policy outcomes, collective lobbying is unlikely to be effective (a single public good but highly differentiated demand) (Grier et al. (1994)). The premise of such differences lends itself to understanding how activity by trade policy affects the choice of lobbying strategy, hypothesized as:

Hypothesis 1a: Collective lobbying is linked with higher activity for a sector-wide public good such as MFN, while individual lobbying has a higher likelihood for product-specific outcomes such as special consignments.

Despite the above discussion suggesting a positive relation between collective lobbying and sector-wide trade policy, and for individual lobbying and product-specific trade policy, it is important to recognize the possibility that may result in preference of a dual strategy over each single strategy. Existing literature suggests that there exists differences for the firm decision to do undertake a combination of individual and collective lobbying versus only collective lobbying or only individual lobbying as in Beyers (2004). This is likely when firms have a higher stake in an outcome as in BT and forms the basis for the following hypothesis:

Hypothesis 1b: Dual lobbying is preferred over single strategies when firms seek to increase the likelihood of their influence for changes in current policies.

To unpack the differences for the choice of single and dual lobbying strategies, I follow the logic from Olson (1971), Beyers (2004) and BT in trying to ascertain the domestic institutional environment that may create such differences. Industry structure has a likely impact on endogenously determined trade policy as in Olson (1971) that suggests more concentrated industries will be more successful than less concentrated industries in

receiving trade protection. This is explained by the fact that maintaining a cooperative outcome is more difficult in less concentrated industries. Also, Trefler (1993) outlines that greater seller concentration alleviates the free-rider problem in coordinating a lobby increasing the level of protection. Therefore, the literature suggests that a rise in concentration creates a *Free-Riding Effect* and what BT call a *Competition Effect*. Gawande (1997) provided one of the first empirical evidence on private provision of public goods following Bergstrom et al. (1986), suggesting that concentration of firms in a sector in fact increases trade protection.

BT extend this using an explicit mechanism of interaction between the government and individual firms that is adopted here. Free-riding in this context implies that higher concentration creates greater incentive to lobby via associations as cooperation is easier and the larger firm gets more of the total return from an increase the sector-wide outcome. Therefore, if the size dispersion of firms is larger (higher concentration), there is more incentive to lobby collectively. The competition effect on the other hand creates a stronger incentive to lobby individually when the size dispersion is larger (higher concentration). A stronger competition effect would thereby imply that for sectors with lower concentration, firms choose to lobby together, and for sectors with higher concentration firms lobby more individually. Thereby, a lower concentration in the product market can deliver more cooperation in lobbying for protection. Note however that if firms decide to lobby collectively, there is no individual lobbying in BT. I make the assumption that there is the possibility that firms can decide to adopt a dual lobbying strategy in a BT environment²⁵. Based on this, I examine the free-riding versus competition effect as the following hypothesis:

Hypothesis 2: A lower output concentration is associated with higher likelihood of dual lobbying. Competition effect is stronger than free-riding such that in sectors with larger number of firms producing the output, firms choose to undertake individual lobbying in addition to cooperating and lobbying together as a group.

The next argument concerns the timing of lobbying decisions such that firms in a given

²⁵ This is based on the underlying notion of an imperfect trade-off between a sector-wide outcomes from collective lobbying and the product-specific one from individual lobbying in BT

sector take the decision on association membership by paying the fixed cost of being a member. This accrues to the finding that associations are seen as greater legitimacy for lobbying in developing countries as in Narlikar (2006). Once the firms know their membership to the association, they decide on cooperating for collective or individual lobbying that is undertaken by each firm in its own capacity. Therefore, some firms will adopt a dual strategy where they maximize their returns by considering a combination of the two lobbying strategies. Therefore, firms first decide about their membership to the trade association (national trade association), and their choice of lobbying strategy is nested within the decision of being a member of a trade association. This suggests that the lobbying strategy be examined in a two-level framework, where the lobbying process is such that a firm's decision to use a lobbying strategy is related to the firm self-selecting to be a member of the trade association in the first place. Further, the link between lobbying strategies and trade policy outcomes is important to assess the resources used by outcome²⁶.

The determinants of association membership have received significant attention in the lobbying literature as in Kerr et al. (2014). It is not surprising that evidence suggests large firms engage in firm-specific political strategy more frequently than do small firms Gawande (1997) where it is argued that larger firms offer greater potential pay-off to support policy-makers such that firms with more employees provide politicians with a greater pool of potential support. However, since I examine the extent of influence on trade policy rather than likelihood of getting elected, I argue that firm lobbying resources will play a greater role that determines the capacity across different strategies; where some resources are better suited to a specific strategy than others, as shown in Gawande (1997), Hojnacki and Kimball (1998), and Berry (1997). Firms with more lobbying resources are able to bear fixed costs of access to associations and the government, but can also push through for a private product-specific outcome. Also, it has been argued that multiple lobbying efforts require several resources and well-endowed groups are found to better develop multilevel strategies de Figueiredo and Richter (2014). Therefore, firm choice of lobbying strategy is linked to firm capacities that

²⁶ Olson (1994) provides a discussion on the use of political strategies by firms and expected outcomes.

motivates the final hypothesis:

Hypothesis 3: Firm lobbying strategy depends on available resources that determines the lobbying capacity across different strategies.

5. Empirical analysis

Firm lobbying strategy is defined as binary and multinomial choice variables. First, I examine firm choice of lobbying strategy as a binary variable where a firm reporting to have undertaken one strategy does not exclude the firm from adopting the other; estimated using a simple probit model for each collective and individual lobbying strategy, examining the link to specific trade policy. The results suggest defining the lobbying strategies as exclusive choices with the additional strategy of dual lobbying. This leads to examining the determinants of lobbying strategy as a multinomial choice variable such that the firm can decide to lobby collectively, individually or use a dual strategy. Finally, accounting for an apparent nested structure of these choices, leads to a nested logit model that relaxes the Independence of Irrelevant Alternatives (IIA) assumption of the MNL.

Let the firm choice of lobbying strategy (L_i) be explained by various firm and industry-specific characteristics in addition to alternative-specific covariates that will be discussed below as specified under the primary factors of interest in R and the control variables C as follows:

$$L_i = f(R, C) \quad (1)$$

The hypotheses are examined for firm lobbying strategy across different models and results are compared to assess robustness in terms of the primary variables of interest **R**.

Overall summary statistics are attached in Table A4 in the Appendix. The primary variables of interest in **R** are: **MFN** is defined as the lobbying activity for a sector-

wide outcome proxied hereby the MFN tariffs; and **SC** is the lobbying activity for a product-specific outcome proxied by Special Consignments; *Concentration* is the output concentration calculated as the share of output of the four largest firms in a sector calculated using data from All India Survey of Industries (ASI).

The control variables in **C** include: *Elasticity* that are the elasticities of substitution from Broda and Weinstein (2004)²⁷ taken as the logarithmic transformation to deal with outliers for each sector. *Firm Size* where firms were asked about the number of workers, as: "What is the size (number of workers) of your firm?". In the empirical analysis, it is measured using the log of number of workers. *Foreign* defined as a binary variable that takes the value 1 for foreign ownership and 0 for none using the question: "What is the ownership structure of your firm in terms of Private Foreign Ownership?". *Competition* measured by asking how many competitors the firm faces. "In the last year, how many competitors did your firm face for its top 3 products?" (1 = No competitors, 2 = 1-3 Competitors, 3 = 4-10 Competitors, 4 = More than 10 Competitors). This is constructed as a variable that can take the values from 1 to 4, where 1 shows no competitors, 4 shows more than ten competitors for the top products produced by the firm.

In addition, the nested logit includes two proxies for lobbying resources: *Resources* measured on a scale of 1 to 3, where 1=Financial resource to pay membership fee of an association, 2=Specialist Officer Activity for lobbying, 3=Having a lobbying team; and *Firm Lobby Time* measured as the time spent in individual lobbying by the firm. An additional control variable is perceived lobbying *Effectiveness* as a sector, measured using the perception of firms on their ability to influence trade policy.

5.1 Collective & individual lobbying strategy: Probit

To examine Hypothesis 1a and 2, I examine lobbying strategies as the binary variables **Collective** and **Individual**. Let *Lobbying* be the binary variable that takes the value

²⁷ They use the 6-digit HS import data (1992 classification system) from the COMTRADE database from 1994- 2003 to estimate the elasticities between varieties of imported goods that are reported at the 3-digit HS. I obtain concordances between 3-digit HS codes and 4-digit NIC/ISIC codes to group the estimates of elasticities of substitution by NIC/ISIC. Finally, I take the mean elasticity of substitution for each of the 20 sectors in this study.

one when the firm reports to have undertaken lobbying in a typical year using a specific strategy during the period 2010 – 2014. This depends on the benefit from lobbying using a specific strategy outweighing the cost to lobby. Let this decision be based as a latent variable formulation such that y^* is the unobserved continuous latent variable representing the excess utility derived by lobbying compared to not lobbying. The observed decision to lobby takes a value of one if the excess utility from lobbying (1) compared to not lobbying (0) is positive.

$$Lobbying_i = 1 \text{ if } y^* > 0 \tag{2}$$

$$0 \text{ otherwise}$$

I estimate a probit model as specified below in terms of the main covariates of interest in **R** and the additional control variables **C**, assuming that the error terms are independent and normally distributed on the entire sample of 146 firms:

$$Lobbying_i = \beta_0 + \beta R + \eta C + \varphi_i \tag{3}$$

Model 1 examines MFN and Concertation as primary variables of interest and Model 2 includes SC and Concertation; in Model 3 I introduce MFN and SC activity together. I control for elasticity, firm size, foreign ownership and competitors in all three models. An empirical complication here is that the observations within each sector may not be independently distributed. Therefore I report robust standard errors and accounting for small sample size, I cluster bootstrapped standard errors. Table 6 reports the probit coefficients; a constant term is included in all estimations. Findings from Model 3 are used to examine the hypotheses as the theoretical framework seeks outlines firm choices across the strategies and how these substitute with different trade policy outcomes.

Model 3 finds support for *Hypothesis 1a* such that the likelihood of adopting collective lobbying is found positively associated with a higher activity for a sector-wide public good such as MFN, while individual lobbying has a higher likelihood for activity

directed to product-specific trade policy outcomes. *Hypothesis 2* also finds validation as the likelihood of collective lobbying is found increasing significantly with a fall in sector concentration that suggests competition effect is clearly dominating any free-riding effects as sectors with lower concentration (larger number of firms producing the output) will be more likely to lobby for trade policy influence using collective lobbying.

Columns (1)-(4) in Models 1 and 2 include the objective of lobbying activity MFN and SC separately. In column (2), I find evidence that lobbying for a public good is also significantly associated with a higher likelihood of individual lobbying. This suggests that firms may adopt a combination of collective and individual strategies that needs to be unpacked further. Therefore, while the probit results lend evidence in the direction that justifies the argument of differences in lobbying strategies controlling for specific trade policy outcomes, it is important to examine these differences by defining the strategies as exclusive choices and introducing the possibility of adopting a dual strategy.

Table 6: Collective & individual lobbying: Probit model estimates

Variables	Model 1		Model 2		Model 3	
	Collective	Individual	Collective	Individual	Collective	Individual
	(1)	(2)	(3)	(4)	(5)	(6)
MFN	0.480*** (0.161)	0.203* (0.108)			0.620*** (0.146)	0.010 (0.151)
SC			0.050 (0.126)	0.283*** (0.109)	-0.199 (0.132)	0.280** (0.139)
Concentration	-0.017*** (0.006)	-0.011* (0.007)	-0.018** (0.007)	-0.011 (0.007)	-0.017*** (0.006)	-0.011 (0.008)
Controls						
Elasticity	0.033 (0.158)	0.192 (0.247)	-0.022 (0.281)	0.127 (0.196)	0.083 (0.166)	0.128 (0.196)
Firm Size	-0.121* (0.064)	-0.005 (0.164)	-0.080 (0.108)	-0.025 (0.191)	-0.117* (0.070)	-0.025 (0.198)
Foreign	-0.143 (0.613)	-0.399 (0.280)	-0.255 (0.585)	-0.392 (0.367)	-0.148 (0.578)	-0.392 (0.388)
Competitors	0.066 (0.300)	0.272*** (0.096)	0.091 (0.304)	0.255*** (0.097)	0.085 (0.325)	0.254*** (0.098)
Observations	146	146	146	146	146	146

*** p<0.01, ** p<0.05, * p<0.1

Note: Table 6 shows probit coefficients; constant term is included in all estimations; Standard errors are bootstrapped using ten replications and clustered by sector.

5.2 Collective, individual & dual lobbying strategy: Multinomial Logit

Now, I define *Lobbying Strategy* such that firms adopt the exclusive use of each strategy and the dual use of both: Lobbying only collectively (=2), Lobbying only individually (=3) and a combination of collective and individual lobbying (=4). The differences between each strategy to lobby collectively via the association and lobby individually by going directly to the government or between one of these and using a combination of both, lends direction to examine the differences across these choices. If the assumption of the random disturbance term associated with each strategy for firm i satisfies the independence of irrelevant alternatives (IIA) assumption²⁸, I can examine the likelihood

²⁸ To check the IIA, I examined the coefficient estimates by dropping each of the choices. However, I find that the statistical inference is unchanged even when I eliminate one option at a time. Now, if the errors for each lobbying strategy are highly correlated, dropping a choice should change the results a lot as outlined in Hausman and McFadden (1984). However, note that the results are interpreted as conditional on satisfying the assumption of the IIA.

of lobbying using the exclusive strategies as independent choices in a Multinomial Logit (MNL) model²⁹, given the objective of lobbying activity. Again, I report robust standard errors that have been corrected for clustering by sector.

If one believes the data from the survey justifies the assumption of IIA, then lobbyists are indifferent between any two or more of the choices. The firm facing N lobbying strategies chooses a particular strategy if the utility of that choice is greater than the utility it derives from the remaining strategies. This utility is dependent on a set of firm and sector characteristics motivated in the framework above. The multinomial logit helps examine the exclusive lobbying choices compared to a base category. Fitting the log-odds of lobbying strategy in each category p_{ij} vs. base p_{ik} as a linear function of the covariates with each explanatory variable having $j - 1$ coefficients, one for each category of the dependent variable:

$$\log \frac{p_{ij}}{p_{ik}} = \alpha_i + \beta_i R + \eta_i C \quad (4)$$

The lobbying strategy is examined in terms of the main covariates of interest in \mathbf{R} and the additional control variables \mathbf{C} . The log odds of the lobbying outcomes are modelled as a linear combination of the predictor variables. The likelihood of each strategy compared to the base category are presented in Table 7. The dependent variable is the response variable consisting of three categories of lobbying strategies as unordered choices. Note that here I drop the 9 firms that are not lobbying as there are not enough variables to capture any significant effects for these firms in the multinomial framework. I report the relative log odds from the multinomial logit regression for each lobbying strategy compared to the base outcome for each explanatory variable. I

²⁹ Multinomial Logit was preferred over the Multinomial Probit (MNP) even though MNP relaxes the IIA by allowing error terms across different choices to be correlated. This is because MNP requires alternative-specific variables in order to converge, however in my framework most of the variables vary across the agents that are firms. Therefore, the identification of the matrix of variance-covariance parameters here requires the correlation across errors to be independent and standard errors to be homoskedastic. Therefore, I undertake the MNL as the preferable empirical strategy over the MNP. However, I introduce alternative specific variables that fit in a nested framework in the next section.

present the results using the base category of collective lobbying³⁰.

The theoretical framework motivates that I examine the likelihood of individual and dual lobbying compared to the base of Collective Lobbying³¹. Now, to provide evidence on hypothesis 1a, 1b and 2, the primary cases of interest include the following. First, to examine the likelihood of lobbying strategies in relation to lobbying activity by trade policy. Second, the likelihood of adopting a dual strategy compared to only collective lobbying. Third, assess the robustness of the competition effect by examining the relationship with sector concentration.

I find support for *Hypothesis 1a* in Model 3 as firms are less likely to adopt an individual or dual lobbying strategy (compared to the base of collective lobbying) to target sector-wide trade policy of MFN, however the effect is insignificant. MFN is negatively related to the log-likelihood of individual and dual lobbying. However, SC shows a positive and significant relationship for individual and dual lobbying (in comparison to lobbying collectively) in column (2) and (3). This suggests that it is likely for firms to adopt a dual strategy to target product-specific trade policy outcomes in addition to individual lobbying. Also, I find support for *Hypothesis 2* such that I observe a negative and significant coefficient for concentration associated with the log-likelihood of dual lobbying in all Models. This implies strong competition effects where if the firm dispersion is higher (lower concentration), firms will undertake a combination of collective and individual lobbying. Therefore, competition will lead to greater cooperation in addition to individual lobbying. The strong competition effects in lobbying also add support to the BT findings.

The evidence thereby points to the firm preference of a dual strategy for product-specific outcomes, with the single strategy of individual lobbying being likely for product-

³⁰ I began by examining the likelihood of pursuing each lobbying strategy compared to the base category of no lobbying. Compared to the base category of no lobbying, the findings were qualitatively similar for each strategy. To discern the likelihood of the lobbying strategies, I dropped the 9 firms that are not lobbying.

³¹ I present the results using the alternate base category of *Individual Lobbying* the Appendix as a means of comparison. Comparing the two models shows the differences in one strategy compared to the other.

specific outcomes. What is surprising is that firms may prefer the dual strategy compared to the exclusive use of individual lobbying for SC (in Model 2). This suggests the preference of a dual strategy which is explained by groups increasing the likelihood of influence when lobbying for a change in policy, while the single strategy of collective or individual lobbying is to only defend the existing trade policy. Lobbying for a product-specific outcome therefore seems to fit into the criteria where firms react quickly and lobby for changes in policy.

Table 7: Lobbying strategy given trade policy outcomes

Dependent variable: Lobbying Strategy = Collective, Individual, Dual

MNL with Base-Collective Lobbying				
Variables	Categories	Model 1 (1)	Model 2 (2)	Model 3 (3)
MFN	Individual	-0.575 (0.428)		-1.058 (0.592)
	Dual	0.387 (0.281)		-0.099 (0.356)
SC	Individual		0.343 (0.267)	0.716* (0.314)
	Dual		0.585** (0.219)	0.614* (0.244)
Concentration	Individual	0.012 (0.013)	0.016 (0.010)	0.011 (0.012)
	Dual	-0.047** (0.014)	-0.047** (0.015)	-0.047** (0.015)
Controls				
Elasticity	Individual	0.305 (0.428)	0.250 (0.338)	0.135 (0.313)
	Dual	0.321 (0.423)	0.183 (0.311)	0.194 (0.303)
Firm Size	Individual	0.057 (0.313)	-0.020 (0.340)	0.023 (0.354)
	Dual	0.113 (0.374)	0.107 (0.409)	0.090 (0.416)
Foreign	Individual	0.492 (0.836)	0.492 (0.836)	-0.006 (0.678)
	Dual	-1.406** (0.448)	-1.406** (0.448)	-1.452** (0.539)
Competition	Individual	0.191 (0.335)	0.191 (0.335)	-0.166 (0.541)
	Dual	0.689** (0.229)	0.689** (0.229)	0.629** (0.212)
N		137	137	137

*** p<0.01, ** p<0.05, * p<0.1

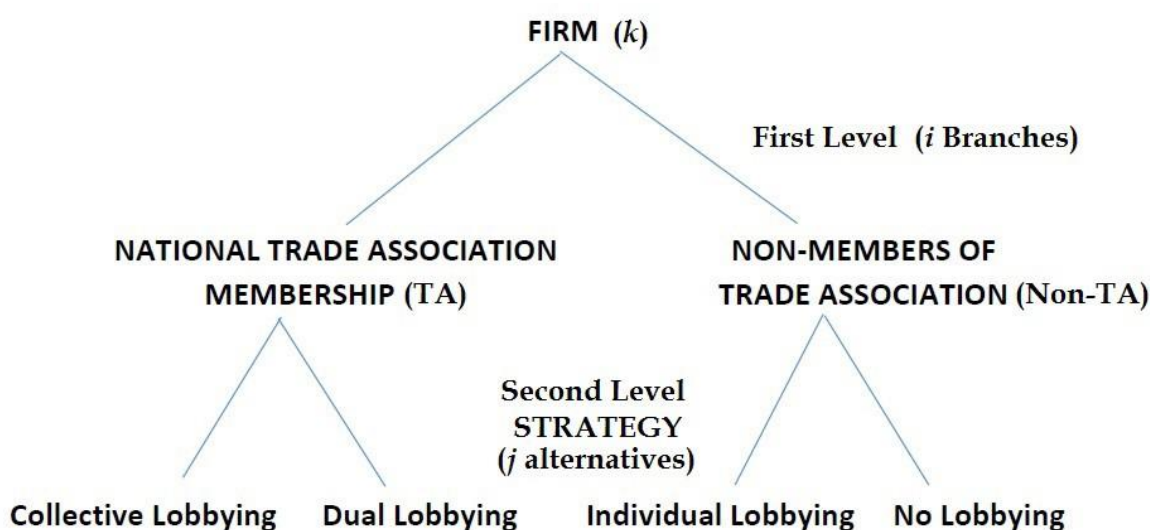
Note: Table 7 shows the coefficients (log odds) from the Multinomial Logit (MNL) regressions given the lobbying activity for MFN and Special Consignments (SC). Robust (clustered by industry) standard errors in parentheses

Now, if membership to associations have greater legitimacy in India, then it can be argued that firms in fact first decide about their membership to the trade association (national trade association), and then decide their lobbying strategy. The choice of lobbying strategy is thereby nested within the decision of being a member of a trade association, that motivates a two-level nested logit (Greene (2009)) as further estimation. In that case, a firm's decision to use a lobbying strategy is related to the firm self-selecting to be a member of the trade association in the first place. This relaxes the Independence of Irrelevant Alternatives' (IIA) assumption that all alternatives are proportionately substituted for one another (Hensher and Greene (2002), Train (2009)) and lends further robustness to the theoretical framework that argues the strategies as imperfect substitutes.

5.3 Lobbying strategy as 2-Level decision-making: Nested Logit

The choice of lobbying strategy is now defined as 2-level decision making. Firms in a given sector take the decision on membership to the trade association, the firm then decides to cooperate and undertake collective lobbying or do individual lobbying that is under- taken by each firm in its own capacity. Some firms will adopt a dual strategy where they maximize their returns by undertaking a combination. Therefore, firm choice of lobbying strategy is nested within its decision of being a member of a trade association that is linked to firm capacities as shown in 6.

Figure 6: Nested choices for firm lobbying strategy



At the first level, there are two categorical states: $TA = 1$ when firms (k) are members of the trade association, and $TA = 0$ when firms are non-members (Non-TA); indicating that random shocks affect the type of choice at this level. At the second level, the dependent variable, *STRATEGY*, can represent one of the four categorical states where firms face a choice between the following: Lobbying collectively=1; Lobbying individually=2; Lobbying using a dual strategy=3; No Lobbying=4; indicating there are other random shocks that affect firm decision to adopt the strategy independently. Therefore, there are j lobbying strategies as discrete unordered choice alternatives that a firm k could choose from. This relaxes the Independence of Irrelevant Alternatives' (IIA) assumption that all alternatives are proportionately substituted for one another (Hensher and Greene (2002), Train (2009))³². For j outcomes (i.e. strategies) and i branches (TA or Non-TA), let the probability of the bottom-level choice equals the conditional probability of selecting

j given branch i times the probability that branch i was selected: $P_{r_{ij}} = P_{r_j|i} \times P_{r_i}$

³² Relaxing this assumption is appropriate here, where the categories 1 and 2 and categories 3 and 4 are assumed to be substitutes for each other respectively and are in fact qualitatively different options

Let the utility from each alternative:

$$U = \alpha + \beta' x_{ij} + \gamma' w_i \quad (5)$$

x_{ij} are covariates that can change over the lobbying strategies (bottom level) and w_i are attributes of the choice set of being a member of a TA or not (top level); α is the firm-level constant. The parameters are estimated using full information maximum-likelihood estimation, where the nested logit model relaxes the assumption of independently distributed errors and the IIA inherent in conditional and multinomial logit models by clustering similar alternatives into nests. By default, it uses a parameterization that is consistent with random utility maximization (RUM).

Table 8 shows coefficients from the nested logit model. I examine the drivers of firm lobbying strategies in terms of how the strategy-specific (vary both across firms and strategies) attributes (Resources, Firm Lobby Time and Effectiveness) apply to the strategy choice and how firm-specific attributes (MFN, SC) apply to the alternative set at the first decision level (being a TA member or not). In addition, I also specify firm-level variables (output concentration, elasticity of substitution, firm size, foreign ownership and competition) to parameterize the constant term in the utility equation for each lobbying strategy. The dissimilarity parameter (an inverse measure of the correlation of error terms associated with alternatives within a nest) shows that the model is consistent with random utility maximizing (RUM) behavior at all ranges of the independent variables Train (2009)³³.

³³ If the value of these parameters lies between 0 and 1, then the model is consistent with utility maximization for all levels of the explanatory variables, while a negative value is inconsistent with utility maximization; values greater than one are consistent for a range of explanatory variables (Train (2009)

Table 8: Nested logit model: Lobbying

**Strategy Lobbying Strategy = Collective,
Individual, Dual, None** *Alternative-Specific Variables*

Resources	1.533** (0.608)		
Firm Lobby Time	2.296*** (0.635)		
Effectiveness	0.564 (0.656)		
<i>Firm-Specific Variables</i>			
Base=Collective	Dual	Individual	None
Concentration	-0.029* (0.016)	0.011 (0.025)	-0.022 (0.056)
Log Sigma	-0.099 (0.182)	0.074 (0.448)	0.044 (0.531)
Firm Size	-0.559*** (0.187)	-0.277 (0.354)	0.429 (0.345)
Foreign	-1.047** (0.468)	0.503 (1.166)	-1.266 (1.183)
Competition	0.360 (0.250)	-0.200 (0.510)	0.058 (0.474)

First Stage: TA Member versus Non-TA Member

Firm-Specific Variables

Base=Non-TA	TA Member
MFN (Public Good)	0.776** (0.363)
SC (Product-Specific)	-0.245 (0.263)

Dissimilarity Parameters

TA	0.347* (0.200)
NON-TA	0.474 (0.624)

LR test for IIA

chi2(2)	6.09
Prob > chi2	0.0475
Wald chi2(20)	41.70
Observations	584

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: Table 8 shows the coefficients (log odds) from the Nested Logit (NL) regressions. The coefficients report the log-odds of how firm-specific attributes (k) apply to the alternative set at the first decision level and alternate-specific variables (j) apply to the second level.

There is further support for *Hypothesis 1a* as firm-level lobbying activity for public goods such as MFN increases the log-odds of being a trade association member (relative to no membership) by 0.77, while firm-level activity for individual product-specific outcomes such as special consignments has no significant impact on this decision. Therefore, firm membership to association is linked with a higher likelihood of activities directed towards public goods and less likely for any product-specific outcomes.

The findings provide further robustness to the prior results as I find the likelihood of adopting a dual lobbying strategy (relative to only collective lobbying) is higher in sectors that are characterized by low concentration (dispersion is higher) such that firms increase their chances of trade policy influence. This reinforces a strong competition effect (driving cooperation and individual lobbying) over any free-riding drives firm strategy to lobby for trade policy influence. Additionally, I find that larger firms and firms with higher foreign ownership seem less likely to adopt a dual strategy. This may be explained by the fact that larger and foreign owned firms have better resources such that they are more effective in lobbying with single strategies.

Resources, Firm Lobby Time, and Effectiveness are the alternative-specific variables, i.e. they vary both across firms and strategies. Here, I find support for *Hypothesis 3* such that resources available and time spent in lobbying are significant determinants of the strategy choice, while the firm's perceived effectiveness of their sectoral lobbying does not seem to be a significant driver of this choice. An increase in the resources available for lobbying and time spent in individual lobbying using one of the strategies by 1 unit, will increase the log-odds of that alternative being chosen by 1.53 and 2.30 respectively.

Using the coefficients, Table 9 shows the average predicted probabilities by industry at the first and second level. It uses the in-sample predictions to outline the probability of

adopting each strategy across the industries. The predicted probabilities by firm is attached in Table A6 in the appendix. The evidence suggests highest likelihood of dual strategies by firms in electronics, electrical appliances and sugar industry; while firms in auto components, textiles and mineral processing have the highest likelihood of pursuing single strategies, with textile firms likely to lobby collective while mineral processing firms are likely to pursue individual lobbying.

Further, I compare the predicted probability of each strategy by high and low concentration in Table 10 that further re-affirms the likelihood of adopting a dual lobbying strategy is higher in sectors that are characterized by low concentration.

Table 9: Lobbying strategy: Average predicted probability by industry

Industry	First Level: TA & Non-TA		Sec	nd Lev	el: Strategy	None
	Garments	0.946	0.054	0.214	0.732	0.027
Textiles	0.850	0.150	0.377	0.473	0.037	0.114
Drugs & Pharma.	0.616	0.384	0.297	0.320	0.332	0.052
Electronics inc. consumer durables	0.973	0.027	0.048	0.925	0.024	0.004
Electrical Appliances	0.988	0.012	0.057	0.931	0.009	0.003
Machine Tools incl. Machinery & Parts	0.955	0.045	0.274	0.681	0.024	0.021
Auto Components	0.509	0.491	0.415	0.094	0.467	0.024
Leather & leather products	0.853	0.147	0.368	0.485	0.053	0.095
Sugar	0.976	0.024	0.007	0.969	0.012	0.012
Food Processing	0.774	0.226	0.037	0.737	0.111	0.115
Plastics & Plastic Products	0.946	0.054	0.183	0.763	0.021	0.033
Rubber & Rubber Products	0.850	0.150	0.194	0.655	0.061	0.089
Paper & Paper Products	0.799	0.201	0.053	0.746	0.056	0.145
Structural Metals & Metal Products	0.891	0.109	0.119	0.772	0.036	0.072
Paints & Varnishes	0.812	0.188	0.237	0.575	0.180	0.009
Cosmetics & Toiletries	0.706	0.294	0.268	0.438	0.167	0.126
Other Chemicals	0.915	0.085	0.188	0.726	0.076	0.010
Mineral Processing	0.543	0.457	0.061	0.482	0.456	0.002
Agro Processing	0.867	0.133	0.087	0.780	0.130	0.004
Wood & Furniture	0.679	0.321	0.090	0.589	0.181	0.140

Note: Table 9 shows the average predicted probabilities from the Nested Logit (NL) coefficients by industry.

Table 10: Lobbying strategy: Average predicted probability by concentration

Concentration	Collective	Dual	Individual	None
Low (<1)	0.131	0.742	0.056	0.070
Medium (10>x>1)	0.175	0.683	0.074	0.068
High (>10)	0.230	0.493	0.255	0.021

Note: Table 10 shows the average predicted probabilities from the Nested Logit (NL) coefficients by low, medium and high values of concentration across the industries.

6. Findings

Overall, findings are robust across all specifications discussed. The hypothesis are robust to binary, multinomial and nested choice setup for lobbying strategy. Overall, the evidence presented is summarized below.

First, Indian manufacturing firms *join hands* (lobby using a collective strategy) when targeting sector-wide outcomes in the nature of public goods; firms *join hands while walking alone* (dual strategy) when targeting product-specific outcomes. I have argued that trade policy in the nature of a public good such as MFN is slow to change such that it does not warrant reactionary lobbying where firms need to respond quickly. A sector-wide trade policy in place needs to be defended and cooperation by means of membership to lobby collectively is arguably a preferred choice for manufacturing firms in developing countries such as India. A product-specific trade policy on the other hand is more susceptible to change without considerable lag and needs quick reaction from firms to advocate for changes. Therefore, when lobbying for a product-specific outcome, firms adopt a dual strategy that is some combination of collective and individual lobbying, where firms increase their chances of influence.

Second, the likelihood of adopting a dual lobbying strategy is higher in sectors that are characterized by low concentration (dispersion is higher) such that firms increase their chances of trade policy influence. This suggests a strong competition effect (driving cooperation and individual lobbying) over any free-riding that drives firm strategy to lobby for trade policy influence in India. Therefore, when there are several firms in a given sector producing much of the output, it is likely that firms compete for influence on trade policy. This competition leads to higher cooperation for collective lobbying in addition to higher individual lobbying, the combination of which achieves better

influence.

Finally, availability of resources and lobbying time are significant drivers for the type of strategy undertaken. This affirms the resource-based lobbying perspective (Olson (1971)) that lobbying requires specific resources. Firm endowments of lobbying resources can vary such that firms with more lobbying resources are likely to succeed in exerting influence than the groups with fewer resources. Thereby, firm choice of lobbying strategy is driven by financial resources and expertise in lobbying in the form of specialist officers and teams.

7. Conclusions

To the best of my knowledge, there is no prior evidence on firm lobbying strategies for trade policy in India. This paper outlines broad patterns of lobbying strategies and suggests the most likely combination of factors that predict use of single and dual lobbying strategies. Findings in this paper recognize drivers for utilizing dual lobbying strategies and potentially achieving more influence.

I provide evidence that suggests: First, Indian manufacturing firms lobby using a collective strategy when targeting sector-wide outcomes in the nature of public goods; firms adopt a dual strategy when targeting product-specific outcomes. Second, the likelihood of adopting a dual lobbying strategy is higher in sectors that are characterized by low concentration (dispersion is higher) such that firms increase their chances of trade policy influence. This suggests a strong competition effect driving cooperation and individual lobbying over any free-riding for firm strategy to lobby for trade policy influence in India. Finally, availability of resources and lobbying time are significant drivers for the type of strategy

The use of dual lobbying strategies have significant implications to identify the process of policy-making in trade but the underlying mechanisms have remained unexplored in the Indian context. On the whole, Indian manufacturing firms prefer a dual lobbying strategy. The probability of lobbying via associations and lobbying using a dual strategy is higher in sectors with lower concentration such that the competition effect is clearly

dominating any free-riding effects in lobbying for Indian trade policy. In the context of dual lobbying compared to collective lobbying, I found that Indian manufacturing firms seem reactionary such that they respond quickly in order to capitalize on a change in the political status of a policy. For this, the specific policy issue and resource constraints can potentially limit their choices.

Firms are likely to adopt a collective lobbying strategy when targeting sector-wide public goods such as MFN tariffs while they are likely to adopt a dual strategy for a product-specific policy outcome that suggests firms seek to increase the likelihood of influence when lobbying for changes in product-specific policy than defend existing sector-wide ones.

Overall, this paper provides a new element for understanding lobbying strategies for trade policy in India. The attempt was to offer an understanding of the structure of lobbying for trade policy influence. It has important implications for democratic policy-making and offers evidence to recognize that specific types of groups are utilizing dual lobbying strategies and potentially achieving more influence. The results outline broad patterns of lobbying strategies that suggest the most likely combinations of factors that predict use of various lobbying strategies.

8. Policy implications

India has aligned to the importance of international trading systems while partaking a degree of independence in its trade policy formulation. The latter stance is often linked to domestic state business relations that have organized in expressing specific needs of developing countries. In this paper, ***domestic state-business relations are formulated as lobbying strategies pursued by firms to communicate information to political actors***, providing what is the first primary information on strategies that characterize such relations. Therefore, it would be remiss to not draw a set of policy implications based on the findings.

Indian ***manufacturing firms are reactionary and respond quickly for changes in relation to urgent trade policy issues*** such as a consignment at the border or an

import license. They approach the government directly to provide specialized and discrete information in addition to representing their interests via a national collective association such as CII, with the aim of increasing the likelihood of influence. This is what has been termed as the '**dual' strategy that has a higher likelihood in sectors that have several firms producing large shares of the output (low concentration) like electronics, electrical appliances.**

When lobbying to defend a wider trade policy such as a public good like an MFN tariff or a preferential barrier, manufacturing firms are likely to represent their interests using the single strategy to go collectively via the national association; they communicate their preferences as a group and do not make attempts for direct communication with the government. **Firms in the textile sector are likely to adopt the single strategy where they approach the government collectively via the association**

On the whole, **firms are in competition for influence which drives them to cooperate through the association in addition to communicating with policymakers directly**; rather than free-riding on the efforts by other firms producing output in the sector, to lobby on their behalf. Finally, the availability of resources and the time spent in communicating with the government are significant drivers for the type of strategy undertaken, irrespective of any perceived effectiveness in achieving influence.

In the absence of a formal mechanism on state-business relations for trade policy-making, the findings of this paper advocate for a **comprehensive and clear structure to facilitate such interactions**, based on a two-fold approach:

- **Market Structure** in terms of firm shares of sector output can determine the extent of business cooperation versus accountability in terms of free-riding as demonstrated. This can thereby be the mechanism towards a consultative framework for the structure of state-business relations to then feed into responsible multilateral representation.
- **Firm resource ownership** for communicating with the government on specific issues can enable prior recognition of differences in the response of state-business relations towards policy reform in terms of preserving existing ones and introducing changes.

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Appendix

A1: Count distribution of World Bank Enterprise Survey

Industry	Number of Firms	% of Total Firms
Garments	275	12.03
Textiles	222	9.71
Drugs & Pharma	165	7.22
Electronics inc. Consumer Durables	100	4.37
Electrical Appliances inc. white goods	155	6.78
Machine tools inc. Machinery & parts	195	8.53
Auto Components	218	9.54
Leather & leather products	74	3.24
Sugar	4	0.17
Food Processing	155	6.78
Plastics & plastics products	122	5.34
Rubber & rubber products	38	1.66
Paper & paper products	24	1.05
Structural metals and metal products	303	13.25
Paints and varnishes	20	0.87
Cosmetics and toiletries	13	0.57
Other chemicals	112	4.9
Mining	3	0.13
Mineral processing	32	1.4
Marine food processing	14	0.61
Agro processing	26	1.14
Wood and furniture	16	0.7
Total	2,286	100

This shows the coverage of the World Bank Enterprise Survey of 2005. I drop the sector of Mining and Marine food processing that gives me 20 sectors. These sectors are the base sampling reference of my survey.

A2: Sampling Procedure

Stratum	Population		Criteria			Sample	
	Firms	%	Cost (c)	Variability (s)	$\frac{s}{\sqrt{c}}$	Firms	%
Member Directories	508	49.20%	\$20	6.4	1.431	211	60.30%
Phone directories	524	50.80%	\$32	5.2	0.919	139	39.70%
Total	1032	100%				350	100%

A3: Target versus Actual Distribution across Sectors

Industry Coverage	Target		Actual		Response Rate
	Firms	Percent	Firms	Percent	Percent
Garments	18	7.2	8	5.48	44.40%
Textiles	32	12.8	29	19.86	90.60%
Drugs & Pharma.	12	4.8	6	4.11	50.00%
Electronics inc. consumer durables	9	3.6	4	2.74	44.40%
Electrical Appliances	15	6	3	2.05	20.00%
Machine Tools incl. Machinery & Parts	9	3.6	7	4.79	77.80%
Auto Components	18	7.2	6	4.11	33.30%
Leather & leather products	10	4	7	4.79	70.00%
Sugar	12	4.8	4	2.74	33.30%
Food Processing	9	3.6	8	5.48	88.90%
Plastics & Plastic Products	11	4.4	5	3.42	45.50%
Rubber & Rubber Products	10	4	5	3.42	50.00%
Paper & Paper Products	10	4	6	4.11	60.00%
Structural Metals & Metal Products	22	8.8	16	10.96	72.70%
Paints & Varnishes	11	4.4	6	4.11	54.50%
Cosmetics & Toiletries	8	3.2	5	3.42	62.50%
Other Chemicals	9	3.6	6	4.11	66.70%
Mineral Processing	7	2.8	5	3.42	71.40%
Agro Processing	10	4	5	3.42	50.00%
Wood & Furniture	8	3.2	5	3.42	62.50%
Total	250	100	146	100	58.40%

A4: Summary Statistics

Variable	N	Mean	Std. Dev.	Min	Max
LOBBYING					
Collective Lobbying	146	0.829	0.378	0	1
Individual Lobbying	146	0.705	0.457	0	1
LOBBYING STRATEGY (Exclusive Choices)					
Collective Only	146	0.233	0.424	0	1
Individual Only	146	0.110	0.313	0	1
Dual Lobbying	146	0.596	0.492	0	1
PRIMARY VARIABLES					
MFN	146	2.877	0.901	1	4
SC	146	2.390	1.304	1	4
Concentration	146	8.568	12.814	0.005	46.972
CONTROL VARIABLES					
	146	10.828	16.596	2.658	93.076
Firm Size	146	5.991	0.876	1.946	8.294
Foreign	146	0.671	0.471	0	1
Competitors	146	3.068	0.876	2	4
STRATEGY-SPECIFIC VARIABLES					
Resources	584	0.678	0.817	0	3
Firm Lobby Time	584	0.466	0.872	0	4
Effectiveness	584	2.039	1.467	0	4

A5: MNL with Base-Individual Lobbying

Dependent variable: Lobbying Strategy = Collective, Individual, Dual

Base-Individual Lobbying				
Variables	Categories	(1)	(2)	(3)
MFN	Collective	0.575 (0.428)		1.058 (0.592)
	Dual	0.962* (0.401)		0.960* (0.509)
SC	Collective		-0.343 (0.267)	-0.716* (0.314)
	Dual		0.243 (0.219)	-0.102 (0.252)
Concentration	Collective	-0.012 (0.013)	-0.016 (0.010)	-0.011 (0.012)
	Dual	-0.059** (0.012)	-0.062** (0.013)	-0.059** (0.013)
Elasticity	Collective	-0.305 (0.428)	-0.250 (0.338)	-0.135 (0.313)
	Dual	0.017 (0.166)	-0.067 (0.207)	0.058 (0.186)
Firm Size	Collective	-0.057 (0.313)	0.020 (0.340)	-0.023 (0.354)
	Dual	0.056 (0.305)	0.127 (0.316)	0.067 (0.329)
Foreign		-0.492 (0.836)	0.006 (0.836)	 (0.678)
	Dual	-1.898 (1.027)	-1.898 (1.027)	-1.446 (0.809)
Competition	Collective	-0.191 (0.335)	-0.191 (0.335)	0.166 (0.541)
	Dual	0.498 (0.361)	0.498 (0.361)	0.795 (0.553)
N		137	137	137

*** p<0.01, ** p<0.05, * p<0.1

Note: Table A5 shows the coefficients (log odds) from the Multinomial Logit (MNL) regressions given the objective of lobbying activity for MFN and Special Consignments (SC). Robust (clustered by industry) standard errors in parentheses.

A6: Predicted Probabilities by Firm

Firm	Collective	Dual	Individual	None
1	0.931	0.000	0.023	0.046
2	0.974	0.000	0.001	0.025
3	0.870	0.010	0.029	0.090
4	0.000	0.986	0.011	0.003
5	0.004	0.976	0.020	0.000
6	0.966	0.000	0.013	0.021
7	0.793	0.054	0.012	0.140
8	0.000	0.936	0.062	0.002
9	0.002	0.958	0.040	0.000
10	0.087	0.864	0.048	0.002
11	0.008	0.970	0.012	0.010
12	0.170	0.812	0.009	0.009
13	0.001	0.991	0.001	0.007
14	0.016	0.957	0.027	0.000
15	0.010	0.971	0.015	0.004
16	0.000	0.994	0.006	0.000
17	0.106	0.785	0.109	0.001
18	0.040	0.864	0.083	0.013
19	0.211	0.211	0.568	0.010
20	0.053	0.079	0.869	0.000
21	0.002	0.074	0.924	0.000
22	0.004	0.153	0.842	0.000
23	0.033	0.355	0.609	0.004
24	0.000	0.998	0.002	0.000
25	0.014	0.942	0.012	0.032
26	0.012	0.569	0.413	0.007
27	0.006	0.591	0.393	0.010
28	0.054	0.544	0.401	0.001
29	0.000	0.992	0.008	0.000
30	0.000	0.997	0.003	0.000
31	0.007	0.979	0.008	0.006
32	0.001	0.913	0.081	0.005
33	0.050	0.252	0.687	0.011
34	0.280	0.648	0.067	0.005
35	0.117	0.871	0.009	0.002
36	0.055	0.925	0.018	0.001
37	0.014	0.954	0.017	0.015
38	0.000	0.996	0.004	0.000
39	0.001	0.916	0.082	0.001
40	0.008	0.888	0.034	0.070
41	0.071	0.491	0.080	0.358
42	0.899	0.002	0.016	0.083

Predicted Probabilities by Firm (cont.)

Firm	Collective	Dual	Individual	None
43	0.003	0.910	0.086	0.001
44	0.538	0.020	0.019	0.423
45	0.000	0.998	0.001	0.001
46	0.601	0.005	0.078	0.317
47	0.000	0.986	0.003	0.011
48	0.000	0.976	0.005	0.019
49	0.000	0.975	0.011	0.014
50	0.451	0.164	0.023	0.362
51	0.298	0.195	0.270	0.236
52	0.000	0.996	0.004	0.000
53	0.174	0.429	0.076	0.321
54	0.843	0.002	0.023	0.131
55	0.000	0.996	0.004	0.000
56	0.656	0.086	0.257	0.000
57	0.095	0.813	0.026	0.066
58	0.017	0.939	0.006	0.038
59	0.000	0.984	0.012	0.004
60	0.000	0.989	0.008	0.004
61	0.003	0.854	0.113	0.030
62	0.000	0.966	0.023	0.011
63	0.017	0.720	0.219	0.044
64	0.057	0.873	0.053	0.016
65	0.000	0.943	0.054	0.003
66	0.000	0.938	0.013	0.049
67	0.190	0.742	0.058	0.009
68	0.685	0.231	0.001	0.083
69	0.728	0.018	0.008	0.246
70	0.774	0.012	0.066	0.148
71	0.001	0.944	0.008	0.047
72	0.001	0.974	0.024	0.002
73	0.285	0.623	0.091	0.002
74	0.249	0.685	0.059	0.007
75	0.167	0.747	0.085	0.001
76	0.010	0.966	0.024	0.000
77	0.010	0.943	0.041	0.007
78	0.222	0.427	0.007	0.344
79	0.000	0.992	0.008	0.000
80	0.001	0.064	0.934	0.000
81	0.786	0.145	0.038	0.032
82	0.685	0.253	0.003	0.060
83	0.000	0.986	0.014	0.000
84	0.131	0.747	0.122	0.000
85	0.004	0.919	0.076	0.001

Predicted Probabilities by Firm (cont.)

Firm	Collective	Dual	Individual	None
86	0.067	0.701	0.229	0.002
87	0.000	0.994	0.001	0.005
88	0.000	0.997	0.002	0.001
89	0.035	0.870	0.079	0.016
90	0.000	0.982	0.018	0.000
91	0.000	0.982	0.018	0.000
92	0.400	0.202	0.001	0.397
93	0.137	0.032	0.796	0.034
94	0.033	0.942	0.013	0.012
95	0.000	0.925	0.022	0.052
96	0.037	0.944	0.019	0.001
97	0.783	0.000	0.092	0.125
98	0.309	0.386	0.010	0.295
99	0.240	0.087	0.074	0.598
100	0.585	0.026	0.029	0.360
101	0.313	0.011	0.015	0.661
102	0.240	0.001	0.015	0.744
103	0.078	0.012	0.906	0.003
104	0.006	0.963	0.030	0.002
105	0.006	0.841	0.153	0.000
106	0.015	0.892	0.092	0.000
107	0.000	0.986	0.005	0.009
108	0.851	0.033	0.007	0.109
109	0.000	0.999	0.001	0.000
110	0.000	0.987	0.006	0.006
111	0.000	0.996	0.004	0.000
112	0.000	0.999	0.000	0.000
113	0.961	0.000	0.013	0.026
114	0.862	0.010	0.052	0.075
115	0.924	0.000	0.062	0.014
116	0.789	0.001	0.006	0.204
117	0.970	0.000	0.015	0.015
118	0.709	0.001	0.000	0.289
119	0.001	0.835	0.164	0.000
120	0.000	0.844	0.154	0.001
121	0.065	0.807	0.128	0.000
122	0.005	0.926	0.069	0.001
123	0.225	0.547	0.225	0.003
124	0.000	0.916	0.081	0.003
125	0.035	0.794	0.143	0.029
126	0.678	0.011	0.006	0.305
127	0.015	0.917	0.035	0.034
128	0.000	0.994	0.004	0.002



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