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## **ESSAYS IN INDIAN TRADE POLICY**

This study is based on the doctoral dissertation titled “Essays in Indian Trade Policy” selected as the award winning entry for the EXIM Bank International Economic Research Annual (IERA) Award 2017. The dissertation was written by Dr. Amrita Saha, currently Post-Doctoral Researcher at the Institute of Development Studies, University of Sussex, under the supervision of Professor L. Alan Winters, and Dr. Ingo Borchert. Dr. Saha received her doctoral degree in 2016 from the University of Sussex, UK.

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## GLOSSARY OF ABBREVIATIONS

PFS - Protection for Sale

MFN - Most Favored Nation

BT - Bombardini & Trebbi, 2012, JIE

MOCI - Ministry of Commerce and Industry

WITS - World Integrated Trade Solution.

ASI - All India Survey of Industries.

CSO - Central Statistical Organization

NIC - National Industrial Classification

ISIC - International Standard Industrial Classification of all Economic Activities

WBES - World Bank Enterprise Survey

SC- Special Consignments





# EXECUTIVE SUMMARY

The importance of trade policy, especially in its role of securing balanced outcomes across disparate needs in the economy, has been extensively studied in economics and politics. It is widely acknowledged that trade policy is governed by complex sets of interactions between business/industries and government as agency of the State, with profound impacts on the development and design of trade policy reforms. To a large extent, such interactions have the ability to ascertain if trade policy is economically appropriate and feasible, in addition to being politically acceptable.

There has only been limited empirical research to explain these interactions shaping trade policy outcomes in developing countries. This study aims to contribute towards this gap by examining the case of Indian trade policy. The interactions are studied as industry lobbying to convey information signals that are useful to trade policy makers and help engender government responsiveness to business concerns. To theorise the influence of such interactions on trade policy outcomes, a simple modified framework of a structural political economy model (the 1994 seminal work of Grossman and Helpman's protection-for-sale, PFS henceforth) is adopted. Further, empirical evidence is provided by exploiting variations in trade, applied Most Favored Nation (MFN henceforth) tariffs and industry-government interactions data for the Indian manufacturing sector. The key ideas of the study are summarised below.

## 1. Key Contributions of the Study

### **State-Business Interactions as “Industry Lobbying to Transmit Information Signals”**

State - business interactions are studied as industry lobbying, enabling the strategic transmission of information to the government. These interactions arise due to uncertainty about how policies map into consequences, such as elections or employment outcomes. Such uncertainty creates the role for business lobbying

groups as sources of policy-relevant information for the government. However, not all groups will have the same influence through interactions and so, it is likely that some sectors will make a better case for trade protection than others. The sectors that make a better case for protection will send 'signals' – such as information on pressing labour issues or other strategic reasons– which makes the government self-interested to supply protection. The idea of industry lobbying to transmit information signals is placed at the centre of the modified political economy framework motivated in this study.

### **Industry Lobbying by Means of Associations**

In India, membership to associations is often seen as a more legitimate means of interacting with the government. Associations have close ties to the government and are seen as sources of crucial trade policy information. These associations include especially the apex bodies of Confederation of Indian Industry (CII) and the Federation of Indian Chambers of Commerce and Industries (FICCI) that sponsor and participate in general policy debates. Using information on firm memberships to associations, a new binary indicator called 'political organization' is constructed, based on data from the World Bank Enterprise Survey (WBES). This indicator identifies sectors as either organized to lobby or unorganized. Using this binary measure, the analysis begins by estimating the standard version of the political economy model (PFS) with the new measure for political organization, asking "Has Protection really been for Sale in India?"

### **Lobbying Effectiveness and its Determinants**

Despite the economics profession's attachment to the policy of free trade, protection is still common, and among the questions it still poses is "Why do some sectors receive higher trade protection than others?" Some sectors are more effective in presenting their case for trade protection than others. Quantifying this effectiveness of industry-government interactions in obtaining policy outcomes has been a challenging task in the literature. The evidence for India in this regard is negligible. The study introduces lobbying effectiveness to measure industry-government interactions, with the assumption of government placing different weights on different sectors. The different weights are explained by some sectors signalling the possession of relevant information of interest to the government prior to setting trade policies. To account for lobbying effectiveness, a simple

modification to the standard version of the theoretical model is introduced (PFS with Lobbying Effectiveness). Additionally, the study examines what determines such effectiveness.

### **Lobbying Effectiveness and Additional Political Factors**

A continuous measure based on the firms' membership to industry associations in each sector as a proxy measure of lobbying effectiveness is constructed in the study. Using the proxy measure, the theoretical framework including lobbying effectiveness is estimated, asking the question: "Is Protection still for sale with Lobbying Effectiveness?". The analysis also recognizes that there may be additional political economy factors explaining the variation in trade protection besides the estimated effectiveness in interactions captured by membership to associations. Such factors can be potential substitutes or complements to lobbying by memberships and do influence trade protection, specifically in developing countries such as India. The modified theoretical model (PFS with Lobbying Effectiveness & Additional Political Factors) is further extended by adding this factor.

### **Single and Dual Lobbying Strategies**

To complement the structural analysis in this study with information on the actual trade policy process in India, a primary survey of manufacturing firms was conducted. Using this data, the choice of lobbying strategy that included collective lobbying ("Join Hands") by a group of firms or individual lobbying ("Walk Alone") by a single firm, was examined. A distinction was drawn between the use of each of these single strategies and a dual strategy (a unique combination of collective and individual lobbying). The following questions are asked. First, "What lobbying strategies do firms use for trade policy influence?" Second, "How does firm choice of lobbying strategy links to specific trade policy outcomes?" Finally, "What drives firm lobbying strategy for trade policy influence?". An understanding of the factors affecting 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 trade policy instruments.

## **2. Key Findings of the Study**

The aim of this study is to contribute towards the limited literature on political

economy of Indian trade policy. In doing so, a simple intuitive modification was applied to a well-known theoretical model (PFS) that captured effectiveness in industry-government interactions and its impact on trade policy outcomes. This model provided effectiveness measures across manufacturing sectors and shed light on factors determining this effectiveness. Both these findings have the capacity to facilitate informed trade policy reforms. Additional political economy factors helped incorporating other mechanisms of interactions that suggest the existence of trade-offs between lobbying by membership to association versus individual lobbying. Finally, the primary evidence on lobbying strategies presents an understanding of factors explaining the likelihood of dual versus single strategies in the manufacturing sector, with the possibility to inform policy-makers and industries in facilitating transparency and accountability for the trade policy making process. Key findings are summarized below.

### ***Protection has been for Sale in India since 1999***

Based on findings from the standard political economy framework (PFS), with the new political organization measure adopted in this study, it is found that protection has been for sale, but only in the years following 1998. This is opposed to findings for the year 1990 in the existing literature. While the difference is difficult to explain, it is plausible that political economy factors played only a minor role in setting protection levels in 1990 as most manufacturing industries were publicly owned at that time.

### ***Protection for Sale with Lobbying Effectiveness***

A simple modification to the political economy model yields a structural framework (Modified PFS) that can be used to provide estimates on lobbying effectiveness using data varying across sectors and time. Using this framework, the study provides sector-wise empirical estimates of the effectiveness of industry-government interactions for trade policy outcomes in the Indian manufacturing sector. The most effective sectors have high deviation in lobbying effectiveness from the average effectiveness of the manufacturing sector, the less effective sectors have lower deviation in lobbying effectiveness from the average effectiveness. Estimates of effectiveness confirm the political economy changes for India and appear surprisingly consistent with what has been observed in the political economy of Indian trade policy.

## ***Lobbying Effectiveness Estimates***

It is interesting to note that clear changes are evident while comparing effectiveness for the entire period 1990-2007, with those for the sub-periods. Across the two sub-periods of pre-1998 and post-1998, government decision-making became highly responsive to business concerns. Overall effectiveness for the manufacturing sector is lower in the pre-1998 period than in the post-1998 period. With evidence in the literature suggesting strong interests from few big individual businesses in the former period, it is likely that these few individual firms were effective in lobbying in this early period. Liberalisation brought the elimination of licensing, introduction of competition and an emerging pattern of coalition governments that marked the beginning of collective lobbying and an increase lobbying effectiveness. Further, the sector-wise estimates suggest that the sector Motor Vehicles was the most effective sector over the entire period. But Distilling, Blending of Spirits was the most effective over the years since 1998. The sector Electronic Valves and Tubes was the least effective for the years before 1998, with Aircraft and spacecraft the least effective after 1998.

## ***Geographical Proximity and Competition in Lobbying***

The study finds that manufacturing firms producing similar goods are competitors. This competition effect reduces the positive impact on lobbying effectiveness from being geographically close. Hence, within a sector, firms in close proximity and producing similar goods compete to lobby rather than cooperating or free-riding. In a sector, producing similar goods (higher elasticity of substitution) works against regional divergence (geographical spread) in determining effectiveness in lobbying. The importance of competition over free-riding suggests the role of market structure in Indian manufacturing and how that can influence the direction of policy changes.

## ***Protection is for Sale (only) for Very Effective Sectors***

Based on findings from the modified political economy framework (Modified PFS), the study finds that protection is for sale but only for those sectors that are very effective in lobbying the government via associations. This suggests that sectors with a greater number of firms that lobby using their membership to associations are very effective in lobbying and achieve positive trade protection. Additional political economy factors that reflect the firm-specific strength of a sector appear to be

substitutes in terms of lobbying strategy (PFS with Lobbying Effectiveness & Additional Political Factors).

### ***Indian Manufacturing Firms Join Hands while Walking Alone to Lobby the Government***

The study finds that firms lobby collectively for a public good and lobby individually for firm-specific outcomes. The unique finding is that firms preferred the dual strategy compared to the exclusive use of a single strategy. The preference for a dual strategy is explained by groups lobbying for changes in current policies, while each single strategy is generally used to defend a single existing policy.

### ***Competition Effects Dominate Lobbying for Indian Trade Policy***

The likelihood of adopting a dual lobbying strategy is higher in sectors that are characterized by low output concentration (dispersion is higher), such that firms increase their chances of trade policy influence. Therefore, when there are several firms in a given sector producing much of the output, it is likely that they compete for influence on trade policy. 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.

# 1. POLITICAL ECONOMY OF INDIAN TRADE POLICY

Chapter one presents the motivation and background to studying the nature of interactions between industry and government for trade policy influence in India. It begins by discussing why India is an interesting case study to examine these interactions; this is followed by a brief discussion of why the focus is on applied MFN tariffs; and finally, the background of the dynamic political economy arguments of interactions between businesses/industry and the government as the agency of the state, for Indian trade policy, that motivated this study, are presented.

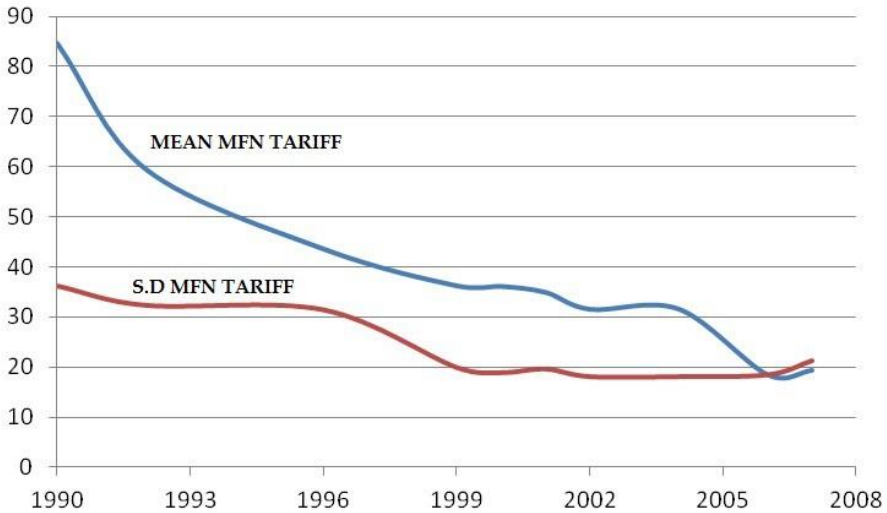
## 1.1. Political Economy in Indian Trade Policy

India is an interesting case study for interactions between industry and the government, with a seemingly likely impact on India's trade policy stance, owing to at least three key reasons which I discuss in turn. First, while India has always acknowledged the importance of the international trading system, it has equally always stressed domestic political imperatives in determining trade policy. Until economic liberalization in the 1990s, domestic interactions between industry and the government, for trade policy, was only at the margin. By 2000, the policy scenario was transformed such that domestic business interests could effectively determine negotiating positions by communicating with the apex organization of Ministry of Commerce and Industry (MOCI) overseeing Indian trade policy, as outlined by Narlikar (2006). Industry involvement in multilateral WTO negotiations also served to heighten government responsiveness to domestic business concerns.

Second, India has historically had among the highest trade barriers in the world, so that inter-sectoral differences are likely to be easily observable. **Figure 1.1** shows that the average (mean) applied MFN tariffs (at the 4-digit of National Industrial Classification) for the manufacturing sector stood at a high of 85 per cent in 1990. Post the IMF mandate in 1991, these tariffs reduced to 44 per cent by 1996. The study finds that the standard deviation (S.D.) of tariffs dropped by half during the same period but remained quite high, between 32-36 per cent. The nature of these changes in applied MFN

protection from 1990-2007 present themselves to examine the extent to which political economy factors can be used to understand the inter-sectoral differences.

**Figure 1.1: Mean and Standard Deviation (S.D.) of MFN Applied Tariffs in India (%), 1990-2007**



Third, while the reforms of 1991 were essentially apolitical, having been imposed by the IMF, subsequent multilateral and unilateral reforms arose from domestic political processes and thus permitted significant differences across sectors. Post-1991, the MOCI took cognizance of the fact that India's increased engagement in international negotiations stimulated overlaps across its fragmented ministries and sectors that further required a greater number of domestic interactions and meetings aimed at mediating differences across sectors. The government participated in business association meetings at home to inform its multilateral agenda. These associations included bodies such as the Confederation of Indian Industry (CII) and the Federation of Indian Chambers of Commerce and Industries (FICCI) that became very active during the decade of 2000s. Associations sought to combine the interests of domestic business with the imperatives of economic liberalization faced by India (Baru, 2009).



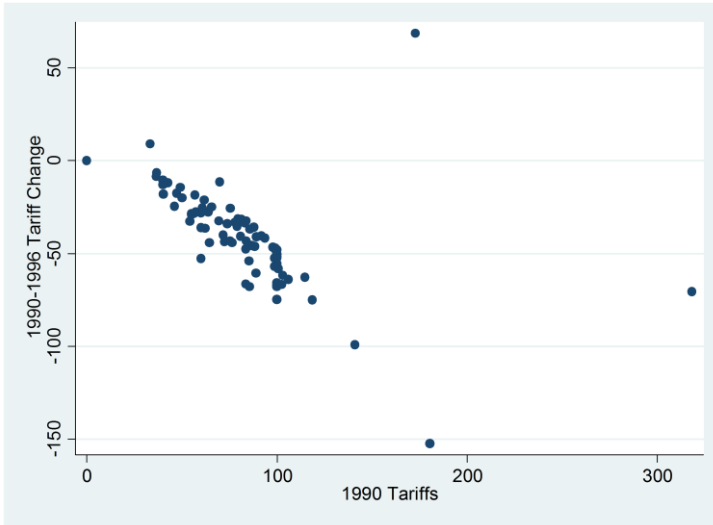
## 1.2. The Case of Applied MFN Tariffs

The applied MFN tariffs present an interesting case to capture the extent to which tariff changes were a result of domestic political concerns. Since tariff changes in the early period – roughly 1990 to 1998 - are attributable to the IMF mandate and Uruguay Rounds, in which international constraints clearly played at least some role, the study also draws a distinction between the sub-periods of changes pre-1998 and those post-1998<sup>1</sup>. Examining MFN tariff changes in some detail, **Figure 1.2** outlines the linear relationship between pre-reform MFN applied tariff levels and changes in the period immediately after liberalization from 1991-1996. This uniformity is evidence that the tariff changes in this period were in fact exogenous. After 1997, different sectors were characterized by uneven levels of liberalization – see also in (Topalova 2007). This suggests that protection may have been used selectively after 1997 to meet certain political economy objectives. In fact, the linear relationship disappears between the immediate post-reform tariff levels in 1999 and tariff changes from 1999-2001 in **Figure 1.3** and re-appears weakly between 2001 and 2007 in **Figure 1.4** the weak linearity reflects the fact that by the latter half of the 2000s, most changes in applied MFN tariffs had already occurred. Overall, the changes across the period are suggestive of the endogeneity in tariff protection across manufacturing sectors in India, and seems to suggest the need for a political economy analysis.

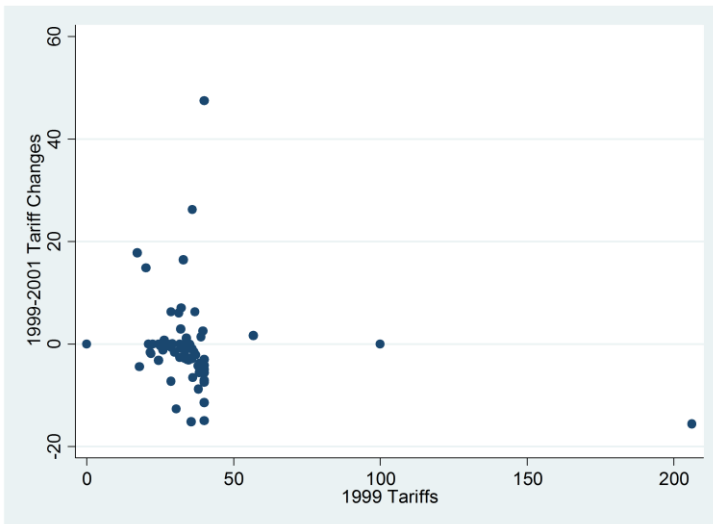
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<sup>1</sup> Non-tariff barriers have emerged as the dominant mode of unilaterally imposed protection, but this was more so by the end of 2000s. With data availability on the tariff equivalents of non-tariff barriers, it is possible to conduct similar analysis with other trade policy measures.

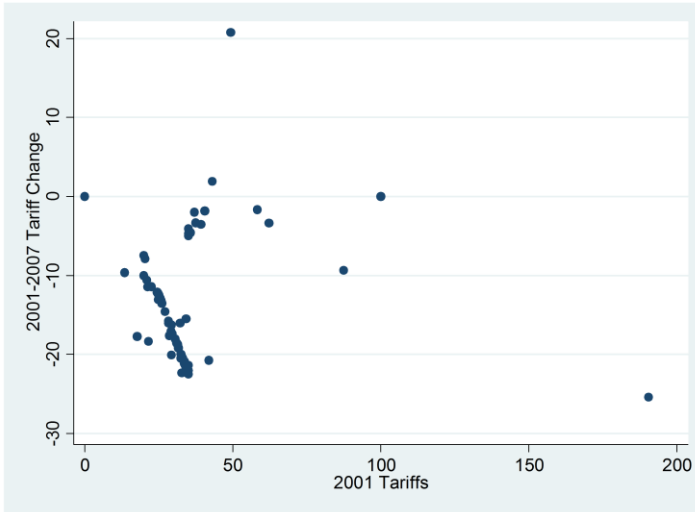
**Figure 1.2: Pre-reform MFN Tariff Changes 1990-1996**



**Figure 1.3: MFN Tariffs and Tariff Changes 1999-2001**



**Figure 1.4: MFN Tariffs and Tariff Changes 2001-2007**



### 1.3 State-Business Interactions in Indian Trade Policy

The nature of political economy characterizing Indian trade policy-making has been quite dynamic. This dynamism is reflected in the typology of interactions between businesses/industry and the government as the agency of the state, for trade policy which have evolved from direct and individual business access to the government to collective influence of business as associations.

#### **Pre-Liberalization:** Individual Business Access to State

Milner and Mukherjee (2011) suggest that trade policies in India before 1991 met to the interests of few big business houses that were able to influence the content of trade policies. This was the era of central planning, when the state retained autonomy of agenda. Kochanek (1996) outlines the post-independence economy of India subject to heavy government regulation weighted towards the dominance of the public sector. Indian policy-makers followed import-substitution industrialization as the chosen model of development with extensive regulatory controls as asserted in Sinha (2007). High levels of trade protection were in place to protect infant industries considered vital to the country's economic growth. With few big businesses, state-business relations prior to liberalization were characterized by direct and individual access to the government for specific concerns. This is also evidenced by findings in the literature and in interviews with the policy-makers

that all point to a narrow group of large business houses that constituted the most influential groups sharing a close relationship with the state. Industries only occasionally reacted to policy decisions and resorted to approaching the government directly. Yadav (2008) terms it as a system where access was only in few hands with money or strong political connections. It appears that the policy regime in place during this period was not conducive to collective action (Piramal, 1996).

### **Liberalization:** Transformation towards Collective Business Access to State

The IMF support to India in the face of an external payment crisis in 1991 was conditional on an adjustment program of structural reforms. Chopra (1995) outlines that for trade policy this included a reduction in the level and dispersion of tariffs, removal of quantitative restrictions on imported inputs and capital goods for export production. As a result, import and export restrictions were eased and tariffs were drastically reduced, in accordance with the guidelines outlined in the report of the Tax Reform Commission constituted in 1991. Milner and Mukherjee (2011) outline the interaction between the government and industry immediately after the 1991 reforms. Confronted with the need to raise funds to finance the ruling party's campaign for the 1994 state elections, the incumbent government turned to large industrial houses for financial support, as argued in Kochanek (1996). The business groups in turn formed an organization called the Bombay Club, consisting of a group of prominent Indian industries voicing concerns about – and seeking the reversal of – trade reforms, and demanding greater protection for their industries from the surge in import competition, as outlined in Kochanek (1996) and Kochanek and Hardgrave (2006). This seems to have marked the beginning of a transformation of business influence on trade policy – from individual business to collective business as associations.

### **Post-Liberalisation:** Duality in Business Access to State

Post-liberalization, the elimination of licensing and the introduction of competition accompanied by an emerging pattern of coalition governments could have potentially reduced the pay-offs to individual access. At this stage, there started evolving a duality in business interactions with the government that consisted of organized industry associations in addition to direct individual lobbying. Also, Indian business began to look at market opportunities abroad including overseas investment as highlighted by Baru (2009). India continued on the path towards further trade liberalization in the post-reforms era. Topalova (2007) shows that Indian sectors were characterized by uneven

levels of liberalization owing partly to domestic interests fearful of market-oriented reforms. This is also evidenced in the endogeneity in tariff protection assigned across manufacturing sectors in India in **Figure 1.3.** that warrants an understanding of the political economy changes over the entire period.

The political economy of Indian trade policy is, no doubt, evidence of the political circumstances and development realities that often govern trade policy choices. These choices have a compelling link to the complex interplay of industry-government interactions in shaping the policy outcomes. In the following chapters, the study endeavors to offer empirical and theoretical insights on the link(s) between these interactions and choices.

## 2. TRADE POLICY AND LOBBYING EFFECTIVENESS: THEORY AND EVIDENCE FOR INDIA

### 2.1. Introduction

Chapter two puts forth new evidence on the effectiveness of interactions between industry and government for trade policy outcomes in India. These interactions are studied as lobbying to convey information signals that are useful to trade policy makers and help engender government responsiveness to industry concerns. To theorise the influence of such interactions on trade policy outcomes, a simple modified framework is adopted, based on the seminal contribution of Grossman and Helpman's (1994) protection-for-sale (PFS henceforth) model.

Using a unique dataset from 1990-2007, interactions between industry and the government are captured in two ways. First, using the standard PFS binary indicator, 'political organisation', identifying sectors as either organized to lobby or unorganized, based on membership to industry associations. Second, using a simple intuitive modification of the model, a continuous empirical measure of 'lobbying effectiveness', reflecting lobbying strength across sectors, is obtained. Further, the study asks what determines lobbying effectiveness in terms of potential resource advantages such as geographical concentration, intra-sectoral heterogeneity and opportunities to interact with the government.

The analysis introduces lobbying effectiveness based on the government placing different weights on the political contributions from different sectors<sup>2</sup>. Varying weights have been introduced in earlier literature such as in Maggi and Rodriguez-Clare (2000), who assign different weights for producers and importers to reflect their different lobbying strengths, and by Swinnen and Vandemoortele (2011) who also include lobbying by consumers<sup>3</sup>. In this chapter, on the other hand, lobbying effectiveness varies across sectors, and results in the government applying different weights to the contributions from

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<sup>2</sup> De Figueiredo and Richter (2014) discuss some of the issues with quantifying lobbying effectiveness.

<sup>3</sup> Different weights are also adopted more recently in Gawande et al. (2015) to examine cross-country.

different sectors<sup>4</sup>. Taking this modified *PFS* framework to panel data for India, the analysis overcomes the need to define a binary variable for political organization by introducing a continuous measure. This measure is estimated using *PFS*' sector-specific relationships between trade protection and import penetration, revealing sector-specific lobbying effectiveness.

India provides a good case study for the new, modified, *PFS* framework, owing to at least three key reasons which are discussed in turn. First, while India has always acknowledged the importance of the international trading system, it has equally always stressed domestic political imperatives in determining trade policy. Second, India has historically had among the highest trade barriers in the world, so that inter sectoral differences are likely to be easily observable. Third, while the reforms of 1991 were essentially apolitical, having been imposed by the IMF, subsequent multilateral and unilateral reforms arose from domestic political processes and thus permitted significant differences across sectors.

The remainder of this chapter is structured as follows. Section 2 outlines the theoretical framework. Section 3 presents the data and methodology, followed by an outline of the results in Section 4. Section 5 examines the question of what determines lobbying effectiveness. Section 6 provides a brief summary of the overall findings and concludes the chapter.

## 2.2. Theoretical Framework

The *PFS* model has spawned a large empirical literature<sup>5</sup>. However, this literature is not without its limitations, either conceptually or practically, especially as far as developing countries, lacking data on political contributions or lobbying, are concerned – see, for example, Gawande et al. (2015).

The standard *PFS* model treats the ability to advocate for protection as exogenously given by sectors' political organization. Organization is a binary indicator, such that some sectors are fully organized to lobby and the rest are

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<sup>4</sup> To the best of my knowledge, only De Figueiredo and Silverman (2006) have taken a close look at the effectiveness of lobbying activities in shaping policy outcomes.

<sup>5</sup> This literature includes Goldberg and Maggi (1999) (GM henceforth) and Gawande and Bandyopadhyay (2000) (GB henceforth) among others for the United States. Estimates for other countries include Mitra et al. (2002) for Turkey; McCalman (2004) for Australia; Belloc (2007) for the EU; and Bown and Tovar (2011) and Cadot et al. (2007) for India.

unorganized. A substantial part of the empirical literature makes use of this binary approach<sup>6</sup>, but it implies that only the existence of a lobby matters (Eicher and Osang, 2002) and that there are no differences within the sets of organized and unorganized industries, due, say, to different degrees of free-riding within different organizations. A major challenge in applying the PFS model to India –there are no lobbying data and so no easy (even if approximate) way of allocating sectors into organized and unorganized sets. Cadot et al. (2007) and Cadot et al. (2014) overcome this absence by estimating *PFS* using a multi-stage iterative procedure based on grid-search to generate an organization variable. Bown and Tovar (2011), on the other hand, confirm the *PFS* hypothesis for 1990 and 2000-2002 in India, treating an industry as organized if it lists membership to at least five organizations in the World Guide to trade associations for 1995 (Zils and Verrel, 1995). The study applies the approach of the latter authors to the sample from 1990 to 2007, but makes use of a new measure of organization for lobbying, reflecting the proportion of firms in a sector that belong to apex industry associations which have strong links with government, to estimate the standard *PFS* framework.

Standard *PFS* also assumes that the government places the same value on political contributions from every sector of the economy, and yet both theorizing (Hillman, 1989) and experience suggest otherwise. An important element of success in securing trade protection has been attributed to government willingness to supply it, as in Baldwin (1989). Hence, government responsiveness to domestic industry concerns is important<sup>7</sup>. However, not all groups will have the same influence, and so, if the government is responsive, it is likely that some sectors will make a better case for protection than others. In principle, in the *PFS* model, the government knows the contributions of each sector, and thus it can have varying preferences across sectors. But why would some sectors be valued more than others? One reasonable explanation is that some sectors send a signal that they have information that the government may wish to know before it sets trade policies. Such signals could include pressing labour issues or other strategic reasons which would make the government self-interested to supply protection. The idea of lobbying as the strategic transmission of information has been explained by Austen-Smith (1993) using the logic of uncertainty about how policies map into

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<sup>6</sup> Mitra (1999) is a notable exception in endogenizing the formation of lobbies.

<sup>7</sup> See also Hillman (1982) among others.



consequences, such as election or employment outcomes. Such uncertainty creates the role of lobbying groups as sources of policy-relevant information. The *PFS* model, applied overwhelmingly to the United States, has been based on (measured) political contributions, and has focused less on the informational channel through which lobbies can influence policy, although Facchini et al. (2011) have suggested it. The study places it at the centre of *PFS*, explaining lobbying effectiveness in India, arguing that such information signals are useful to policy makers and help to engender government responsiveness to industry concerns<sup>8</sup>. Using this simple modification of *PFS*, the analysis estimates lobbying effectiveness directly from panel data, and thus overcome the need to define political organization a priori.

## 2.3. Data & Methodology

### 2.3.1. Data

To estimate the models, the study uses cross-sectional and panel variation in tariffs, imports and output. Lobbying effectiveness estimates,  $\gamma_i$ , are obtained across 98 sectors at the 4-digit of International Standard Industrial Classification of all Economic Activities (ISIC) Revision 3. The data was compiled across 1990–2007, but there were gaps in tariff data such that a total of nine years: 1990, 1992, 1996, 1999, 2000, 2001, 2004, 2006, 2007, were available. Appendix Table A presents descriptives for the sample of observations used in *PFS* estimations by years.

Tariffs are defined as the applied Most Favored Nation (MFN) tariff, with data taken from the World Integrated Trade Solution (WITS) of the World Bank drawing on TRAINS and WTO IDB. Industry data are from the All India Survey of Industries (ASI) compiled by the Central Statistical Organization (CSO) at the National Industrial Classification (NIC)<sup>9</sup>. For the analysis several revisions of NIC from 1990-2007 to NIC-1998 are mapped. Its one-to-one correspondence with the ISIC Revision 3 of All Economic Activities of the United Nations at the 4-digit level was used to achieve further correspondence with tariffs data. (Details on mapping are available on request).

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<sup>8</sup> Details in Saha (2017a).

<sup>9</sup> This data is available for purchase across all years but needs to be mapped using concordance tables for building a panel.

Instrumental variables are constructed using the stock of inventories by sector from ASI. In addition, sectoral capital-labor (K/L) ratios for the United States are used from Gawande and Bandyopadhyay (2000). Note that the K/L ratio for the United States are readily available only for one year, while inventories vary across all years. Import demand elasticities are from Kee et al. (2008), providing a systematic estimation of import demand elasticities using a semi-flexible trans-log GDP function approach with data on prices and endowments.

Using information from the World Bank Enterprise Survey (WBES) reported in 2005, a new measure of organization  $I_{WBES}$  is constructed. WBES data were collected for 2,286 firms, categorized into 22 aggregated sectors<sup>10</sup>. To construct the measure, the study uses a threshold based on the share of firms that are members of national associations, using the question: "Is your firm a member of a producer or trade association?". A threshold of 0.75 was used to define sectors that were organized<sup>11</sup>. It defined 79 out of the 98 sectors as organized.

### 2.3.2. Methodology

The analysis begins by estimating a standard *PFS* type specification using the new political organization variable. The standard *PFS* results are mainly there to compare with the results from the modified *PFS* framework, but they do also allow to plot the evolution of effects year by year, which the latter cannot do, since they require panel data.

#### Standard PFS

In standard PFS, the government maximizes its objective, defined as the sum of industry contributions from sectors and social welfare, which comprises the sum of wages, profits and taxes generated by all sectors. Government attaches a relative weight,  $\alpha$ , to aggregate welfare. Contributions are made by the set of sectors that is organized, (L), out of the profits that they make.

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<sup>10</sup>WBES data is based on information collected over the period of 2000-2004. Therefore, this is a good reflection of political organization for the end of 1990s and the decade of 2000s.

<sup>11</sup>The number of sectors varying in terms of this share (from <0.20 upto 1) is shown in Table 8. I created four quantiles for the shares taking the percentiles of 0.75, 0.82, 0.85 and 0.89 (LM I-LM IV) as different thresholds to construct the political organization indicator. I found the threshold of 0.75 gives the most variation to identify differences by organized and unorganized sectors.

The fraction of population organized as lobbies is  $\alpha_L$ . Within L, one dollar of contribution has the same value, irrespective of which sector it comes from. Hence, in standard PFS, profits in organized sectors receive a weight of  $(1 + \alpha)$  and those in unorganized sectors the smaller weight of  $\alpha$ .

The study estimates the standard *PFS* as the stochastic equation [1] below, adding an error term,  $\epsilon_{it}$ . The dependant variable is the tariff ratio,  $\frac{\tau_{it}}{1 + \tau_{it}}$ , varying across time  $t$  and sector  $i$ , multiplied by the absolute value of the import demand elasticity,  $e_i$ . On the right hand side, the first term is  $z_{it}$ , defined as the ratio of output to imports  $X_{it}/M_{it}$  and  $z_{it} * I_i$ , that is  $X_{it}/M_{it}$  multiplied by  $I_i$ , an indicator variable that equals 1 if the sector  $i$  is organized and 0 if unorganized, varying only by sector.

$$\frac{\tau_{it}}{1 + \tau_{it}} e_i = \rho z_{it} + \beta (I_i z_{it}) + \epsilon_{it} \quad [1]$$

Two testable predictions, based on standard *PFS*, include the following: (i).  $\beta$ , the coefficient on  $z_i * I_i$ , defined as  $\beta = \frac{1}{a + \alpha_L}$ , is positive i.e. for organized sectors, trade protection is positively related to the ratio of domestic output to imports. (ii).  $\rho$ , the coefficient on  $z_i$ , defined as  $\rho = \frac{-\alpha_L}{a + \alpha_L}$ , is negative, i.e. for unorganized sectors, trade protection is negatively related to the ratio of domestic output to imports. The analysis also estimates the structural parameters of the weight on government welfare,  $a$ , and the fraction of population organized as lobbies,  $\alpha_L$ .

### **PFS with Lobbying Effectiveness**

To account for sectoral differences in achieving actual lobbying influence, the analysis considers an intuitive modification of standard *PFS* to introduce lobbying effectiveness based on heterogeneous weights on political contributions from different sectors. Now not all dollar contributions are equal; hence that the government objective can now be characterized as a sum of contributions, weighted by lobbying effectiveness  $\gamma_i$ , and the aggregate voter welfare, weighted by  $\alpha$ . Each sector  $i$  now receives a sector-specific weight given by  $(\alpha + \gamma_i)$ , different from the weight of  $(1 + \alpha)$  across all sectors in standard *PFS*.  $\gamma_i$ , is the lobbying effectiveness that translates into a higher or lower valuation of a particular sector in government preferences.

Modified *PFS* is estimated using the stochastic equation [2] below, using pooled data, where  $\beta_{1i}$ , varying by sector,  $\beta_{1i} = \frac{\gamma_i - \sum_{j=1}^n \gamma_j \alpha_j}{a + \sum_{j=1}^n \gamma_j \alpha_j}$ , can be estimated across  $i$  sectors using the variation of interaction for  $z_{it}$  with a dummy variable  $D_i$ .

$$\frac{\tau_{it}}{1+\tau_{it}} e_i = \beta_{1i} z_{it} + \mu_{1it} \quad [2]$$

The modified *PFS* framework differs from the straightforward interpretation in standard *PFS*, as there is now a further component in the overall relationship between inverse import penetration and trade protection, explained by the deviation of lobbying effectiveness for each sector,  $\gamma_i$ , from a mean effectiveness for all sectors  $\sum_{j=1}^n \gamma_j \alpha_j$ . To operationalise the modified *PFS* framework, it is assumed that the weight that the government puts on welfare, equals 1. In the model, while the government gives a weight of  $1 + \gamma_i$  to each sector when setting trade policy, a higher  $\gamma_i$ , does not necessarily translate into more protection for a given sector. What matters for the extent of protection received by a sector is how  $\gamma_i$  compares to the weighted average of all sectors. The most effective sectors will have a high deviation in lobbying effectiveness from mean effectiveness, translating into higher trade protection. Less effective sectors will have lower deviation in lobbying effectiveness from mean effectiveness, translating into lower trade protection.

However, estimates from the pooled data could be biased and inconsistent due to correlation of the regressors with the error in other periods. Unobserved effects over the years include, for instance, changes in governments, correlated with explanatory variables. To address this, year fixed effects are employed to capture any pattern that the sectors exhibit as a group over the years. Including year fixed effects  $\delta_t$ , re-writing equation [2], equation [3] is estimated below.

$$\frac{\tau_{it}}{1+\tau_{it}} e_i = \delta_t + \beta_{1i} z_{it} + \mu_{2it} \quad [3]$$

$\delta_t$  is included in addition to  $\beta_{1i}$ . The effect of inverse import penetration on trade protection is now identified from the variation across sectors, controlling for any unobserved effects across the years that may be correlated with the explanatory variable. Following a similar logic as in (Gawande, Krishna, and Olarreaga 2015), lobbying effectiveness is estimated as time-invariant across

the period of analysis. The modified PFS for two sub-periods, pre-1998 and post-1998, is also estimated. The modified PFS with data for two sub-periods gives estimates that vary across the two periods, but also helps examine robustness of the results.

## 2.4. Results

### 2.4.1. Has Protection really been for Sale in India?

**Table 2.1** presents results from estimating the standard *PFS*. Panel A presents results with the pooled data<sup>12</sup>. The results from estimating the standard *PFS* model with data for the sub-periods i.e. post-1998 years and pre-1998, are reported in columns (II) and (III) respectively. For the years 1998 onwards, the standard *PFS* still finds support and validity. However, using pooled data for years preceding 1998 i.e. 1990-1996, the findings are no longer significant, even though the coefficients have expected signs.

Given that MFN tariffs were falling strongly over the sample period, while the inverse import penetration ratio was rising considerably, it is possible that these results arise merely from regressing one trending variable on another. To test this, such trends (and more) are eliminated, by adding year fixed effects to the pooled model in column (IV) of panel A. The standard *PFS* fails both in terms of signs and significance. This weak result once the time variation has been removed may well reflect heterogeneity between sectors, a plausible cause of which might be differences in lobbying effectiveness.

The coefficients from estimating *PFS* with the pooled data in columns (I) and (II) may seem to confirm the quantitative implications from *PFS* hypothesis. However, to examine the standard *PFS* hypothesis closely, the *PFS* equation using cross-sections that look at the relationship between tariffs and inverse import penetration within organized or unorganized sectors at a point in time, is also estimated. Results from estimating the *PFS* type specification with data for the years 1990, 1999, 2000 and 2004 are reported in columns (I)-(IV) in panel B. *PFS* finds support for the years 1999, 2000 and 2004. The coefficients have expected signs for these years, but are insignificant such

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<sup>12</sup> First stage estimates are available in author's thesis.

that the validity of results is not commented upon. *PFS* finds no support for 1990 as the expected signs on the coefficients are reversed.

Bringing the results together, it appears that protection has been for sale, but only from years after 1998. This is opposed to findings in Bown and Tovar (2011), that finds strong evidence for *PFS* using tariffs for 1990. The difference is difficult to explain. It is plausible that political economy factors played only a minor role in setting protection levels in 1990 as most manufacturing industries were publicly owned then. But it is also plausible that my political organization indicator is a good measure only for the years from 1998<sup>13</sup>.

**Table 2.1: Pooled Cross-Section with Political Organization I**

PANEL A: <i>Using pooled data</i>				
	(I) <i>Baseline</i>	(II) <i>Sub-Periods</i>	(III) <i>Pre-1998</i>	(IV) <i>Pooled with</i>
	<i>Pooled</i>	<i>Post-1998</i>	<i>Pre-1998</i>	<i>Year FE</i>
<i>z</i>	-0.148*	-0.297**	-0.077	0.009***
	(0.088)	(0.147)	(0.113)	(0.003)
<i>z*I</i>	0.175**	0.341**	0.095	0.006
	(0.088)	(0.145)	(0.112)	(0.004)
<b>Year FE</b>	No	No	No	Yes
Observations	876	588	288	876
Kleibergen-Paap Wald rk F statistic	6.713	5.334	2.267	6.779
Kleibergen-Paap rk LM	28.496	23.488	10.158	18.174
Chi-sq(2) P-val	0.0000	0.0000	0.0062	0.0001
PANEL B: <i>Using cross-section data</i>				
	(I) <b>1990</b>	(II) <b>1999</b>	(III) <b>2000</b>	(IV) <b>2004</b>
<i>z</i>	0.085	-0.303	-0.539	-0.012
	(0.179)	(0.329)	(0.456)	(0.121)
<i>z*I</i>	-0.067	0.353	0.579	0.093
	(0.182)	(0.330)	(0.450)	(0.128)
Observations	94	98	98	98
Kleibergen-Paap Wald rk F statistic	0.77	1.13	0.981	0.83
Kleibergen-Paap rk LM	3.63	5.34	4.26	4.03
Chi-sq(2) P-val	0.1626	0.0692	0.119	0.1331

Robust standard errors in parentheses

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

<sup>13</sup> The lack of support for *PFS* for the years between 1991 and 1998 is credible because of the heavy influence of the IMF and the Uruguay Rounds, but this does not pertain in 1990.

**Table 2.1** reports results with pooled data using  $z(X/M)$  and the political organization indicator from  $WBES-I_{WBES}$ . Panel A presents results with the pooled data. (I) are results for data pooled across all years, (II) uses data for the years post 1998, (III) is for data for pre 1998, finally (IV) outlines results with time dummies. Panel B reports results from estimating the PFS type specification with data for the years 1990, 1999, 2000 and 2004, reported in columns (I)-(IV). The test for weak IVs gives the Kleibergen-Paap Wald rk F statistic. The null of under-identification is read with the Kleibergen-Paap rk LM chi-square statistic.

For the analysis the structural parameters  $\alpha$  and  $\alpha_L$  using results in **Table 2.1** for the pooled cross-sections in columns (II) and (III) are estimated next. Column (I) in **Table 2.2** shows that the relative weight on social welfare with respect to industry interactions (political contributions in terms of the PFS model) for the government in India was 0.674 for the period of 1998 onwards. These estimates therefore imply that the government cared about social welfare, yet it was open to industry opinion and corresponding producer welfare. This also owes to the fact that a large fraction of the population are specific factor owners who can organize to lobby the government. In fact the estimate of  $\alpha_L$  in this period was approximately 0.871, which implies a very high proportion of specific factor owners were organized as members of associations in India. A comparison for the two sub-periods i.e. pre-1998 to post-1998, in **Table 2.2** suggests that the fraction of organized population increased significantly across the two periods. This leads to the next section that examines potential heterogeneity in terms of actual lobbying across sectors.

**Table 2.2: Implied  $\alpha$ ,  $\alpha_L$  and Sum of Coefficients**

Structural Parameters	(I) Post 1998	(II) Pre-1998
$\alpha$	0.674*** (0.140)	0.907*** (0.111)
$\alpha_L$	0.871*** (0.063)	0.816*** (0.224)
Sum of Coefficients	0.044*** (0.007)	0.017*** (.004)

**Table 2.2** presents the structural parameters based on coefficients from columns (II) and (III) in panel A of Table .  $\rho$  and  $\beta$  are used to calculate the parameters such that  $\alpha_L = -\frac{\rho}{\beta}$ , and  $\alpha = \frac{1+\rho}{1+\rho+\beta}$ .

## 2.4.2. Estimating Lobbying Effectiveness

The  $\beta_{1i}$  coefficients were both positive and negative in sign. A negative coefficient identifies sectors with lower than average effectiveness, for which a higher inverse import penetration is associated with lower MFN protection. A positive coefficient applies to sectors with higher than average effectiveness, for which higher inverse import penetration is associated with higher MFN protection. The positive relationship between import penetration and protection is increasing with the deviation of effectiveness from the mean. The estimates of  $\gamma_i$  for the sub-samples help to capture changes in deviations in mean effectiveness. Splitting the sample enables to consider, at least broadly, how the links between business and the government evolved over time. The number of positive coefficients is significantly lower for the post-1998 period than the pre-1998 period. This suggests that a few sectors were able to achieve substantially higher than average effectiveness after 1998, between the two sub-periods, also suggesting a potential increase in mean effectiveness in the same period.

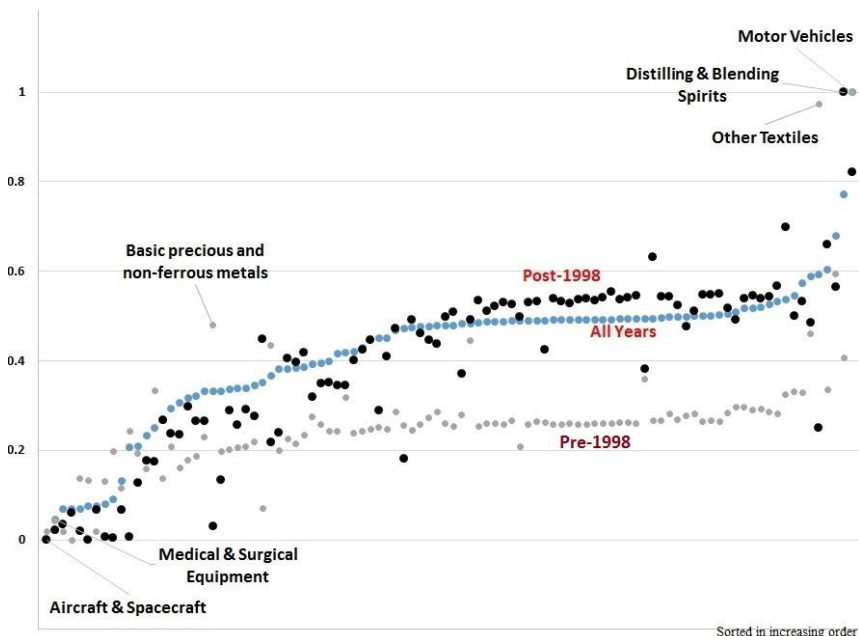
**Figure 2.1** presents exponentiated and normalized coefficients. The effectiveness measures across all specifications are presented, sorted by baseline effectiveness from the estimation with all years 1990 – 2007. It is interesting to note that comparing results for the entire period with those for the sub-periods, there are clear changes. Effectiveness is lower in the pre-1998 period than in the post-1998 one - a range of 0.2-0.4 rising to 0.4-0.6. One explanation is that trade policies in India were often skewed to interests of few big individual businesses that were able to influence the content of trade policies in early 1990s as outlined by Milner and Mukherjee (2011). This seems to suggest that very few individual firms were effective in lobbying in this early period. Kochanek and Hardgrave (2006) further documents a transformation in collective influence of business with elimination of licensing, introduction of competition, and an emerging pattern of coalition governments. This could have potentially reduced the pay-offs to rare cases of individual lobbying and marked the beginning of collective sector level lobbying<sup>14</sup>.

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<sup>14</sup> Towards mid-90s, business groups formed an organization called the Bombay Club consisting of a group of prominent Indian industries to voice concerns against trade reforms as documented in Kochanek and Hardgrave (2006). This seems to have marked the beginning of a transformation in collective influence of business.



**Figure 2.1: Lobbying Effectiveness Across Indian Manufacturing Sectors**



The estimates suggest that Motor Vehicles was the most effective sector (with the highest positive deviation from the mean) over the entire period. But Distilling, Blending of Spirits was the most effective if only the years since 1998 are considered. The sector Electronic Valves and Tubes was the least effective (with the highest negative deviation from the mean) for the years before 1998, replaced by Aircraft and Spacecraft after 1998. After 1998, sectors were characterized by uneven levels of liberalization, and protection was arguably available only for sectors that could make a strong case for it. There is much to do to understand these differences but taken at face value they suggest that capturing heterogeneity in actual lobbying may reveal some important insights. Such heterogeneities lead to the next question: what determines lobbying effectiveness?

## 2.5. What determines Lobbying Effectiveness in India?

This section examines the determinants of lobbying effectiveness estimates. The evidence on this question is scarce, with few empirical papers looking at the effectiveness of lobbying in shaping policy outcomes, and no empirical

evidence whatsoever in the context of lobbying effectiveness for Indian trade policy.

The idea of heterogeneity in lobbying based on differing degrees of free-riding across groups is well known since Olson (1971). Using similar logic, the role of firms in shaping protection for a sector is explored in Bombardini (2008). It is also widely accepted that industry characteristics influence the extent of industry organization: for example, Mitra (1999) examined the structure of the demand function and geographical concentration, while Gawande and Bandyopadhyay (2000) considered the role of trade related variables, along with political contributions, firm concentration and other variables. Of these determinants, the geographical location of firms and the type of goods that are produced within a sector can have an impact on sectors' effectiveness in making a case for protection.

The study adopts a lobbying technology along the lines of Hillman et al. (2001) and Hillman (1989), focusing on the inherent resource advantages that enable sectors to argue a better case and send strong signals to policymakers. This applies especially to India's multi-level political system. For example, if a politician is elected in a district with a highly concentrated sector, there is a higher likelihood that he/she will be sensitive to issues raised by that sector. Similarly, the type of goods produced in a sector may matter. For instance, if these are necessity goods with very few substitutes available, the government may be keener to grant protection.

The following determinants of lobbying effectiveness estimates are examined, by breaking the data into two sub-periods, Pre – 1998 and Post–1998. The primary variables of interest are the following. First, Geographical Concentration, taken from Lall, Jun, and Chakravorty (2003), measures if industrial activity within sectors is clustered across locations. If geographical concentration is lower, then firms in a given sector are spread across various states, and their political influence will be felt through multiple channels (Brock and Magee, 1984). At the same time, however, it could be harder or more expensive for firms that are spread out to organize and lobby and thus to eliminate free-riding. Second, elasticity measures the elasticity of substitution between the different varieties of goods in a sector, and are taken from Broda, Greenfield and Weinstein (2006). The effect of the elasticity on lobbying effectiveness is ambiguous a priori: firms producing highly substitutable goods may be able to cooperate more effectively (Bombardini and Trebbi 2012), or, similarity of interest could encourage free riding. Based on Krugman (1990)'s

hypothesis that a higher elasticity of substitution works against geographical divergence, the interaction term Geography\*Elasticity is included. The interaction term accounts for how elasticity may affect the impact of geography on effectiveness and vice versa. Control variables include the following. First, Opportunity measured by the average time spent by firms on direct interactions with the government (scaled by the output of the sector), and is taken from the WBES. Second, Output Concentration, calculated as the share of output produced by the four largest firms in a given sector from ASI data, weighted by the output of a given sector across specific years. Third, Average size of a sector, proxied by the logarithm of the mean firm output, taking the number of firms in a sector from WBES and total output from the ASI data.

**Table 2.3** presents the results for the determinants of lobbying effectiveness. The effect of geography on lobbying effectiveness, is always positive and significant, suggesting that, ceteris paribus, geographical concentration has a positive effect on lobbying effectiveness. The partial effect of the elasticity of substitution is also positive, suggesting that more substitutable products would have greater lobbying efficiency. However, both effects are dominated by the negative estimates of the interaction term which imply that the positive effect of geography declines with an increase in elasticity of substitution. For sectors with greater ease of substitutability, an increase in geographical concentration actually reduces lobbying effectiveness. This result is broadly consistent across six slightly different specifications: Column (I) includes no control variables, while Columns (II)-(VI) introduce them and a dummy for the sub-period post-1998 in various combinations. The results do not change much in terms of size of coefficients in columns (II) and (III). In column (IV), controlling for average firm size reveals the relevance of this variable in interpreting the effects of geography and elasticity. Overall, it appears that competition dominates free-riding and cooperation in determining sectors' lobbying effectiveness. Taken together, the results affirm the underlying idea in Krugman's (1990) hypothesis that a higher elasticity of substitution works against regional divergence. Firms producing similar goods are competitors. This competition effect reduces the positive impact from being geographically close.

**Table 2.3: Determinants of Lobbying Effectiveness**

VARIABLES	(I) PRIMARY SPECIFICATION	(II) SINGLE CONTROLS	(III)	(IV)	(V) ALL CONTROLS NO DUMMY	(VI) ALL CONTROLS YEAR DUMMY
Geography (G)	0.1644*** (0.016)	0.1662*** (0.016)	0.1593*** (0.016)	0.0558*** (0.019)	0.0480*** (0.017)	0.0465** (0.018)
Elasticity	0.0589*** (0.010)	0.0629*** (0.012)	0.0574*** (0.010)	0.0249*** (0.008)	0.0220*** (0.007)	0.0215*** (0.007)
Geography*Elasticity	-1.5193*** (0.326)	-1.6584*** (0.409)	-1.4720*** (0.328)	-0.5513** (0.249)	-0.4656** (0.218)	-0.4417* (0.229)
<b>CONTROL VARIABLES</b>						
Opportunity		0.0007*** (0.000)			0.0019*** (0.000)	0.0020*** (0.000)
Output Concentration			0.0381** (0.019)		-0.0106 (0.017)	0.0004 (0.017)
Size				0.0663*** (0.009)	0.0711*** (0.009)	0.0866*** (0.010)
Year Dummy	No	No	No	No	No	Yes
Observations	196	196	195	195	195	195
R-squared	0.693	0.697	0.699	0.782	0.791	0.808

Robust standard errors clustered by 4-digit sector in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Table 2.3 presents results from examining determinants of lobbying effectiveness. Dependent variable is the exponentiated estimate of lobbying effectiveness. Column (I) presents results for the primary specification without controls. Columns (II)-(IV) introduce control variables in turn-opportunity, output concentration of the sector and size. Column (VI) includes the year dummy for 1998. Robust standard errors and R-squared are reported for all estimations.*

## 2.6. Conclusions

The principal contribution of this chapter is the new evidence on effectiveness of interactions between industry and government for trade policy outcomes in India. The lobbying effectiveness estimates capture the extent to which groups make a better case for protection by sending a signal regarding information of use to policy makers before they set trade policies. The estimates confirm the political economy changes for India and appear surprisingly consistent with what has been observed in the political economy of Indian trade policy. Across the two sub-periods of pre-1998 and post-1998, government decision-making became highly responsive to business concerns that is reflected in higher effectiveness estimates post-1998. The analysis also examines the determinants of lobbying effectiveness and show a strong competition effect. These empirical estimates for India can be used in future research. Furthermore, an understanding of the factors that determine lobbying effectiveness may serve as a motivation to evaluate state-business relations across sectors and also to inform policy reform prescriptions.

# 3. IS PROTECTION FOR SALE? LOBBYING EFFECTIVENESS AND ADDITIONAL POLITICAL FACTORS

## 3.1. Introduction

Chapter three examines how differences in the effectiveness of interactions and related political economy factors characterizing such interactions can explain the variation in trade protection across Indian manufacturing sectors. The effectiveness of interactions is studied as lobbying effectiveness in conveying information signals, using the modified framework of Grossman and Helpman's (1994) protection-for-sale (PFS henceforth) model, developed in earlier chapter. The following question is answered: "Is Protection still for sale with Lobbying Effectiveness?"

The modified PFS model is estimated using a proxy for the new measure of lobbying effectiveness, based on information on firm membership to associations that have close ties to the government (Narlikar, 2006) Chapter. 2 used information taken from the World Bank Enterprise Survey (WBES) to identify a binary measure of political organization in traditional PFS. Now, the same data on firms that are members of industry associations in each sector is used to construct the proxy measure of lobbying effectiveness.

The two following qualifications are discussed in turn below. First, membership alone may not fully capture the extent of actual lobbying. Firms can lobby more or less effectively by means of their membership. It is a fair argument that membership to associations does not imply actual lobbying that can bias the impact of effectiveness on trade protection downwards. This leads to the first robustness check for the baseline estimation. Using the measures of lobbying effectiveness constructed above, a binary equation is used to estimate the likelihood of a firm to lobby effectively for trade policy influence by means of its membership. This gives a predicted measure of lobbying effectiveness such that the PFS model is estimated using the predicted measure as a robustness check for the qualitative findings of the baseline.

Second, there may be additional political economy factors at work, besides interactions by means of membership to associations that can help explain the variation in trade protection in the model. Such factors can be potential substitutes or complements to lobbying by means of membership. The second qualification finds discussion in Goldberg and Maggi (1997), who have extended the empirical specification of PFS to include variables that may affect protection but were left out of the model. Following this line of thought, one can contest that there may be additional political economy factors that can influence the equilibrium level of trade protection specifically for developing countries and more so for India that may still be left out of the theoretical model. This leads to the next robustness check for the baseline model, where another factor that can help explain the variation in trade protection in the model is added. To achieve this however, the empirics are driven by using a theoretically consistent specification derived by another simple alteration to the functional form of the modified PFS framework.

Findings are that protection is for sale but only for those sectors that are very effective in lobbying the government via associations. This suggests that sectors with a greater number of firms that lobby by means of their membership to associations are very effective and achieve positive trade protection. Including additional political economy factors that reflect the firm-specific strength of a sector appears to be substitute in terms of lobbying strategy.

The remainder of the chapter is organized as follows. In Section 2, a discussion of relevant literature is presented, followed by Section 3 where the theoretical framework is outlined and the hypothesis is built for analysing the data outlined in section 4. Section 5 then outlines the Methodology. Section 6 summarizes the overall findings and concludes the chapter.

### **3.2. Literature**

The literature on PFS has recognized the limitations for undertaking this estimation for developing countries. Issues with the availability of data has made it hard to discern the extent to which political economy factors determine trade policy for these countries. Weymouth (2012) uses the WBES data for 2002-2005 for over 42 developing and transition countries to examine the determinants of lobbying and perceived policy influence. His estimates give support to the hypotheses that lobbying and influence increases with

firm size and market power in these countries. However, India is not included in this study because WBES data for India is not comparable with the global dataset. This warrants a case specific study of India using the WBES data that is undertaken in this chapter.

Chen (2013) shows that firm-level heterogeneity determines the nature of firm engagement with government officials in China. A Chinese firm-director panel dataset is used to examine the matching of heterogeneous firms and politicians using 36,308 detailed observations. The results show that the more productive firms are the ones paired with more powerful politicians. Olarreaga et al. (1999) conclude that industrial lobbies had an important influence on the determination of Mexican trade policy. They conduct a survey with Mexican business executives and conclude that only three percent of the executives think that it is useless to attempt and influence government policy. This shows the importance attached to lobbying as a means of influence on trade policy for Mexico.

Campos and Giovannoni (2007) provide evidence on lobbying and influence for 25 transition countries. Their results suggest that firm size and ownership are amongst the most important determinants of lobby membership, even for less developed countries. Further, if a firm is foreign-owned it is more likely to seek membership to lobby groups and governments could also be particularly attentive to requests from foreign investors. Foreign firms in India are subject to greater trade regulations than domestic firms, such that foreign ownership could imply that they must lobby harder to achieve the same influence. It can also be hypothesized that firms with foreign ownership are also likely to have an advantage in negotiating with foreign partners in international negotiations such that they would leverage this by taking membership in domestic lobbying associations for a better stance at lobbying the policy-makers.

If firms in a given industry are spread across the country, then their influence on the government's decision-making process can be stronger as they would exert their influence through different channels (Facchini et al, 2006). This can in addition be linked to greater political representation across different locations in the country. At the same time, it has been suggested in earlier literature that it could be harder/expensive for firms that are spread out to organize and lobby. The concentration of firms in geographical locations can have important implications for cooperation in lobbying. To explain effectiveness in terms of membership to associations, this reasoning would

imply that firms in sectors with lower geographical concentration would be more likely to achieve effectiveness in lobbying by means of their membership.

### **3.3. Theoretical Framework**

#### **3.3.1 PFS and Lobbying Effectiveness**

A heterogeneous measure of lobbying effectiveness was introduced in earlier chapter to replace the binary identification of the PFS model. The literature on collective action has often repeated that trade associations provide a common lobbying organization that can handle the concerns of industries in a more effective manner than if the firms lobbied themselves as argued in Olson (1971). The national associations in India also seem to have a significant say government's policy formulation. It can also be argued that following political organization, the industries were able to overcome the free rider-problem to different degrees to lobby such that they are more or less effective in lobbying. To test this proposition, a proxy measure was constructed for lobbying effectiveness based on the proportion of firms that are members of associations in every industry.

The robustness of the baseline findings is then checked to the concerns that membership may not always imply actual lobbying effectiveness. A different measure is constructed by introducing a preliminary stage where the determinants of membership are estimated. In addition to lobbying for trade policy influence, association membership is a source of political support for vote-maximizing politicians. Membership with an association may thereby increase the political activity and influence of the firm, as emphasized in Weymouth (2012). There is a cost for membership to the lobby association. In turn, a member of an association then derives a benefit. Both the lobbying costs and benefit depend on firm and industry-level characteristics, as evidenced in the existing literature. The decision to lobby by means of membership to an association depends on the benefit outweighing the cost.

Membership brings benefit when firms cooperate in a given sector and lobby the government through the association. If all firms in a given sector lobby the government as members of associations, they have solved the free-rider problem and all firms cooperate to lobby effectively. While, as stated earlier,



not all membership is to lobby and may in fact be just to serve the purpose of political support. Therefore, if some firms join the association but do not actually lobby as members, this would mean that such firms free-ride and that would make a sector less effective than a sector where all firms are lobbying as members of associations. Thereby, I predict the likelihood of firms to lobby effectively as members of trade associations to achieve influence on trade policy. The predicted probabilities for firms were collapsed by WBES sectors, taking an average across all firms that map to each sector. Therefore, such a predicted measure can be understood as the likelihood of firm lobbying as members of associations in terms of cooperation in lobbying versus free-riding.

### **3.3.2. Additional Political Factors**

There are specific arguments relevant for Indian trade policy that may be left out in the empirical specification for protection in the PFS and in the modified framework. As mentioned earlier, there is no usable data on lobbying in India, such that information on direct industry and government interactions are not available. These direct interactions can take various forms, which in the traditional PFS set-up can be attributed to the additional error term in the empirical estimation. Such interactions are included by introducing an additional factor in the government objective.

Goldberg and Maggi (1997) introduced such additional variables into the PFS. This argument was taken forward by Ederington and Minier (2008), included additional terms into the trade policy equation, arguing that this can actually reverse some of the fundamental predictions of the model. In traditional PFS, the government maximizes industry contributions and (anonymous) utilitarian social welfare and there is no scope for additional factors. However, there can be other political factors that can influence government maximization. Examples include employment in marginal constituencies and other forms of representation.

Following the explanation in Goldberg and Maggi (1997) and Ederington and Minier (2008), the modified PFS framework is estimated with an additional political economy factor that can potentially affect trade protection in India.

The empirical extension derives from a well-specific alternative hypotheses, suggesting the additional regressor and its functional form that enables a further check on the robustness of the findings in the baseline.

To include additional political economy factors, the government objective can be characterized as a sum of the contribution schedules of lobby groups weighted by lobbying effectiveness  $\gamma_i$ , the aggregate voter welfare, weighted by  $\alpha$ , and an additional factor. In the new framework, the government attaches a relative weight of  $b$  to this additional factor, which implies the government weighs every individual by the weights attached to the overall welfare, their effectiveness in lobbying as producers and any other political factor ( $\alpha + \gamma_i + b$ ). Assume  $l_i$  is the additional political economy factor defined above. The marginal effectiveness of the additional political economy factor now enters the structural determination of trade protection. A question of importance in the PFS framework is how the interest groups would choose between cooperative lobbying and other factors. For the total offerings forwarded to the government in the PFS model, firms in an industry could choose to divert resources from cooperative lobbying to additional political factors.

### 3.4. Data

One contribution of this study is to assemble a dataset that combines industry, trade and lobbying data for the Indian manufacturing sector. Industry data is from All India Survey of Industries. The Indian Industrial Classification is the National Industrial Classification (NIC) developed following the ISIC Revision 3 of classifying data according to the kind of economic activity. The industry sample consists of 98 sectors ( $i$ ) at the 4-digit of manufacturing industries. The firm-level characteristics are from the WBES in 2005, for 2,286 firms ( $j$ ), categorized into 22 sectors ( $k$ ). The distribution of firms across the WBES sectors is attached in Appendix Table B.

### Lobbying Effectiveness

The first measure for lobbying effectiveness,  $\gamma_i^a$ , is measured as the proportion of firms that are members of associations in each sector. It is constructed using information identified from the WBES, using the question: "Is your firm

a member of a producer or trade association?" A positive answer is coded as 1, while the value of 0 was assigned to a negative answer, identified by the binary variable *members*, shown in Appendix Table B. Further, another measure is constructed based on the proportion of firms that are members in each of the 22 sectors, mapped to the corresponding 98 4-digit sectors of NIC. Each 4-digit sector was allocated the measure of the corresponding sector of the WBES.  $\gamma_i^a$ , across the 4-digit sectors, is shown in **Table 3.2**. Approximately 77 per cent of the firms in the WBES sample (2,286 firms) said they were members of an association. The sectors of Textiles and Electrical Appliances are found to have the highest percentage of firms as members of associations.

### **Predicted Lobbying Effectiveness**

The second measure of lobbying effectiveness,  $\widehat{\gamma}_i^b$ , consists of the predicted probability values (the likelihood of firm membership to lobby effectively for trade policy) for the binary measure of Membership. The probability values were explained by the following firm-level and the sector-level determinants. Firm Size, measured as the log of average number of workers for each firm from the WBES survey, is identified using the following question on the number of permanent workers: "Average number of workers during fiscal year 2002. Permanent workers are defined as all paid workers that are employed for a term of one or more years and/or have a guaranteed renewal of their employment contract." Foreign Ownership, is a binary variable, constructed across firms using percentage foreign ownership calculated across sectors using the following question: "What percentage of your firm is private foreign ownership?" Competitors, the number of competitors faced by a firm from the WBES using the question: "Thinking of your firm's major product line in the domestic market, how many competitors do you face?" Finally, the sector level determinants included Geographic concentration from Lall et al. (2003) and Output concentration measured as the share of output produced by the four largest firms in a given sector, from the ASI, and mapped to the 22 sectors of the WBES. **Table 3.1** presents the results for the determinants of lobbying via membership to associations. Columns (1)-(4) include controls on competition and output concentration. Standard errors are robust and clustered by 22 sectors of WBES.

**Table 3.1: Determinants of Effectiveness in Lobbying using Membership**

Variables	(1)	(2)	(3)	(4)
Firm Size	0.253*** (0.070)			0.237*** (0.065)
Foreign Ownership		1.164*** (0.376)		0.787** (0.382)
Geog. Concentration			-0.269*** (0.079)	-0.224*** (0.077)
<b>Controls</b>				
Output Concentration	-0.207 (0.14198)	-0.013 (0.057)	-0.046 (0.062)	-0.247 (0.160)
Competitors	-0.0001 (0.00010)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Constant	0.107 (0.262)	0.788*** (0.096)	1.350*** (0.174)	0.583** (0.262)
N	892	1,052	1,052	892
Pseudo R-Square	0.039	0.017	0.021	0.057
Log Likelihood	-432.450	-534.582	-528.998	-424.256

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$

**Table 3.1** examines the determinants of membership to associations for manufacturing firms in India using data from the WBES for 2005. Columns (1)-(4) include control variables on competition and output concentration. Probit coefficients are reported and the marginal effects are used to construct lobby effectiveness. This is undertaken with the underlying intuition that lobbying by means of associations is potentially more effective than any other means in India. Individual correlations are observed in column (1) to (3). Robust standard errors clustered by 22 sectors of WBES in parentheses.

The lobbying effectiveness measures  $\gamma_i^a$  and the predicted estimates  $\widehat{\gamma}_i^b$  are compared in **Table 3.2** below. Only weak correlation is found between these measures. This aligns with the first qualification made in the introduction regarding membership not being the same as lobbying by means of this membership.

**Table 3.2: Lobbying Effectiveness and Predicted Effectiveness**

S. No.	Industry	Firms	$\gamma_i^a$	$\hat{\gamma}_i^b$
1	Textiles	222	1.000	0.843
2	Electrical Appliances inc. white goods	155	0.944	0.799
3	Paper & paper products	24	0.903	0.823
4	Rubber & rubber products	38	0.891	0.852
5	Electronics inc. Consumer Durables	100	0.867	0.813
6	Food Processing	155	0.855	0.793
7	Leather & leather products	74	0.842	0.423
8	Other chemicals	112	0.840	0.832
9	Machine tools inc. Machinery & parts	195	0.833	0.810
10	Drugs & Pharma	165	0.821	0.865
11	Mineral processing	32	0.817	0.797
12	Mining	3	0.816	0.603
13	Marine food processing	14	0.792	0.853
14	Structural metals and metal products	303	0.786	0.656
15	Agro processing	26	0.766	0.811
16	Garments	275	0.745	0.825
17	Paints and varnishes	20	0.680	0.799
18	Plastics & plastics products	122	0.667	0.793
19	Auto Components	218	0.614	0.806
20	Wood and furniture	16	0.466	0.743
21	Sugar	4	0.462	0.863
22	Cosmetics and toiletries	13	0.188	0.776
	Total	2,286		
	Pearson Correlation			-0.017

**Table 3.2** shows the sectors with corresponding measure of lobbying effectiveness and predicted lobbying effectiveness measures.

### Additional Political Factors

Next, a potential measure of additional political economy factors for Indian trade policy is defined. These factors can be firm-specific individual lobbying that may be a substitute for collective lobbying. If additional political factors can be understood as the firm-specific strength of a sector, the measure for such factors can be seen as the opportunity for firms to interact with the government directly. It is argued that such interactions do not occur by means of cooperative lobbying that is on contrary undertaken via the association and are firm-specific. This is measured using information from the WBES on the following question: “In a typical week over the last year, what percentage of total senior management’s time was spent in dealing with requirements imposed by government regulations including dealings with officials, completing forms, etc.?” This additional firm-level information, shown in

Appendix Table B, is taken as the mean for each sector across the 22 sectors of the WBES to construct the proxy measure for additional political economy factors  $E_i$ . Taking the average value per sector allows to interpret the additional factors as an average measure of the time spent by the firms in each sector. The measures for the WBES sectors are mapped to the 4-digit sectors. This measure can be seen as the opportunity to interact with the government directly, shown in **Table 3.3**.

**Table 3.3: Lobbying Effectiveness and Additional Political Factors**

S. No.	Industry	Firms	$\gamma_i^a$	$E_i$
1	Textiles	222	1.000	0.159
2	Electrical Appliances inc. white goods	155	0.944	0.129
3	Paper & paper products	24	0.903	0.329
4	Rubber & rubber products	38	0.891	0.320
5	Electronics inc. Cons. Durables	100	0.867	0.178
6	Food Processing	155	0.855	0.178
7	Leather & leather products	74	0.842	0.270
8	Other chemicals	112	0.840	0.192
9	Machine tools, Mach. & parts	195	0.833	0.146
10	Drugs & Pharma	165	0.821	0.149
11	Mineral processing	32	0.817	0.128
12	Mining	3	0.816	0.145
13	Marine food processing	14	0.792	0.180
14	Structural metals and metal products	303	0.786	0.087
15	Agro processing	26	0.766	0.130
16	Garments	275	0.745	0.361
17	Paints and varnishes	20	0.680	0.203
18	Plastics & plastics products	122	0.667	0.175
19	Auto Components	218	0.614	0.143
20	Wood and furniture	16	0.466	0.733
21	Sugar	4	0.462	0.147
22	Cosmetics and toiletries	13	0.188	0.157
	Total	2,286		
	Pearson Correlation			-0.213

**Table 3.3** shows the sectors and corresponding measures of Lobbying Effectiveness  $\gamma_i^a$  and the measure for Additional Political Factors  $E_i$ , the average time firms in a sector spend on direct interactions with the government.

The sector of Garments and Wood and Furniture seem to be spending the most time, on average in such interactions. The additional factor is firm-specific such that it represents individual lobbying by firms in a given sector. The correlation between the two measures for interactions and the additional factor suggests evidence of these being substitutes. Textiles is the sector that is most effective in terms of lobbying effectiveness while the use of additional factors is quite low, suggesting this sector is very effective in lobbying by means of membership to associations, not resorting very much to additional political factors for influence on trade protection. On the other hand, the sector Wood has the highest use of additional political factors and correspondingly low lobbying effectiveness in terms of  $\gamma^a$ . At the same time, sectors such as Paper and Leather are not only very effective in lobbying but are also using substantial additional factors. This suggests a weak negative correlation such that this choice needs careful examination at the firm-level both in terms of specific policy instruments and their determinants.

### 3.5. Methodology

#### 3.5.1. PFS with Lobbying Effectiveness

Model 1 includes the lobbying effectiveness measure defined as the proportion of firms that are members of associations for each 4-digit level of the NIC. The dependent variable is the tariff ratio,  $\frac{\tau_{it}}{1+\tau_{it}}$ , varying across time  $t$  and sector  $i$ , multiplied by the absolute value of the import demand elasticity,  $e_i$ . On the right hand side, the first term is  $z_{it}$ , defined as the ratio of output to imports  $X_{it}/M_{it}$ . Lobbying effectiveness,  $\gamma_i^a$  is interacted with import penetration,  $z_{it}$ , where the parameter  $\beta$  will test if the relationship between inverse import penetration and trade protection is homogeneous or depends on the lobbying effectiveness of the sector below. The modified PFS model with effectiveness is estimated using the following specification below, adding an error term,  $\mu_{it}$ :

$$\frac{\tau_{it}}{1+\tau_{it}} e_i = \rho z_{it} + \beta \gamma_i^a z_{it} + \mu_{it} \quad [4]$$

Where  $\rho = \frac{-A}{a+A}$  and  $\beta = \frac{1}{a+A}$ . Empirical estimation of equation [4] yields the coefficients  $\rho$  and  $\beta$ . The structural parameters  $\alpha$  and  $A$  can then be derived as

point estimates using the non-linear combinations of the parameter estimates. However, with the modified model the interpretation of the structural findings cannot be compared with the traditional PFS and is not the primary purpose in this chapter. The instrumental variables used for import penetration include the lagged values of inventories for each sector and the square of the number of production workers for every sector (as a measure of the labor intensity across sectors). A similar strategy to enable comparison with previous results is used. As observed in the previous chapter, following Gawande and Li (2009), the Limited Information Maximum Likelihood (LIML) estimator is used to enable inference with weak instruments, owing to better small sample properties than Two Stage Least Squares (2SLS).

In Model 2, a binary equation is used to estimate the likelihood of firm lobbying via its membership of associations. This is undertaken using the set of firm and industry characteristics (discussed above) to construct  $\widehat{\gamma}_i^p$ . The predicted values enter the structural framework of PFS as an interaction with the endogenous variable  $z_{it}$ . The IV strategy is similar to Model 1.

**Table 3.4** presents the results from estimating Model 1 and Model 2. It is important to note that introducing the heterogeneous measures of lobbying effectiveness changes the interpretation of the coefficients of the traditional PFS model, while the overall predictions are preserved. A negative and significant coefficient for  $\rho$  in column (1) suggests the corresponding inverse relationship for inverse import penetration and tariff protection when the measure of lobbying effectiveness is zero. This relationship turns positive at the value of lobbying effectiveness of 0.745 for the sector Garments. For the most effective sector ( $\gamma_i = 1$ ), the sum of the coefficients  $\rho$  and  $\beta$  is positive and significant at 0.04, that suggests an overall positive relationship with the inverse import penetration. The higher the ratio of output to imports, the higher is the lobbying effectiveness for positive influence on tariff protection. Model 2 presents the results for robustness of PFS using the predicted lobbying effectiveness measure  $\widehat{\gamma}_i^b$ . The signs of the coefficients  $\rho$  and  $\beta$  are robust such that it is observed that the relationship between trade protection and inverse import penetration is increasing in the predicted probability of lobbying by means of being a member of an association. This reaffirms the finding that the higher the import penetration, the more intense is the association lobbying for positive influence on tariff protection. The marginal effect for  $X/M$  (when



$\hat{\gamma}_b=0$ ) is however lower compared to Model 1, while the overall relationship is more positive (for  $\hat{\gamma}_a=1$ ). This suggests that even if the qualitative findings of the model are robust, the downward bias in the interaction term is reduced by the predicted measure of effectiveness.

**Table 3.4: Protection for Sale with Lobbying Effectiveness**

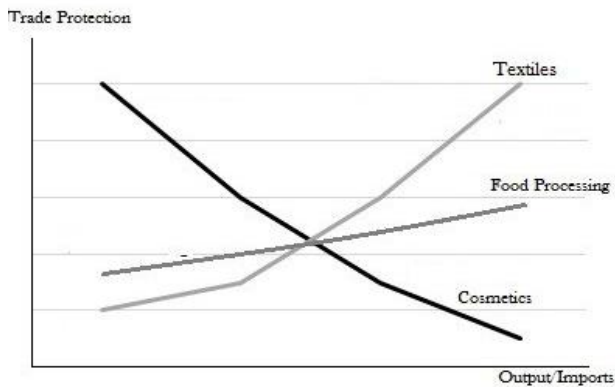
	Model 1	Model 2
	Baseline	Robustness
Variables	(I)	(II)
X/M	-0.103** (0.037)	-0.840* (0.347)
X/M* $\hat{\gamma}_i^a$	0.143** (0.047)	
X/M* $\hat{\gamma}_i^b$		1.051* (0.432)
<i>Instrumental Variables</i>	Lag Inventories, Workers Squared, $\hat{\gamma}_i^a$ .Lag Workers	Lag Inventories, Workers Squared, $\hat{\gamma}_i^b$ .Lag Workers
<b>Weak identification test</b>		
<i>Kleibergen-Paap rk</i>	X/M	10.80
<i>Wald F statistic</i>	X/M* $\hat{\gamma}_i$	10.20
		11.86
		11.77
<b>Overidentification</b>		
<i>Anderson Rubin Statistics</i>		0.243
<i>Chi-square P-values</i>		0.774
		0.62
		0.37
N	876	876

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; ; \* $p < 0.10$

**Table 3.4** shows the results from the estimation of the PFS using Limited Information Maximum Likelihood. Robust standard errors in parentheses. First-stage F-statistics are heteroskedasticity-robust. The Weak Identification Test has  $H_0$ : equation is weakly identified, gives the Kleibergen-Paap rk Wald F statistic as more than 10 in both Models for each endogenous variable. The Anderson-Rubin Statistics tests the joint significance of endogenous regressors in main equation such that over-identifying restrictions are valid. In both Models, the null cannot be rejected.

In the traditional PFS model, the partial derivative of trade protection with respect to inverse import penetration is  $\rho$  for sectors that were politically unorganized (binary measure of political organization being 0) and  $\rho + \beta$  for sectors that are fully organized (binary measure being 1). Thereby, if  $\rho + \beta$  is positive and significant for  $\gamma_i = 1$ , the estimates are in line with the findings of the PFS model. Further, in the model the partial derivative of trade protection with respect to the inverse import penetration is the sum  $\rho + \beta\gamma_i$ , this relationship is no longer homogeneous and differs by the value of lobbying effectiveness. This relationship is depicted in **Figure 3.1** for different sectors. It shows an upward sloping relationship for the most effective sector Textiles (Effectiveness=1) corresponding to full organization, as defined in traditional PFS. For the least effective sector Cosmetics, the downward sloping relationship is comparable to being unorganized in traditional PFS. Food Processing is picked which is effective but has a lower effectiveness of  $\gamma_i^a = 0.85$ , a positive relationship is observed but with a lower marginal effect of 0.02. Therefore, for the very effective sectors, a higher output to import ratio maps to higher trade protection. The relationship between import penetration and trade protection is thereby not homogeneous and depends on the lobbying effectiveness of the sector.

**Figure 3.1: Traditional PFS versus PFS with  $\gamma_i^a$**



**Figure 3.1** shows the sum  $\rho + \beta\gamma_i$ , the relationship between trade protection and inverse import penetration is no longer homogeneous and differs by the value of lobbying effectiveness for different sectors. It shows an upward sloping relationship for the most effective sector of Textiles (Effectiveness=1) that can be said to correspond to full organization as defined in traditional PFS. For the least effective sector of Cosmetics, the downward sloping relationship is comparable to being unorganized in traditional PFS.

The overall picture provides evidence that introducing heterogeneity in the PFS model in terms of differences in lobbying effectiveness helps understand the non-homogeneity in the nature of relationship between import penetration and trade protection. In my modification of the PFS model, this relationship is found to depend on the lobbying effectiveness of the sector. Introducing different measures of effectiveness further re-iterates this evidence. The findings also confirm the overall positive correlations observed between protection and import penetration in Treffer (1993) and Baldwin (1989) across industries.

### 3.5.2. PFS with Lobbying Effectiveness & Additional Political Factors

The study also tests the hypothesis that industries with higher import penetration, achieving higher protection, can be further explained by additional political economy factors that vary by the sector. Re-specifying the equation and introducing time variation, the following stochastic version of the estimable equation is estimated:

$$\frac{\tau_{it}}{1+\tau_{it}} e_i = \rho z_{it} + \beta \gamma_i^a z_{it} + \delta E_i z_{it} + \mu_{it} \quad [5]$$

$\rho$ ,  $\beta$  and  $\gamma$  are defined in terms of the underlying terms  $\alpha$ ,  $A$  and  $b$ : Where  $\rho = \frac{-A}{a+A}$ ,  $\beta = \frac{1}{a+A}$ ,  $\delta = \frac{b}{a+A}$ . The partial derivative of trade protection with respect to inverse import penetration is now the sum  $\rho + \beta \gamma_i^a + \delta E_i$ . The three coefficients  $\rho$ ,  $\beta$  and  $\delta$  that are estimated off the variation in  $z_{it}$  and its interaction with  $\gamma_i$  and  $E_i$  respectively. Note,  $\delta$  is estimated using the interaction of  $E_i$  with  $z_{it}$ . Empirical estimation of equation [5] yields the coefficients  $\rho$ ,  $\beta$  and  $\delta$ . The structural parameters  $a$ ,  $A$  and  $b$  can then be derived as point estimates using the non-linear combinations of the parameter estimates. However, as mentioned above these structural parameters cannot be compared to those from the traditional PFS.

The results are outlined in **Table 3.5**, when  $E_i$  is interacted with import penetration. The relationship of trade protection is now defined in terms of the inverse import penetration and two interaction terms. This relationship between tariff protection and the ratio of output to imports now depends on lobbying effectiveness and additional political factors. The overall positive relationship between tariff protection and inverse import penetration still holds when there are no additional factors such that  $E_i = 0$ . However, this

relationship is reversed when the additional political economy factors are high. This suggests that lobbying effectiveness in terms of association membership and the opportunity for direct interactions with the government may in fact be substitutes as lobbying strategies.

**Table 3.5: PFS with Additional Political Factors**

Variables	Model 3 (I)
X/M	-0.074** (0.037)
X/M* $\gamma_i^a$	0.142*** (0.044)
X/M* $E_i$	-0.132* (0.077)
<i>Instrumental Variables</i>	Lag Inventories, Workers Squared, $\gamma_i^a$ .Lag Workers $E_i$ .Lag Inventories
<b>Weak identification test</b>	
<i>Kleibergen-Paap rk</i>	X/M 8.87
<i>Wald F statistic</i>	X/M* $\gamma_i$ 8.52
	X/M* $E_i$ 7.67
<b>Overidentification</b>	
<i>Anderson Rubin Statistics</i>	0.001
<i>Chi-square P-values</i>	0.978
N	876

**Table 3.5** shows results from the estimation of Protection for Sale (PFS) using Limited Information Maximum Likelihood (LIML). Model 3 uses the additional political economy factors in every sector to proxy for lobbying effectiveness in the modified PFS model. The specification derives from the structural model of PFS. Robust gives the Kleibergen-Paap rk Wald F statistic as more than 10 for each significance of endogenous regressors in main equation such that over-identifying restrictions are valid. The null cannot be rejected.

### 3.6. Findings & Conclusion

**Table 3.6** summarizes the marginal effects for the baseline Model 1 and Model 3. This is interesting as a means of comparison of different kinds of lobbying. Given the estimated overall positive relationship between trade protection and inverse import penetration, the evidence suggests that higher lobbying effectiveness is associated with higher trade protection. However, in Model 1 this depends on lobbying effectiveness while in Model 3 in addition to effectiveness, it depends on other political factors. So, is "Protection still for Sale with Lobbying Effectiveness?" In light of the findings above, it is concluded that protection is still for sale with Lobbying Effectiveness, with differences based on values of the heterogeneous measure of effectiveness.

The study also finds that the traditional PFS hypothesis in terms of the sum of coefficients  $\rho + \beta$  for Model 1 and  $\rho + \beta + \delta$  for Model 3 is positive for higher values of lobbying effectiveness and in addition the political factor respectively. These estimates seem to confirm to the traditional findings of the PFS model. However, it is interesting to note that, for lower values of effectiveness and higher measures of additional political economy factors, the sum of coefficients is no longer positive. For lower values of this measure, the relationship between trade protection and inverse import penetration is found reversed.

In summary, for the PFS model with lobbying effectiveness, protection is for sale but only for those sectors that are very effective in lobbying the government via associations. In terms of the empirical measure, this implies that the sectors with a greater number of firms that lobby by means of their membership to associations are very effective in lobbying and are successful in achieving positive trade protection. Controlling for additional political economy factors in this model, further re-instates this finding but factors in a substitute in terms of lobbying strategy.

**Table 3.6: Overall Findings**

Industry	Model 1		Model 3	
	$\gamma_i^a$	$\rho + \beta\gamma_i^a$	$E_i$	$\rho + \beta\gamma_i^a + \delta E_i$
Textiles	1.000	0.04	0.159	0.047051
Electrical appliances inc. white goods	0.944	0.032056	0.129	0.043125
Paper & paper products	0.903	0.026161	0.329	0.010881
Rubber & rubber products	0.891	0.0244	0.320	0.010269
Electronics inc. consumer durables	0.867	0.020933	0.178	0.025546
Food processing	0.855	0.0192	0.178	0.023789
Leather & leather products	0.842	0.017421	0.270	0.009939
Other chemicals	0.840	0.01719	0.192	0.019966
Machine tools inc. machinery & parts	0.833	0.016167	0.146	0.02506
Drugs & pharm	0.821	0.01443	0.149	0.022947
Mineral processing	0.817	0.01383	0.128	0.025057
Mining	0.816	0.013735	0.145	0.022773
Marine food processing	0.792	0.010208	0.180	0.014609
Structural metals and metal products	0.786	0.009357	0.087	0.026131
Agro processing	0.766	0.006546	0.130	0.017609
Garments	0.745	0.0036	0.361	-0.01578
Paints and varnishes	0.680	-0.00576	0.203	-0.00424
Plastics & plastic products	0.667	-0.00767	0.175	-0.00245
Auto components	0.614	-0.01522	0.143	-0.00565
Wood and furniture	0.466	-0.0364	0.733	-0.10466
Sugar	0.462	-0.037	0.147	-0.0279
Cosmetics and toiletries	0.188	-0.07619	0.157	-0.06807

**Table 3.6** compares the coefficients across the models.

## 4. JOIN HANDS OR WALK ALONE? EVIDENCE ON LOBBYING FOR TRADE POLICY IN INDIA

### 4.1. Introduction

Chapter four puts forth evidence on the strategies used for interactions between industry and government for trade policy outcomes in India. The study analyses this choice of strategy between collective lobbying (*Join Hands*) by a group of firms or individual lobbying (*Walk Alone*) by a single firm. The following questions are answered. First, what lobbying strategies do firms use for trade policy influence? Second, how does firm choice of lobbying strategy link to specific trade policy outcomes? Finally, what drives firm lobbying strategy for trade policy influence? 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.

Literature suggests differences between the uses of each type of *single lobbying strategy* (Hojnacki and Kimball, 1998). First, collective lobbying helps communicate preferences of a group, providing the advantage of lower costs to each firm and greater legitimacy especially in developing countries, as also observed for India (Narlikar, 2006). Second, direct interactions allow interest groups to provide specialized and discrete information to policy-makers, and is expected to be more viable when fixed costs are low and the output includes firm-specific policy (Bombardini and Trebbi, 2012; BT henceforth). It is argued that certain firms with higher stakes in the specific trade policy, adopt what is termed as a *dual lobbying strategy* i.e. a unique combination of collective and individual lobbying.

While public discussion on the choice of lobbying strategies for trade policy in India is widespread, academic research has been limited owing to little or no data. In the absence of data specifically for trade policy in India, a primary survey was designed and implemented to collect original information across 146 manufacturing firms interviewed from the period of July 2013 to November 2014. Both members and non-members of business associations

were interviewed with reference to the sampling firm of the World Bank Enterprise Survey (WBES). The survey collected firm responses on lobbying in a typical year across 2010-2014. It also captured how lobbying evolved since liberalization in 1991.

The findings are a first for India, and suggest the following. First, Indian manufacturing firms ‘join hands’ to lobby (collective strategy) when targeting sector-wide outcomes in the nature of public goods, and ‘walk alone’ (individual strategy) when lobbying for firm-specific outcomes. Second, a dual strategy is preferred relative to single strategies when firms seek to increase the likelihood of their influence for changes in current policies. Finally, 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, suggesting a strong competition effect (driving cooperation and individual lobbying) over any free-riding.

The remainder of this chapter is organized as follows. Section 2 outlines brief details on the survey. Section 3 outlines stylized facts on the choice of manufacturing firms to lobby the government for trade policy. Section 4, presents the theoretical framework and outlines the hypothesis for analysing the survey data. Section 5 presents the empirical analysis. Section 6 outlines the broad findings. Section 7 concludes the study by providing a discussion on policy implications and further research.

## 4.2. Survey

The survey scheme comprised five stages in total. **Table 4.1** presents a summary of each stage of the survey along with the criteria followed<sup>15</sup>. It begins with a sampling reference and then undertakes stratified sampling. The attempt was to make the sample representative to include both association members and non-members. The sampling procedure is randomized and the final target sample consists of 250 firms that eventually gave 146 eligible responses.

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<sup>15</sup> Details are available in Saha (2017b).



**Table 4.1: Survey Summary**

Detail/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 350	Lists Re-arranged in descending order Random Selection	Distribution of firms by size. Draw one firm at fixed intervals of size + Budget (Optimum Allocation)	By Firm Size (Number of Workers) By Strata
E-Mails Final Appointments	320 250	Potential Respondents Target Coverage	Sectoral weights From World Bank Enterprise Survey (30 Firms dropped) Follow-ups+ Contribution to economic activity+ Budget	By Economic Sectors By Economic Sectors
Actual Interviews	146	Actual Coverage	Complete and eligible responses	By Economic Sectors

*Table 4.1 presents the summary of sampling scheme for the survey.*

A systematic sampling procedure was chosen with two strata, list from CII and list of non-members from phone directories in major cities in India. 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. The first step was to create a reliable reference for the sampling. The closest and most relevant reference in this 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. 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. A disproportionate random sampling technique was adopted as there was no a priori for the distribution of firms across the two strata in the survey.

The sampling was then randomized to deal with the potential problem of large firms being over-represented in the sample. The final sample size (distributed across the two different strata) was set 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 resulting list consisted of 350 firms drawn randomly from the distribution of firms. 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. 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). Every possible attempt was made to ensure that the sample of firms surveyed were representative of the population of firms under study, although it is recognized it is not possible to do so fully and there may be potential issues with the final sample that could bias the results. The attempt was to deal with the potential bias at each stage<sup>16</sup>. 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.

### **4.3. Stylised Findings**

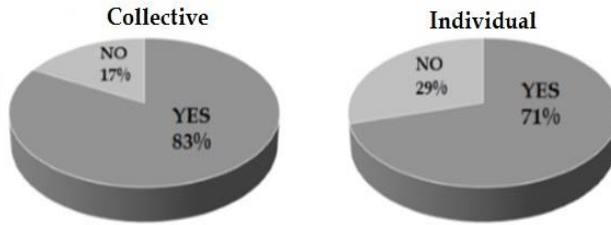
The sample of firms surveyed stressed the rise in their lobbying efforts from the 1990s as the government became more responsive to industry. Also, while policy issues such as MFN (Most Favored Nation) tariffs, import licenses and Non-tariff measures were primary issues of approaching the government in late 90s, other instruments such as preferential tariffs became quite important by the end of 2000s. These other instruments also included *Special Consignments* (SC), where firms might face specific issues related to

incoming imports at the border which relate to custom delays and procedure. In this section, the data for MFN and special consignments is examined.

Before exploring the mechanism of this interaction, it is attempted to assess how often firms interact with the government for lobbying for trade policy in India. In the 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 the sample reported to be lobbying, such that it is found 94 per cent of the manufacturing firms in the 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.

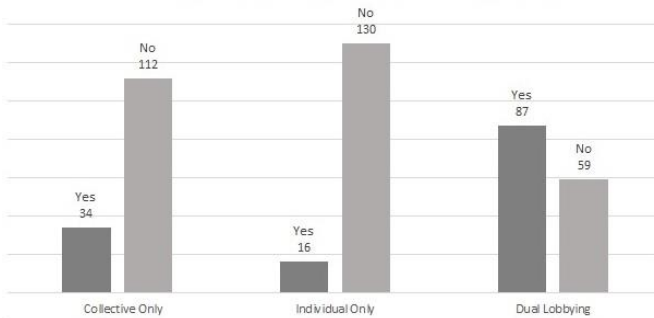
An understanding of lobbying strategies followed by Indian firms can motivate a clear mechanism for both associations and firms to interact with the government. Overall decision on lobbying differs from pursuing different strategies to lobby, such that questions are also asked to measure the firm decision on the different choices, again, based on a typical year during the period 2010-2014. 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, the binary variable lobbying, is examined; 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. It is found that 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 4.1** below.

**Figure 4.1: Firm Decision on Lobbying**



Second, firms that choose the exclusive use of each single strategy and a dual one are identified, using *Lobbying Strategy* such that the 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 4.2** below as exclusive choices. The figure suggests the dual strategy as the preferred choice to lobby for trade policy influence.

**Figure 4.2: Lobbying Strategy**



To examine the differences in lobbying strategy by outcomes, the firms are asked questions on their intensity of lobbying activity for specific trade policy outcomes. Termed as *Lobbying Activity*, firms were asked about various trade policy outcomes, but in this chapter the case of MFN and Special Consignments are compared. The intensity of lobbying in the survey is captured as measure of lobbying activity for each outcome of MFN and SC"

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 it is found that 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 **Table 4.2** and **Table 4.3** below. These numbers for the choice of each strategy (by outcome) motivates an empirical analysis of lobbying strategies by different trade policy outcomes.

**Table 4.2: MFN by Lobbying Strategy**

Collective	Individual				Total
	1	2	3	4	
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

*Table 4.2 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 4.3: Special Consignments (SC) by Lobbying Strategy**

Collective	Individual				Total
	1	2	3	4	
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

**Table 4.3** 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.

#### 4.4. Theoretical Framework

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

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 one. The study considers the possibility that firms can lobby for both trade policy outcomes, with trade-offs, at the same time using a dual strategy. It is assumed 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 status of a product-specific policy. Therefore, it is assumed 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 (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 firm specific outcomes.

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 exist 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, the study follows 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 use 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. Based on this, the free-riding versus competition effect is examined 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.

#### 4.5. Empirical Analysis

The choice of lobbying strategy is examined using two main empirical methods. First, lobbying strategy of the firm is examined as a binary choice, examining the basic characteristics of collective and individual lobbying strategy. Second, defining the strategies as exclusive choices, with the additional strategy of dual lobbying, the determinants of lobbying strategy are examined across the two single strategies and the dual strategy<sup>17</sup>.

Firm choice of lobbying strategy is explained by various firm and industry-specific characteristics. The primary variables of interest are: Sector-Wide defined as lobbying activities for sector-wide outcomes proxied by lobbying for MFN tariffs (MFN); Firm-Specific is lobbying activity for firm-specific outcomes proxied by lobbying for special consignments (SC); and Concentration is calculated as the output share of the four largest firms in a sector, calculated using data from All India Survey of Industries (ASI). Control

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<sup>17</sup> Saha (2017b) also accounts for an apparent nested structure of these choices, and estimates a nested logit model where firms take the decision on membership to the trade association, before deciding to undertake collective or individual lobbying.



variables include: Elasticity that are the elasticities of substitution from Broda and Weinstein (2004), taken as the logarithmic transformation to deal with outliers for each sector. Firm Size is measured using the log of number of workers, where firms were asked: "What is the size (number of workers) of your firm?". Foreign is a binary variable that takes the value 1 for foreign ownership and 0 for none from the question: "What is the ownership structure of your firm in terms of Private Foreign Ownership?" Competition is a variable that takes the values 1-4, from the survey question: "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).

#### 4.5.1. Collective & Individual Lobbying Strategy: Probit

The binary variable *Lobbying* takes the value one when the firm reports to have undertaken lobbying in a typical year, using the single strategy of *Collective* or *Individual* lobbying, during the period 2010 – 2014. The choice depends on the benefit from lobbying using a specific strategy outweighing the cost to lobby. The following *probit* equation [6] is estimated, where *Pr* is probability, with the main covariates of interest in **R** and the additional control variables in **C**, assuming the error terms are independent and normally distributed on the entire sample of 146 firms:

$$\Pr(\text{Lobbying}_i) = \Pr(\beta_0 + \beta R + \eta C + e_i > 0) \quad [6]$$

The main parameters of interest are the marginal effects of lobbying activities for sector wide (MFN) and firm-specific outcomes (SC). The estimates are based on comparisons between firms with different intensity of lobbying activities for the outcomes. Sector-level output concentration helps examine the importance of competition and free-riding with the different effects of lobbying activities. Columns 1 to 6 of **Table 4.3** present the baseline results for collective and individual strategy. Model 1 examines the effect of lobbying for sector-wide outcomes and Concentration as primary variables of interest, and Model 2 includes firm-specific outcome and Concentration. To examine any potential trade-offs, sector-wide and firm-specific lobbying activity are introduced together in Model 3. Control variables include elasticity of substitution, firm size, foreign ownership, and the number of competitors; a constant term is also included in all three models. To deal with the empirical complication that observations within each sector may not be independently

distributed, robust standard errors and cluster bootstrapped standard errors are reported to account for small sample size.

Unsurprisingly so, it is found that lobbying activity for the sector-wide outcome is robustly and positively correlated with adopting a collective strategy, both in Models 1 and 3. An increase in the intensity of lobbying activities for firm-specific outcomes is similarly correlated with adopting an individual strategy, both in Models 2 and 3. *Hypothesis 1a* is thereby supported by the baseline.

**Table 4.4: Collective & Individual Lobbying: Probit Model Estimates**

Variables	Model 1		Model 2		Model 3	
	Collective (1)	Individual (2)	Collective (3)	Individual (4)	Collective (5)	Individual (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)
<b>Controls</b>						
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

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

**Table 4.4** reports the probit coefficients; constant term is included in all estimations; standard errors are bootstrapped using ten replications and clustered by sector.

The most robust result for sector concentration is the negative correlation observed for the likelihood of a collective strategy across all models. No significant correlation is found for sector concentration and the choice of an individual strategy in models 2 and 3. In sectors with a large number of firms producing output, firms would therefore be likely to cooperate and pursue collective strategies. Another interesting observation is that when lobbying is included for the sector-wide outcome in Model 1, there is some positive correlation between sector concentration and the choice if an individual

strategy that disappears in Models 2 and 3. Finding a robust positive correlation for collective lobbying and concentration, suggests support for Hypothesis 2 such that competition effects appear to dominate any free-riding. 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.

In Model 1, the positive correlation between lobbying for the sector-wide outcome and likelihood of individual lobbying appears surprising. It would then be possible that firms may adopt both collective and individual strategies for certain policy outcomes. Since the objective of the study is to provide evidence on specific strategies, the results suggest re-defining them as exclusive choices, and introducing the possibility of adopting a combination of collective and individual strategies i.e. a dual strategy, as different from adopting any of the single strategies alone.

#### 4.5.2. Collective, Individual & Dual Lobbying Strategy: Multinomial Logit

To analyse firm choice of lobbying strategy, the study now distinguishes between the two single strategies of collective and individual lobbying and a combination. Lobbying Strategy is defined such that firms adopt the exclusive use of each single 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. The likelihood of lobbying is examined using the exclusive strategies as independent choices in a Multinomial Logit (MNL) model, given the objective of lobbying activity. 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:

$$\log \frac{p_{ij}}{p_{ik}} = \alpha_i + \beta_i R + \eta_i C \quad [7]$$

Lobbying strategy is examined in terms of the main covariates of interest in **R** and the additional control variables **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 4.5**.

The dependent variable is the response variable consisting of three categories of lobbying strategies as unordered choices. The likelihood of individual (single) and dual strategies is examined compared to the base of collective (single) strategy.

The analysis finds support for *Hypothesis 1a*. In Model 2, it is observed that if a firm were to increase lobbying activities for special consignments, the multinomial log-odds for selecting a dual strategy is expected to increase relative to a collective strategy; the log-odds for selecting an individual strategy is insignificant in this case. However, in Model 3, where lobbying activities are included for both the collective and firm-specific outcomes, then holding all other variables constant, it is found that if a firm were to increase lobbying activities for the firm-specific outcome by one point, then the multinomial log-odds for selecting an individual strategy relative to a collective strategy, would be expected to increase, while the log-odds for selecting a dual strategy would increase by 0.614 units. Considering proxies for both collective and firm-specific outcomes indicates the slightly higher relative log-odds of an individual strategy, compared to examining the firm-specific outcome in isolation, that indicates preference of a dual strategy.

*Hypothesis 2* finds support, such that a negative and significant coefficient is observed for concentration associated with the log-likelihood of dual lobbying in all models. If output concentration goes up, the multinomial log-odds for selecting a dual strategy is expected to decrease. The finding for dual strategy implies strong competition effects where if there are a large number of firms producing output in a given sector (lower concentration), then it is likely that firms will undertake dual strategies to increase their chance of trade policy influence. Therefore, competition is likely to lead to greater cooperation in addition to individual lobbying efforts. The strong competition effect also add support to the BT findings.

**Table 4.5: Lobbying Strategy given trade policy outcomes**

		MNL with Base-Collective Lobbying		
		Model 1	Model 2	Model 3
Variables	Categories	(1)	(2)	(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)
<b>Controls</b>				
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

Dependent variable: Lobbying Strategy = Collective, Individual, Dual

**Table 4.5** 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.

## 4.6. Findings

Overall, findings are robust across all specifications discussed. 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 firm-specific outcomes. It has been 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 firm-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 firm-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.

## 4.7. Conclusion

Prior evidence on firm lobbying strategies for trade policy in India is negligible. This chapter 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 chapter recognize drivers for utilizing dual lobbying strategies and potentially achieving more influence.

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# APPENDIX

**Appendix Table A: Summary Statistics by Years**

Variable	1990		1992		1996	
	Mean	SD	Mean	SD	Mean	SD
MFN Tariff	84.61	36.09	59.42	32.29	43.51	31.39
$\tau/1+\tau$	0.441	0.096	0.357	0.088	0.286	0.090
Import Demand Elasticity	15.46	16.33	15.46	16.33	15.46	16.33
Output (X in Rs Lakhs)	265740.00	490250.60	323287.60	546612.10	643002.20	1021357.00
Imports (M in Rs Lakhs)	25479.34	60135.34	35271.05	87494.62	91821.57	230574.70
z (Rs Lakhs)	385.35	1251.97	466.16	1744.09	232.91	792.02
Inventories	36881.09	75337.71	56166.04	97248.94	94672.22	155715.70
K/L Ratio	1.35	4.71	1.35	4.71	1.35	4.71
Variable	1999		2000		2001	
MFN Tariff	36.16	20.01	36.04	19.00	34.85	19.73
$\tau/1+\tau$	0.257	0.067	0.256	0.068	0.249	0.071
Import Demand Elasticity	15.46	16.33	15.46	16.33	15.46	16.33
Output (X in Rs Lakhs)	862037.30	1301237.00	896164.50	1404715.00	933621.30	1531384.00
Imports (M in Rs Lakhs)	132369.20	326822.10	123997.40	301809.10	137303.30	320044.30
z (Rs Lakhs)	115.03	338.26	137.37	469.84	86.41	196.11
Inventories	162381.40	271251.40	170176.10	314749.40	167874.30	323319.60
K/L Ratio	1.35	4.71	1.35	4.71	1.35	4.71
Variable	2004		2006		2007	
MFN Tariff	31.51	18.21	18.40	18.59	19.28	21.36
$\tau/1+\tau$	0.230	0.071	0.142	0.091	0.145	0.097
Import Demand Elasticity	15.46	16.33	15.46	16.33	15.46	16.33
Output (X in Rs Lakhs)	1618978.00	3382978.00	2300029.00	4873125.00	2657099.00	5715065.00
Imports (M in Rs Lakhs)	302604.70	688638.50	506018.70	1071660.00	397520.40	898767.50
z (Rs Lakhs)	63.06	159.95	86.96	380.63	103.24	410.77
Inventories	242219.80	422042.70	346800.20	613800.70	423931.90	752664.60
K/L Ratio	1.35	4.71	1.35	4.71	1.35	4.71

*Appendix Table A presents the summary statistics for the data to estimate the Protection for Sale model, by years. The dependent variable is  $\frac{\tau}{1+\tau}$  varying across sectors and time. Independent variables include z (X/M), the ratio of outputs (X) to imports (M) that varies by sector and year. For the IVs, note that the capital/labour (K/L) ratio are for the United States from Gawande and Bandyopadhyay (2000), readily available for one year; inventories vary across all years.*

**Appendix Table B: World Bank Enterprise Survey (WBES) Distribution**

WBES Sector	Firms	% Firms	Members*	Direct**
Garments	275	12.03	205	255
Textiles	222	9.71	196	207
Drugs & Pharma	165	7.22	137	154
Electronics inc. Consumer Durables	100	4.37	80	92
Electrical Appliances inc. white goods	155	6.78	125	142
Machine tools inc. Machinery & parts	195	8.53	152	183
Auto Components	218	9.54	167	208
Leather & leather products	74	3.24	34	62
Sugar	4	0.17	4	4
Food Processing	155	6.78	124	140
Plastics & plastics products	122	5.34	104	115
Rubber & rubber products	38	1.66	34	35
Paper & paper products	24	1.05	20	20
Structural metals and metal products	303	13.25	186	272
Paints and varnishes	20	0.87	16	19
Cosmetics and toiletries	13	0.57	6	11
Other chemicals	112	4.9	94	109
Mining	3	0.13	2	3
Mineral processing	32	1.4	28	28
Marine food processing	14	0.61	11	12
Agro processing	26	1.14	17	24
Wood and furniture	16	0.7	3	13
Total	2,286	100	1745	2108

Appendix **Table B** presents the sampling distribution of the WBES survey. There are 22 sectors in total, with 2,286 firms distributed across the sectors. % Firms shows the percentage of firms in each sector. \*Members shows the number of firms that are members of associations in every sector. \*\*Additional shows the number of firms that report having direct interactions (additional political factors) with the government.



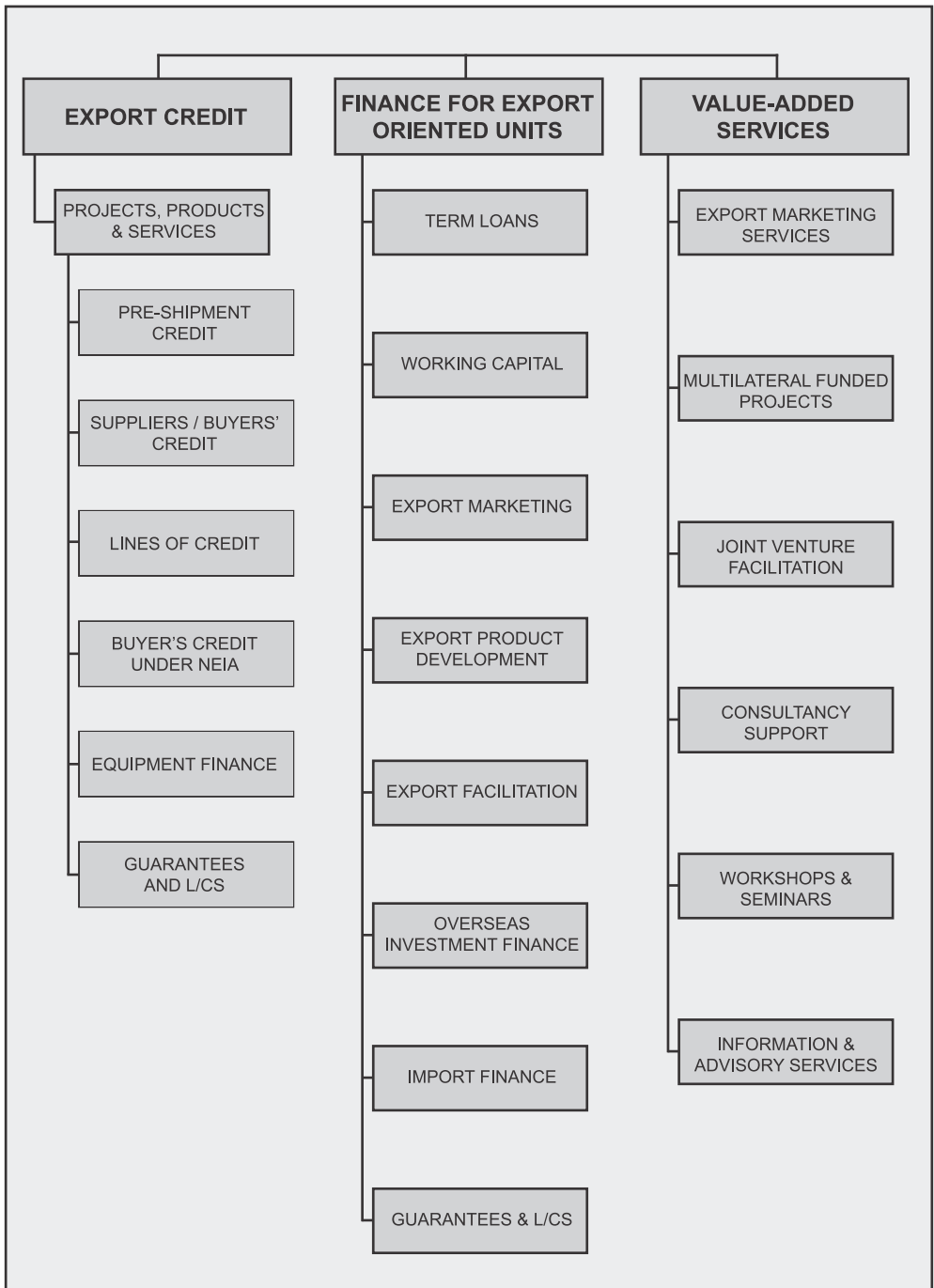
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