‘PROTECTION FOR SALE’:
THE POLITICAL ECONOMY OF TRADE PROTECTION IN PAKISTAN

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TABLE OF CONTENTS

TABLE OF FIGURES

LIST OF TABLES

INTRODUCTION

This paper examines the impact of political influence on trade protection in Pakistan. Using the classic Grossman-Helpman model with an innovative dataset on political influence and trade protectionism, we are able to examine determinants of trade policy. We use a granular dataset on political connections including trade associations, parliamentarians and their business interests, and politically powerful business families in Pakistan. This 'political connections' dataset is combined with data on tariffs, non-tariff measures, and regulatory duties in Pakistan to form a complete picture of trade policy in the country. We extend the methodology traditionally used in the Grossman-Helpman literature by using a synthetic control model to construct the main instruments used in estimating the parameters in the Grossman-Helpman model.

Our empirical analysis is focused on two areas of enquiry. Firstly, we probe whether special interest groups represented by strong business lobbies or politically connected firms were able to secure higher levels of non-tariff protection in the wake of the 2013 trade policy shock. In 2012, Pakistan signed a five-year engagement plan with the European Union that paved way for its inclusion in EU's Generalized System of Preferences (GSP) to allow duty free access to Pakistan's exports. The GSP entailed a major harmonization of regulatory standards. In its wake, there was a dramatic increase in the application of non-tariff measures across the entire space. While in 2012 less than 10 percent of total products in the manufacturing sector were covered by NTMs, the ratio increased to 80 percent in 2013. While NTMs increased in nearly all ISIC-4 manufacturing sub-sectors, some sectors experienced higher NTM introductions than others.

Our second objective is to estimate a structural political economy model of trade protection that accounts for government-industry interaction (Grossman and Helpman, 1992). This allows us to take a broader sweep on the political economy determinants of overall trade protection using a well-established structural model. To this end, we use information on three major trade policy instruments in Pakistan: tariffs, non-tariff measures, and regulatory duties. A major innovation of the project would be to compile a unique database on the presence of politically connected businesses across the entire manufacturing space. We combine this with a highly fine-grained data on the presence, number, and type of NTMs across more than 4000 products.

This study is the first of its kind in the Pakistani context, where both cronyism and trade policy have emerged as key markers of public policy debates but where rigorous empirical research is seriously lacking. Beyond its relevance for Pakistan, our research contributes to the literature that studies the domestic political foundations of trade policy. Studies in this genre have empirically affirmed the theoretical predictions of the "Protection for Sale" type models using industry-level

data from the United States (Goldberg 1999, Gawande, 2000), Turkey (Mitra et al. 2002) and India (Bown and Tovar 2011). The study on India is closest in spirit to our work, since it demonstrates how exceptional non-tariff measures, such as anti-dumping and safeguarding measures, were used to substitute for tariff reductions in politically organized sectors in the wake of 1990-91 IMF agreement.

With the exception of Bown and Tovar (2011) and Limao and Tovar (2011), the overwhelming focus of past research is on tariffs. Our contribution is to go beyond tariffs to include a variety of other trade policy instruments, including non-tariff measures and regulatory duties. A second point of departure from prior work is that we will develop a more precise and direct proxy of politically connected sectors that is based on more granular information on the presence, number, and type of political connections. By contrast, previous studies have used relatively indirect proxies for sectoral exposure to special interest groups measured using the number of groups listed in important reference works, such as the World Guide to Trade Associations. In this regard, we will build on our prior work on Egypt (Eibl and Malik 2016) and Morocco (Ruckteschler, Malik, and Eibl, 2019). Finally, our work will make a definitive contribution to the literature on trade policy in Pakistan, which is both empirically unsophisticated and has largely ignored the political economy dimension.

DATA

In this section, we describe the main data components of our empirical analysis and their underlying sources. In order to conduct this empirical analysis, we combine datasets on NTMs, sector-level characteristics, regulatory duties (RDs), and political connection and organization. Our data on NTMs at the six-digit product level (World Bank 2013) comes from the WITS database. The purpose of this database is to state explicitly when NTMs were introduced, when they were repealed, if at all, and what types of NTM was considered. This rich data on NTMs aggregated at the four-digit sector level and is used to create measures of NTM introduction and NTM intensity.

With the availability of a more refined and structured classification of NTMs in 2010 it is now possible to conduct a more systematic analysis of the form and function of these trade measures. The new system of classification divides NTMs into 16 different chapters and assigns them to two main categories, technical and non-technical measures (the third category consists of export-related measures). Some of the key NTM categories include: Technical Barriers to Trade (TBT), Sanitary and Phytosanitary Measures (SPS), Pre- shipment Inspection (PSI), and Price Control Measures (PCMs). The detailed NTM classification is outlined in the Appendix.

We combine the information on NTMs with data on organized sectors in Pakistan. Consistent with the literature (see Bown and Tovar 2011), we use the presence of trade associations to measure organized sectors. This data is taken manually from the World Guide to Trade Associations. A key aim of the project is to complement the measure of organized sectors with a unique dataset to measure politically connected sectors in Pakistan. To do so, we will follow the established literature, such as Faccio (2006). Faccio defines a company to be politically connected if one of its top shareholders is (a) a member of parliament, (b) a minister or the head of state, or (c) closely related to a top official.

To compile data on politically connected firms, we will follow a three-step procedure. We firstly compiled a list of politically connected enterprises, using publicly available information as well as the Orbis database (Bureau van Dijk, 2013). Orbis provides a database where names of MPs and ministers can be cross-referenced with stakeholders in private corporations. Once those politically connected firms are established, we identify the products they produce and the sectors in which they are classified. This allows us to develop a sector-level indicator on the number, type, and presence of politically connected firms. Finally, we draw on the detailed information in Shahid-ur- Rehman's famous book, *Who Owns Pakistan*, to identify the leading business families of Pakistan that have historically enjoyed political influence under both civilian and military

regimes. We describe these as politically powerful families.

A unique addition to our dataset is information on regulatory duties in Pakistan, which we have obtained from the Commerce Ministry and the World Bank. Data on ad-valorem equivalents and trade elasticities at the HS-6 product-level comes from Niu et al. (2018). Information on sector-level characteristics such as number of firms, number of employees, and value-added will be sourced from Pakistan's Census of Manufacturing Industries (CMI).

POLITICAL CONNECTIONS AND NON-TARIFF MEASURES

The first element of our analysis is dedicated to examining the role of political connections in explaining differential sector-level exposure to non-tariff measures after 2013. Our focus on NTMs is guided by the fact that multilateral trade liberalization has led to a generalized decline in tariff barriers and the emergence of non-tariff measures, commonly known as NTMs, as the dominant form of trade protection. As applied tariffs have fallen by 66% in low and middle-income countries since 1996, the non-tariff measures have increasingly substituted for tariffs as the dominant vehicle for trade protection. This is reflected in the fact that NTMs contribute more than 70% to global trade protection today (Kee et al. 2006). However, unlike tariff barriers, the NTMs are not easily quantifiable as they usually consist of complicated legal texts that defy a simple characterization. UNCTAD (2010) defines NTMs as "policy measures, other than ordinary customs tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both" (UNCTAD, 2010). The NTMs are essentially "complicated legal texts" that are applied for specific products and applying countries.

The NTMs differ in an important respect from what were previously described as non- tariff barriers (or NTBs). The principal difference is that, unlike NTBs, non-tariff measures can be introduced to facilitate and harmonize trade through procedural regulations. For example, sanitary or phytosanitary measures can be applied for health and safety considerations. Similarly, NTMs can reflect the technical properties of individual products or can be part of wider efforts by developing countries to harmonize regulations with trading partners. Some NTMs are intended to meet specific European Union standards (this is true for some SPS and TBT measures). Other technical measures can be imposed for environmental considerations that have gained salience over the last two decades due to popular concerns around environmental and climate issues. Thus, at least in principle, the NTMs can be imposed for achieving desirable regulatory standards and with the intention of facilitating trade. However, in practice, the impact of NTMs is determined in large part by the type of NTM imposed and how they are implemented. As WTO (2012) argues: "the effects of NTMs are dependent not only on regulatory frameworks but also on their implementation procedures and administrative mechanisms".

As recent work has shown, there can be a sharp disjunction between regulatory intent and practice (Hallward-Dreimeir and Pritchett 2015). When implementation is inconsistent and enforcement is selective, the same regulations can become more burdensome for some firms than others. Thus, regardless of their intent and despite their being based on otherwise legitimate considerations (e.g. environmental, health and safety concerns), NTMs can ultimately serve as a

form of trade protection that draws a wedge between domestic and foreign prices of products. Emerging work on non-tariff measures has shown that developing country firms need to spend significant resources to comply with NTMs. Even the apparently harmless harmonization standards can prove costly for domestic firms in third markets (Cadot, Disdier and Fontagne 2012). There is growing evidence that NTMs can have a profound impact on trade performance. In majority of developing countries today NTMs are twice as restrictive to trade than tariffs and contribute more overall trade restrictiveness (Kee et al. 2006). NTMs have also shown to be more costly than tariffs, especially in developing countries. NTMs can also adversely affect exports (World Bank 2019).

Importantly, the disjunction between *de jure* intent and *de facto* implementation creates a room for selective enforcement. Implementation of NTMs requires administrative oversight, which is notoriously susceptible to political abuse. Selective enforcement can create a domain of privilege that can effectively favour more powerful and connected firms. The cost of compliance can systematically differ across firms depending on their proximity to political power. NTMs can be effectively used to generate rents for protected sectors and firms. Thus, both in terms of incidence and intensity, NTMs can be governed by a similar logic of the political economy of rent seeking, where rents induced by trade policy strengthen vested interest groups who might lobby for greater trade protection to secure and maintain these rents. In this context, recent empirical work on Morocco, Egypt, and Tunisia has demonstrated the capture of NTMs by politically connected firms in the wake of tariff reductions and the substitution of tariffs with non-tariff measures (Baghdadi et al., 2021; Ruckteschler et al., 2021; and Eibl and Malik, 2016).

Given the recent dominance of NTMs, the institutional and political determinants of NTMs are not well-understood. In this section, we examine whether the presence of different types of organized and connected firms in a sector might be correlated with greater burden of NTM protection. To do so, we leverage the sectoral differences in exposure to NTMs over time and ask whether politically connected sectors have witnessed a differential exposure to NTMs relative to unconnected sectors. Our analysis leverages the massive wave of NTM introductions in 2013 that affected most sectors in the manufacturing space. Our interest lies in probing whether connected sectors have witnessed a disproportionately higher intensity of NTM exposure in the wake of the 2013 wave. To do so, we leverage the two fine-grained databases on political connections and NTM exposure described in section 2.

3.1 Exploratory Evidence

To motivate our empirical analysis, we chart the evolution of NTM exposure. As Figure 1 shows,

the year 2013 saw a large wave of NTM introductions. While only less than 10 percent of products in the 119 manufacturing sub-sectors were covered by NTMs in 2012, the ratio jumped to 80 percent in 2013. This was a universal shock of sorts that affected all products and sectors. However, there is considerable cross-sectoral variation in the application of NTMs. This means that, for some sectors, the NTM shock in 2013 might have been more pronounced than others. Our interest is in exploring whether the evolution of NTMs differed across sectors depending on their political weight. Our main prior is that sectors with more politically influential firms might have disproportionately benefited from higher trade protection in the guise of non-tariff measures. We examine this using three categories of political influence defined in section 2: sectors represented by formal business associations, sectors with politically connected actors, and sectors controlled by powerful families.

The initial patterns are instructive. Figures 2 and 3 chart the evolution of the cumulative number of NTMs per sector in sectors with business associations (organized) and powerful families during the period 1996-2018. Both figures show a relatively flat line until the NTM shock hits in the year 2013 when a noticeable divergence appeared in the exposure of connected and unconnected sectors to NTMs. For both "organized" and "powerful" sectors the NTM exposure in 2013 was significantly more pronounced. A similar divergence is visible for a more narrowly defined category of "politically connected" sectors where members of parliament are active (see Figure 4). The various categories of political influence are also informative for the intensity of NTM protection, measured as the share of products within a sector that are covered by at least three NTMs. This will be particularly relevant for our foregoing empirical analysis.

Figures 5-7 plot the evolution of the NTM share for our three indicators of political influence: organized sectors, presence of powerful families, and presence of politically connected firms. As the figures reveal, the first slight uptick in NTM share takes place in 2003. However, the dramatic shift occurs in 2013 when a massive wave of NTM introductions hits sectors in the manufacturing space. Interestingly, the three different categories of political influence all display a sharp noticeable jump in the intensity of NTM coverage. While less than one percent of total products in an average sector were covered by at least three NTMs, this ratio shoots up to 50 percent or more for politically influential sectors. Of the individual categories of political influence, organized sectors show the most dramatic spike in 2013 when close to 60 percent of all products in a sector were now covered by at least three NTMs.

In Figure 8 we show the evolution of NTM intensity in an alternative overlapping category of political influence, defined as "politically organized" sectors. These are effectively sectors that meet all three criteria, that is: they are represented by a business association, have politically

connected actors, and controlled by at least one of the members of powerful families, as defined in Shahid-ur-Rahman's book, *Who owns Pakistan*. As Figure 8 reveals, the share of products covered by at least three NTMs now jumps to roughly 75 percent for politically organized sectors, and the difference between connected and unconnected sectors appears even more substantial. Our empirical analysis will examine if these otherwise noticeably different trajectories of NTM intensity for politically organized and unorganized sectors hold up more robust econometric scrutiny.

3.2 Difference-In-Differences Analysis

To investigate whether political organized sectors (our overlapping category of political influence) were more likely to have benefited from greater intensity of NTM protection in the wake of the 2013 shock, we estimate the following difference-in-differences regression specification:

$$NTM\ intensity_{it} = \alpha + \beta * DID_{it} + \gamma_j X_i\ x\ Year_t + \delta_t + \tau_t + \varepsilon_{it} \quad (1)$$

where *i* is ISIC-4 level sub-sector, *t* is time.

$NTM\ Intensity_{it}$ is defined as the proportion of products in ISIC-4 level manufacturing sub-sectors that are covered by at least three NTMs. DID_{it} is the difference-in-differences interaction term between treatment variable, *Politically Organized*, and a *Post2013* indicator variable. *Politically Organized* is a dummy variable that is equals one for sectors that meet the following three conditions: they are organized, politically connected and controlled by powerful families. The Post2013 indicator is equal to one for the post 2013 period (i.e., 2013-2018). β is our coefficient of interest that captures the differential effect of NTM share for politically organized sectors (compared to politically uninfluential sectors) after the 2013 shock (relative to the pre-shock period). X_i is a matrix of control variables that might determine both the post-2013 trajectory of NTM share and be correlated with political influence of a sector. We include the following covariates, averaged over the pre-period (1996-2012) and interacted with the full set of year fixed effects: the MFN tariff rate, import to GDP ratio, total number of establishments, value added share in GDP, regulatory duty in percent, and the average import elasticity of demand. Our main empirical specification includes the ISIC-4 level sector fixed effects (δ_t) and year fixed effects (τ_t). ε_{it} is the error term. The sample consists of 119 ISIC-4 level manufacturing sub-sectors, unless otherwise specified, and the period of estimation is 1996-2016. Observations are at the sector-year level.

We recognize possible identification concerns and try to address these in our empirical strategy.

We consider the 2013 NTM shock as a relatively exogenous event that was triggered by an externally driven trade policy harmonization process that coincided with the signing of the European Union's GSP plus scheme. Politically organized sectors were not the principal driving force behind the trade policy reconfiguration that resulted in the 2013 shock. However, once the shock hit all the manufacturing sub-sectors, the politically organized sectors were well-positioned to take advantage of it. An important identification assumption pertains to the existence of parallel trends in the pre-shock period between treatment and control groups. As Figure 8 show, apart from the slight uptick in 2003, there are no discernible differences in the trajectories of our measure of NTM intensity in the pre-period between politically organized and unorganized sectors.

It is also important to verify that there are no compositional confounding factors in the treated and non-treated groups. For example, there might be unobserved sectoral differences that are correlated with both a sector being characterized as politically organized and receiving a greater NTM shock. To address this, we include sector and time fixed effects. The former account for time invariant sectoral characteristics that may be correlated with either or both the treatment and outcome variables. Year fixed effects control for time-specific shocks that affect all sectors in a given year. For further robustness, we include broad sectoral trends by interacting 2-digit ISIC sector fixed effects with time dummy variables. The inclusion of these account for the fact that some sectors might be susceptible over time to a differential trend in NTM intensity. Finally, we also account for important sector-specific characteristics, such as prior level of tariff protection, import dependence, and other relevant controls described above. Each of these controls is averaged over the pre-period (1996-2012) and interacted with the full set of year fixed effects.

Table 1 presents the DID results for our core empirical specification set out in equation (1). We begin in column 1 by running a simple variant of our specification that only includes the DID interaction term and sector and year fixed effects. As expected, the interaction between the treatment dummy that identifies whether or not a sector is politically organized and a post-2013 indicator variable has a positive and statistically significant coefficient. In columns 2-7, we successively add the interactions of our main control variables with the full set of year fixed effects. To account for the possibility that sectors with higher levels of prior tariff protection might have witnessed a greater increase in NTM intensity post 2013, we include the interaction of average pre-period MFN rate with year fixed effects. Since higher import dependence might induce greater NTM exposure, we add in column 3 the import to GDP ratio. Similarly, we progressively add the total number of establishments and value added (as a share of GDP) in columns 4-5. Clearly, sectors that employ more workers and have higher value added might entail a different structure of trade protection.

Given the complex array of trade policy instruments in use in Pakistan, it is possible that sectors that are subjected to these alternative instruments might have witnessed a differential trajectory of NTMs. In this regard, column 6 accounts for average regulatory duties, which emerged as an important instrument of trade protection in 2008. Finally, in column 7, we include the interaction of average import elasticity of demand with year fixed effects. Again, the underlying logic is similar: sectors with greater import elasticity might see a differential evolution of NTMs. Reassuringly, as the results in columns 2-7 show, none of these potential confounding factors drives away our main finding. The coefficient on the DID interaction term remains stable, positive, and statistically significant. In column 8 we subject our results to a more stringent test by including ISIC- 2 level sector-specific time trends. While the coefficient of interest slightly falls in magnitude, it remains statistically significant at 3 per cent level. Finally, we present the results for a two-period DID model in column 9. Given that the series for NTM share displays limited variation on a yearly basis and that panel datasets are notoriously susceptible to problems of serial correlation, we follow guidance in the DID literature and collapse the data into pre- and post-periods. Estimating this two-period DID model yields a similarly positive and statistically significant result. Overall, the results in Table 1 consistently show that politically organized sectors received a disproportionately higher intensity of NTM protection after the 2013 wave of NTM introductions.

To further concretize these results, we draw on a recent database on ad valorem equivalents (AVEs) made available by the University of Nottingham and investigate whether politically organized sectors benefited from higher protection in terms of tariff equivalents during the 2013-18 period. To do so, we run a regression of ISIC-4 level AVEs on the dummy for politically organized sectors while controlling for sector characteristics (import elasticity, import to GDP ratio, MFN tariffs, value added, etc.), ISIC-2 level fixed effects, and year dummies. Despite conditioning on these factors, we find that the AVEs are significantly higher for politically organized sectors in the post-2013 period. Figure 9 provides a visual representation of this by plotting the average residual AVEs for politically organized and unorganized sectors. As the figure shows, conditional on different sectoral characteristics, average AVEs are positive and higher for politically organized sectors than politically unorganized sectors in the post-2013 period.

ESTIMATING GROSSMAN-HELPMAN'S MODEL

The model we use to estimate equilibrium trade protection across 119 manufacturing sub-sectors in Pakistan draws on the work of Grossman and Helpman (1994) who proposed a structural equation that used political power by industry to predict the equilibrium level of tariffs in that industry. Subsequent work (e.g. Bown and Tovar, 2011) updates the Grossman Helpman model of 1994 to include other types of trade protection such as the ad valorem equivalent tariff from non-tariff measures (e.g. technical measures or sanitary and phytosanitary measures). We will finally explore the political determinants of the structure of overall trade protection that accounts for tariffs, advalorem equivalents of NTMs, and regulatory duties. The latter carries special relevance in Pakistan. The structural approach we use builds on the Grossman and Helpman (1994) model of trade protection. This is the leading political economy model of trade protection and has been developed further by Mitra et al (2002) and Bown and Tovar (2011).

The model assumes a numeraire good produced solely by labour; every other good uses a combination of labour and specific factors in its production. Owners of specific factors are able to organize into a lobby and provide contributions to elected officials. This results in a vector of choices by the government which may exhibit differential trade policy based on political influence. Consistent with prior literature, we measure political power of a sector by number of trade associations. We will complement this with a fine- grained measure of politically powerful firms at the ISIC 4-digit sector level which is an innovation first introduced in Faccio (2006) and used to study Egyptian trade policy by Malik and Eibl (2016).

The Grossman and Helpman model predicts equilibrium tariff levels based on structural factors in each sector. We expect that tariff levels have moved away from the predicted equilibrium and that by accounting for the overall level of protection in each sector, trade policy has moved toward the equilibrium predicted by the model. We will construct an overall measure of protection by combining tariffs (MFN rates), ad-valorem equivalents for NTMs (Mitra et al 2002; Bown and Tovar 2011), and regulatory duties. Our use of regulatory duties is an innovation in the literature. The model looks as follows:

$$\frac{t_i}{1+t_i} = \frac{1}{a+\alpha_L}\left[\frac{z_i}{e_i}\right] - \frac{\alpha_L}{a+\alpha_L}\left[\frac{z_i}{e_i}\right] \qquad (2)$$

Where t_i is the effective measure of protection which includes, depending on the individual specification, MFN tariffs, AVEs of NTMs, and import duties. Import duties consist of regulatory duties, customs duties, and additional customs duties. z_i is the ratio of domestic output to imports or exports (depending on whether the sector is import competing or an exporting one); e_i is the absolute value of price elasticity of import demand or export supply; I_i is an indicator variable that takes a value 1 if the sector is organized or politically connected; and α_L is the proportion of the country's workforce that is employed in sectors that are organized or politically connected. From the regression coefficients, we can obtain values for a. This gives us an estimate about the weight that the government places on social welfare compared with the weight placed on political contributions.

This model cannot be accurately estimated with OLS because we have potentially endogenous variables entering nonlinearly on the right-hand side of the equation, which include the output to import ratio, the price elasticity of import demand, and the indicator for politically organized sectors. To address these endogeneity concerns we use a Tobit estimation procedure combining the empirical approaches in Smith and Blundell (1986) and the Kelejian (1971). The methodology requires that we use least squares to regress the right-hand-side endogenous variables and their nonlinear transformations on the instruments and then include the residuals from these regressions as additional variables in the original import protection equation. The instruments can include the exogenous variables, as well as their quadratic terms and cross-products.

The instruments consist primarily of industry characteristic data, and our choice is motivated by previous tests of the model on other countries and trade policy settings. The variables used to instrument for the political organization variable include the number of employees by establishment, the number of establishments per sector, value added per firm (a measure of scale), and the level of output for a given sector. We instrument for the import demand elasticity by using a weighted average of countries that are similar to Pakistan. Bown and Tovar instrument for India's import demand product elasticities using the elasticities for five other similar countries that are not India's main trade partners (Malaysia, Philippines, Thailand, Tunisia and Indonesia). We decide to take a systematic approach and develop the elasticity instrument using the synthetic control algorithm (Abadie and Garbeazabal, 2003; Abadie et al, 2010; Abadie et al, 2014).

Data on sector characteristics in Pakistan comes from the Census of Manufacturing Industries (CMI) which is collected by the Pakistan Bureau of Statistics. This data is collected in survey waves and relevant to the period of our study are CMI data collected in 1995-1996, 2000-2001, 2005-2006. Recently, the CMI data from the 2015-2016 was released and we are working to incorporate

that information into our estimation dataset. The synthetic data is constructed by sector. We use United Nations Industrial Development Organization (UNIDO) INDSTAT ISIC Rev. 3 data at the sector level from 2005 to 2016 for all political entities avail- able (58 countries and politically distinct regions). We use 2005 through 2007 and the pre-period, 2008 as the treatment period, and 2009 through 2016 as the post-period. The treated unit is Pakistan using CMI sector- level industry data and the donor units are the 58 countries and politically distinct regions from the sector-level INDSTAT data. This process creates a synthetic value added, establishments per sector, employees per establishment, and output per sector. We need these instruments for our full sample period, 1996 through 2018. In order to obtain synthetic variables for value added, establishments per sector, employees per establishment, and output per sector using out-of-sample prediction. We use the synthetic variables constructed for the period, 2009 – 2016, for computing sector-level trends and predicting values for 1996-2008 as well as 2017 and 2018.

Data on price elasticity of import demand comes from Ghodsi, Grubler, and Stehrer (2016) who follow the methodology from Kee et al (2008). They estimate elasticities for 167 countries, including Pakistan. The result gives estimates for unilateral import demand elasticities for the period 1996-2014 differentiated by product and country. The estimates are provided as a cross-section and not a panel. Because we only have a cross- section of import price elasticities, we cannot use the synthetic control algorithm. In order to systematically choose a weighted contribution of other countries to the synthetic price elasticity of demand for Pakistan that will instrument for the real price elasticity of demand, we use Principle Components Analysis (PCA). Our PCA algorithm puts the average ISIC-3 Pakistani price elasticity of demand on the left-hand side. Using a screeplot, we choose the top principal components that help predict the Pakistani import price elasticities. We regress the real Pakistani import price elasticities on these principal components and then use the resulting empirical model to predict Pakistani import price elasticities. These predicted import price elasticities, averaged by sector, are then used as instruments in the Grossman-Helpman model.

4.1 Empirical Results

Before estimating the Grossman-Helpman model, we offer some exploratory empirical patterns that demonstrate the declining role of tariffs and the growing role of alternative forms of trade protection. Figure 10 charts the evolution of overall level of trade protection, consisting of MFN tariffs, AVEs of NTMs, and regulatory duties. Figure 10 shows that MFN tariffs are consistently higher for politically organized sectors. However, a clear divergence emerges between politically organized and unorganized sectors from 2008 onwards when regulatory duties are introduced. In the year 2013, we have both a wave of new NTMs and the introduction of customs duties in our

dataset, which further complicate trade policy. The salience of the latter is visible from Figure 11 that plots the evolution of import duties over time. As can be seen from the figure, import duties were generally higher for politically organized sectors when they were first introduced in 2008. The real spike in import duties becomes apparent in 2013 when they increased from under five percent per sector to over 25 percent. Importantly, from 2013 onwards a noticeable divergence emerges in import duties between politically organized sectors and the rest of the sectors. These patterns foreground the formal estimations below.

Estimations of the Grossman-Helpman model yield two main coefficients. One is the coefficient on the interaction of the measure of political power and the import penetration ratio divided by the absolute value of the price elasticity of import demand. The other is the coefficient on the import penetration ratio divided by the absolute value of the price elasticity of import demand. From these coefficients, we can back out the parameters that are included in the structural model. For our purposes, we are particularly interested in the coefficient on the interaction term with political power. This will estimate, holding sector size and elasticity constant, the impact of a sector's political power on the overall level of protection that a sector receives.

We split our analysis into three time periods. The first time period includes observations for the years from 1996 to 2007; the second time period includes observations for the period, 2008-2013; the third time period includes observations for the period, 2013- 2018. In columns 1-2 we present results for MFN rates (with and without year and sector fixed effects). Columns 3-4 repeat the same exercise for an expanded measure of trade protection that includes both MFN tariffs and AVEs. Finally, in columns 5-6 we present estimates for import duties (i.e., regulatory duties, customs duties, and additional customs duties). We present OLS and IV results for two categories of political influence: organized sectors (Tables 2 and 4) and politically organized sectors (Tables 3 and 5).

The results clearly show that, during first time period, tariffs observed in the period 1996-2007, the Grossman-Helpman model helps to explain the equilibrium value of protection. In both OLS and IV estimates, there is a clear suggestion that organized sectors have higher levels of MFN tariffs than unorganized sectors. However, in the later time periods, these estimates become insignificant. This is in line with our expectation as the MFN rate falls over time for both organized and unorganized sectors, eroding the distinctive effect of politically influence. This corresponds with the relative decline in the importance of MFN rates in the overall picture of trade protection. Although in some specifications the organized sectors have higher AVEs of NTMs, we do not find a clear pattern for AVEs. However, a more consistent result is obtained for import duties in the post-2013 period whereby the estimates for organized and politically organized sectors are

positive and statistically significant in both OLS and IV models. This is in line with our prior that politically influential sectors, regardless of how they are defined, have experienced higher levels of trade protection in the guise of import duties since 2013. Thus, as Pakistani trade policy became more complex since 2013, politically organized sectors have become important beneficiaries of trade protection.

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Figure 1

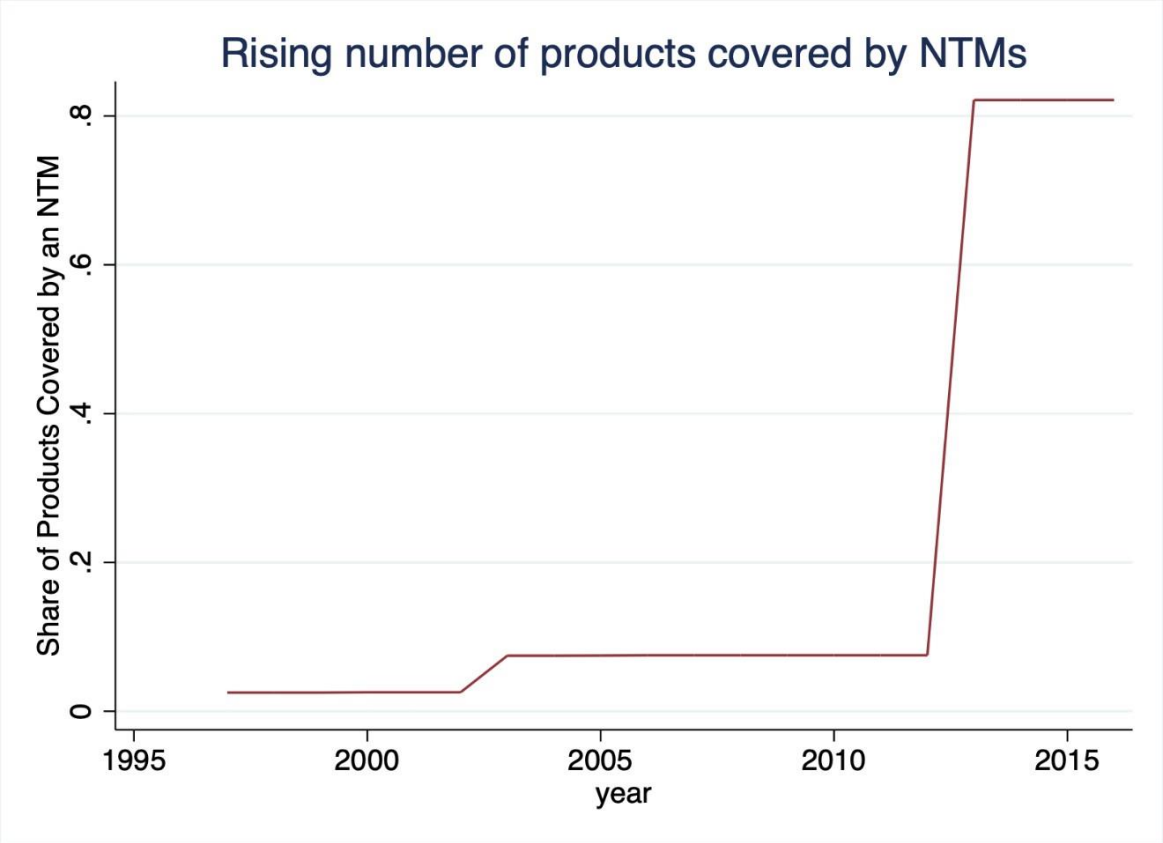


Figure 2

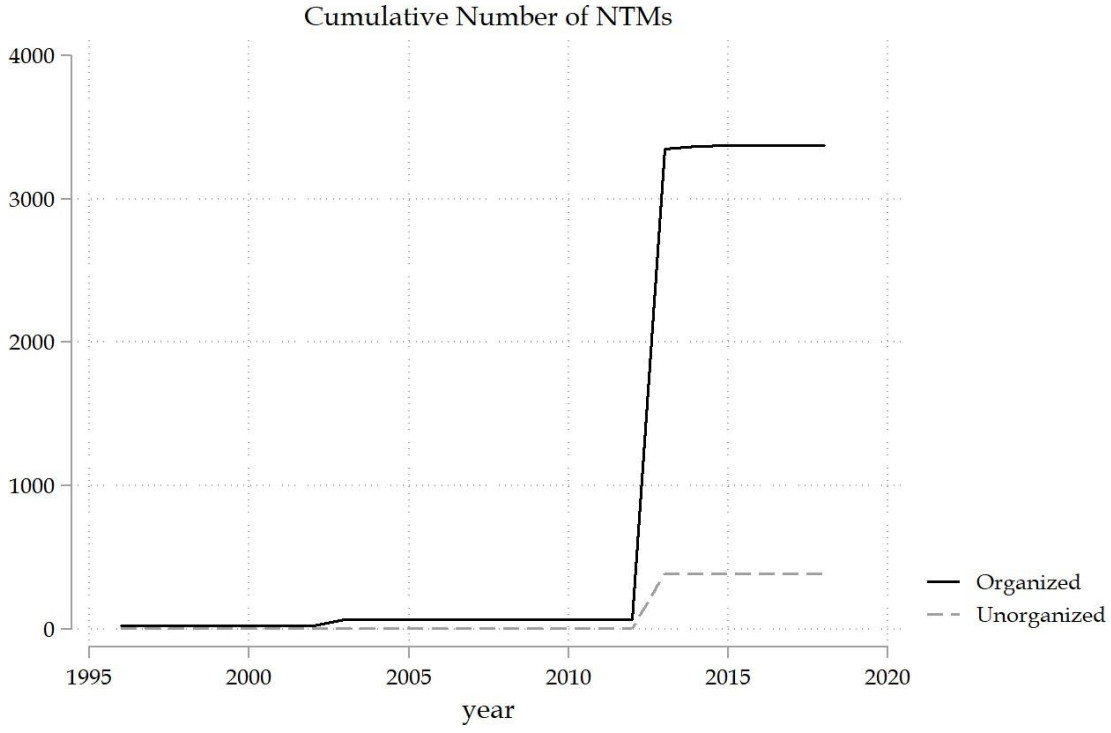
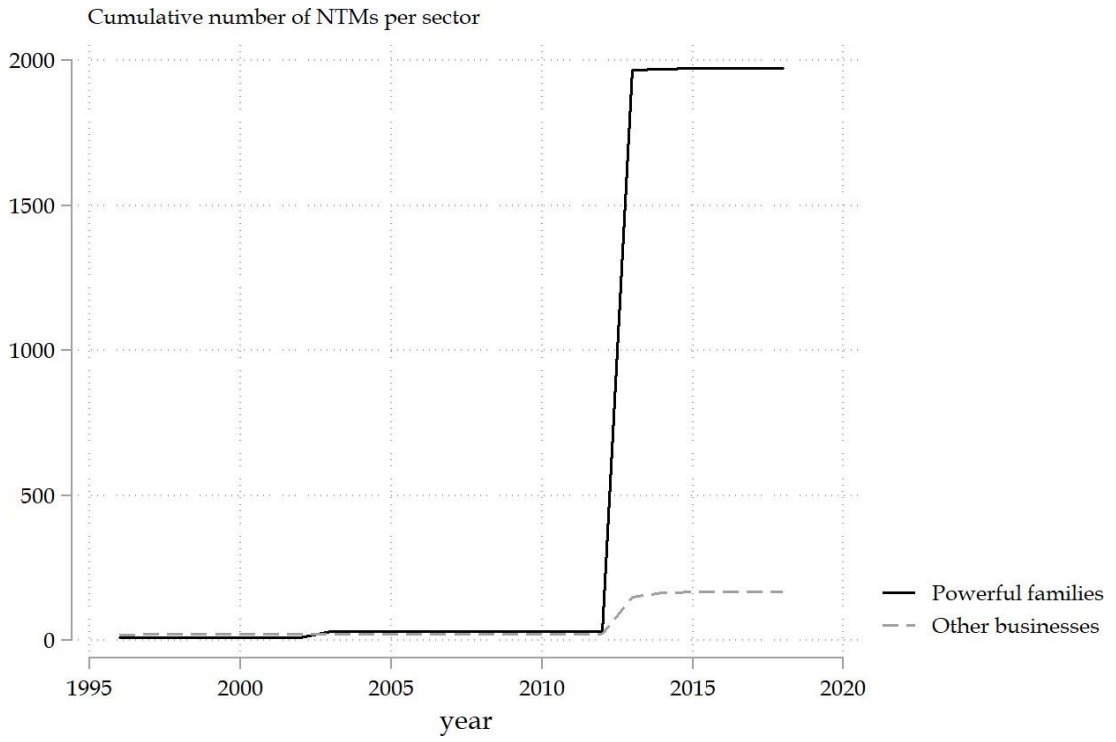


Figure 3



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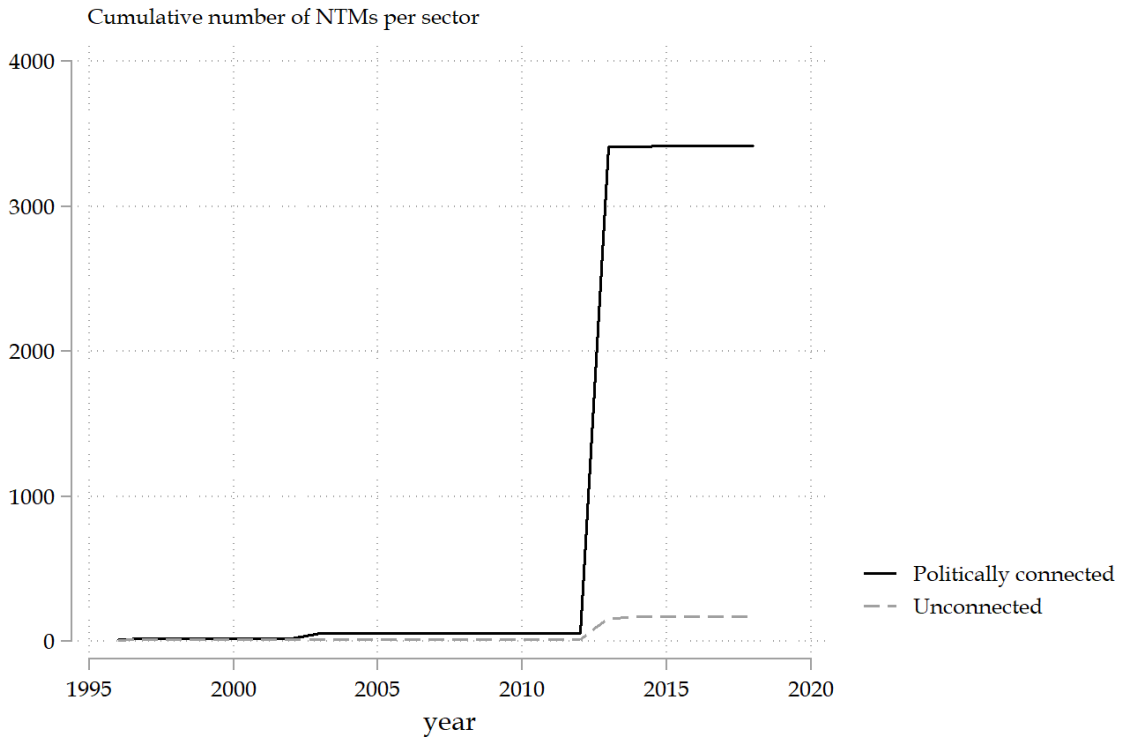

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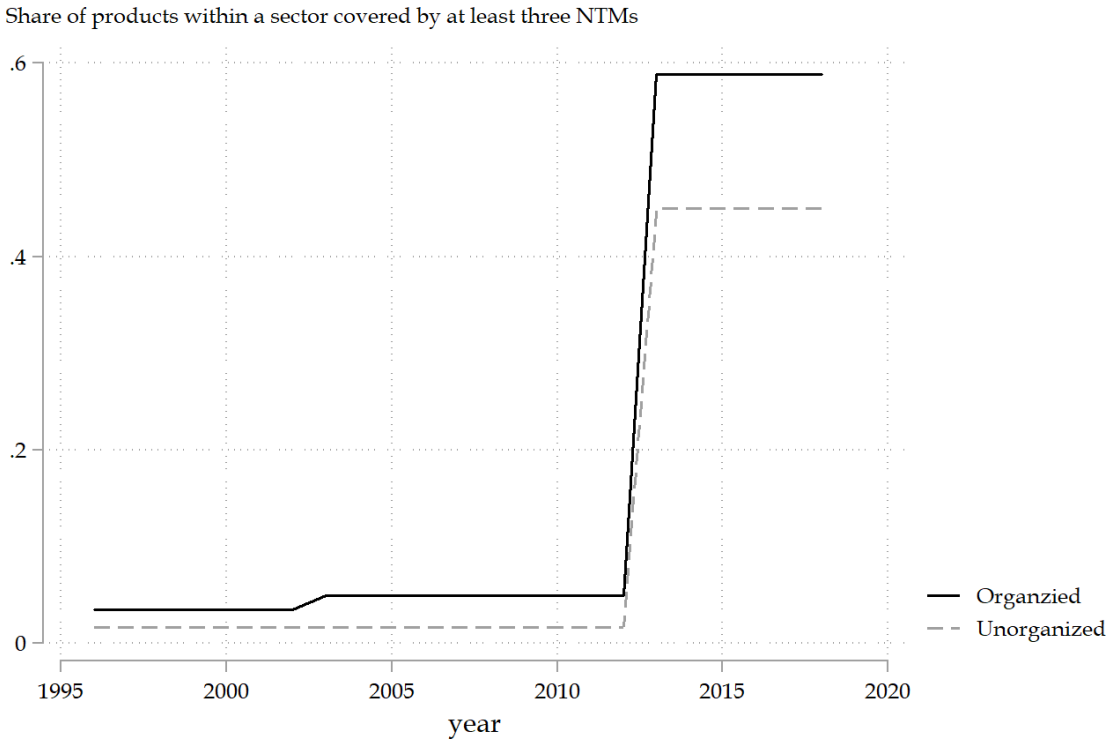

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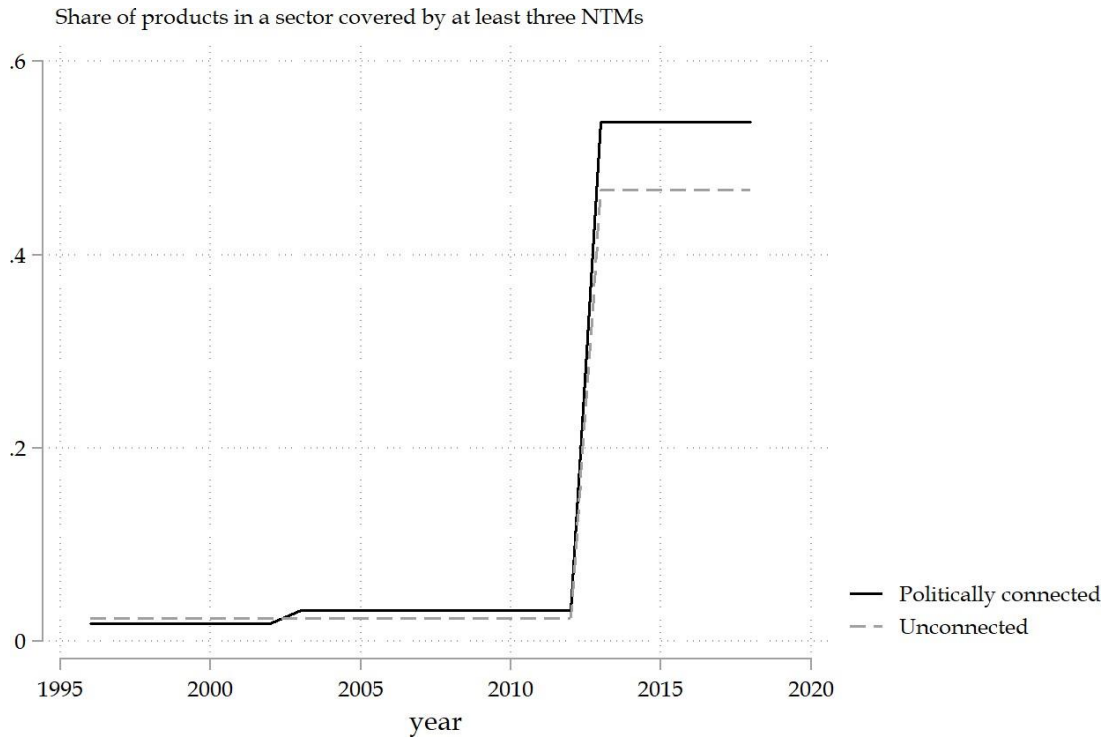

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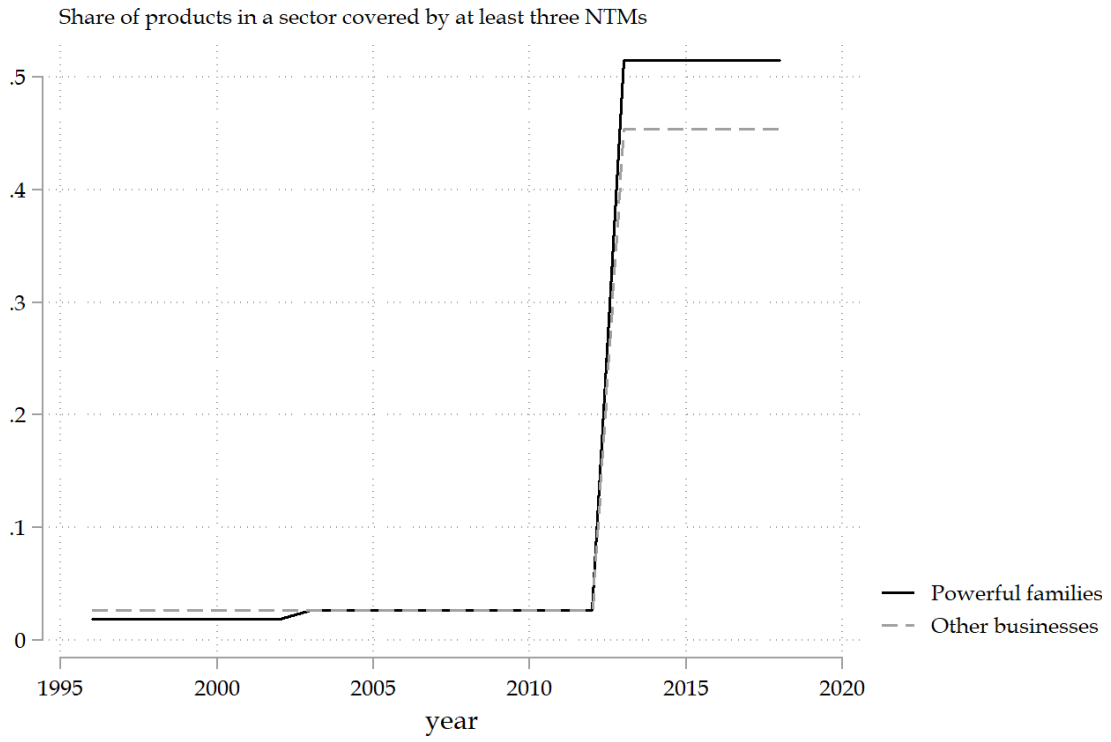


Figure 8

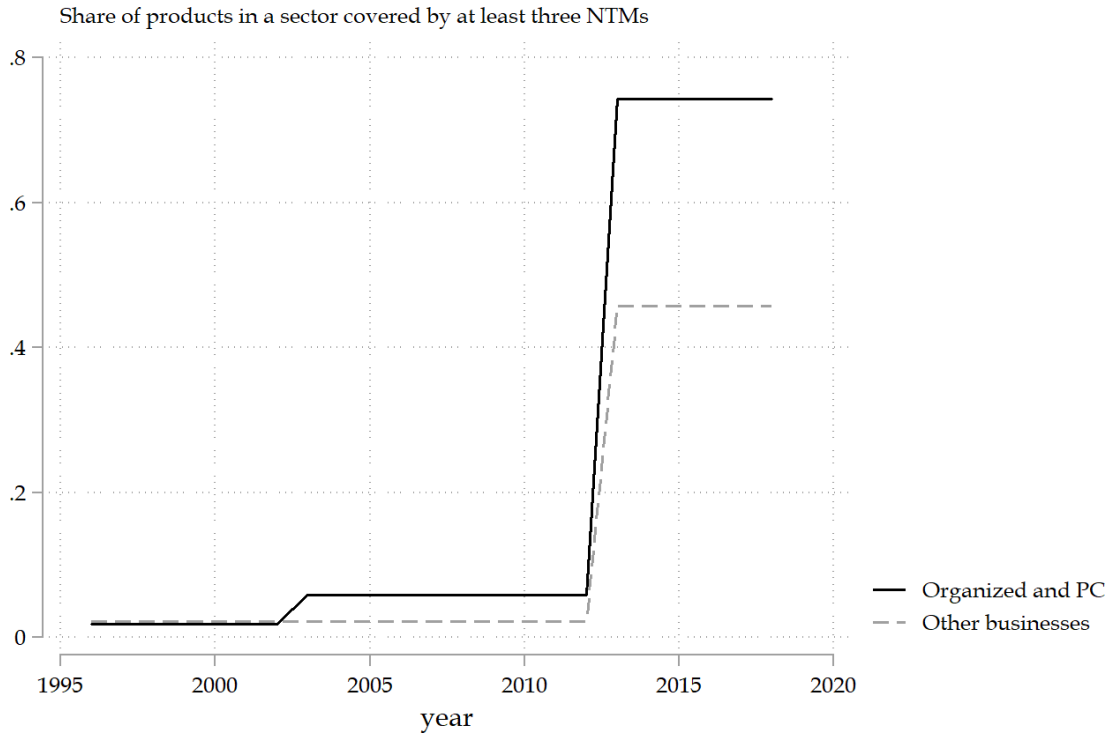
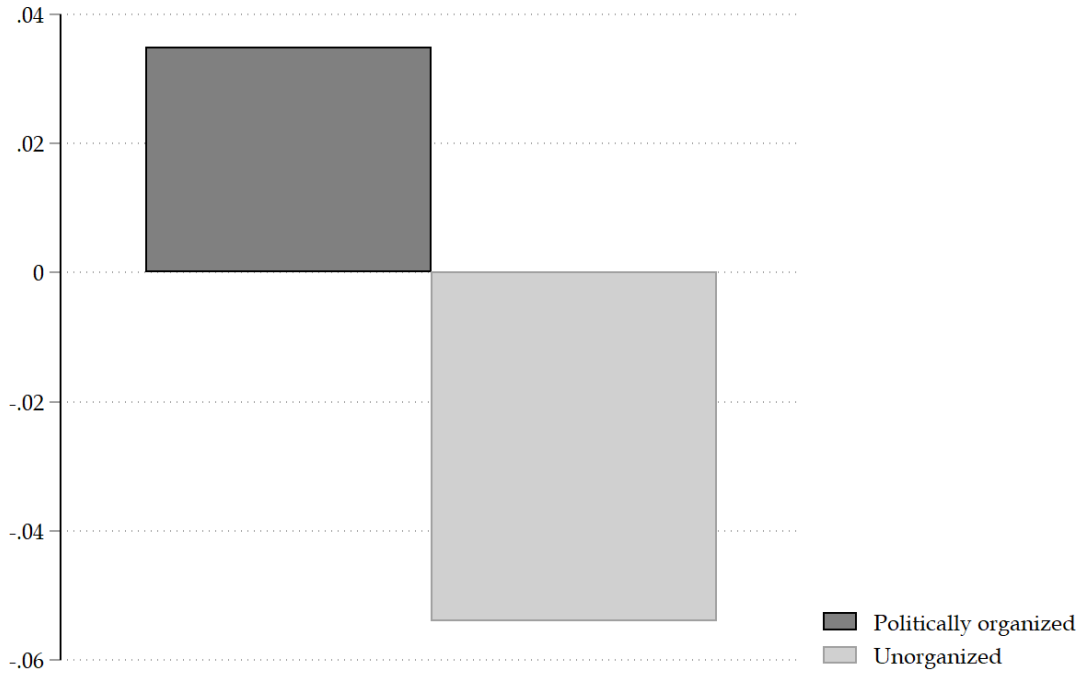


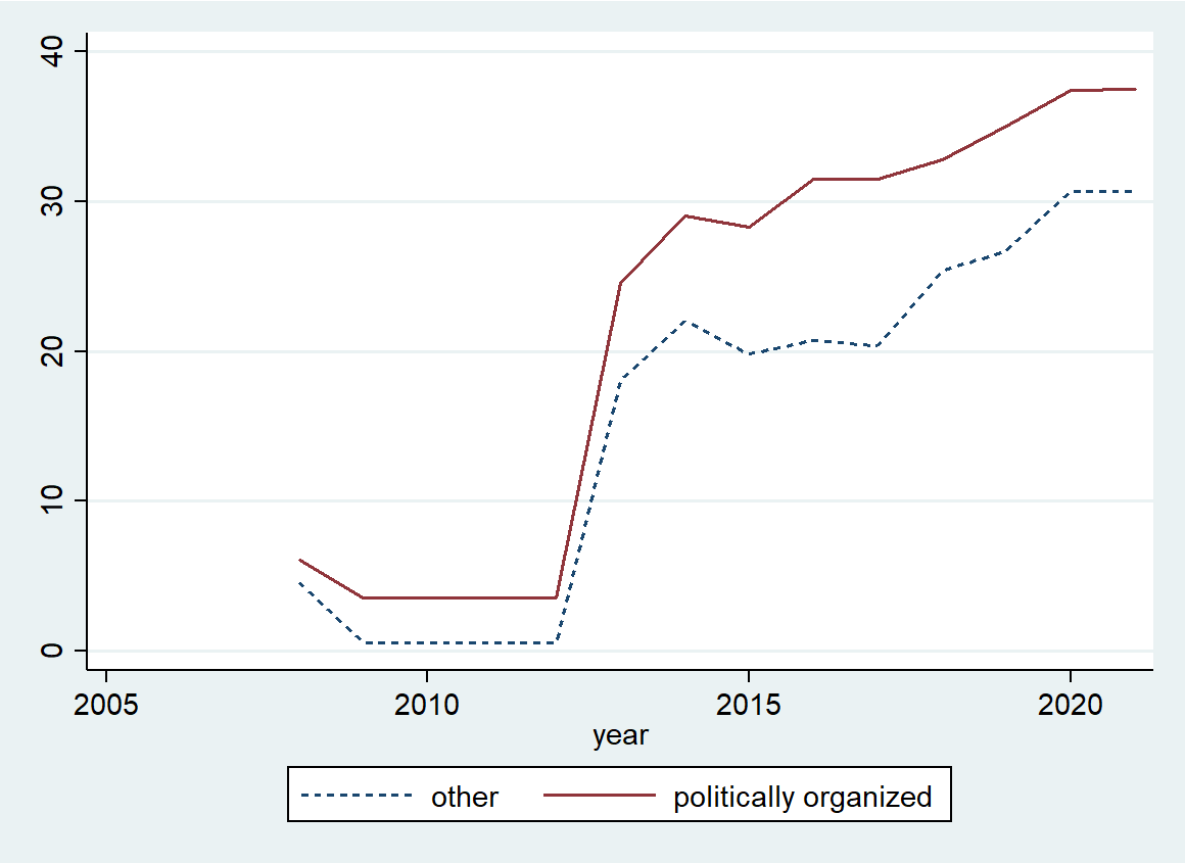
Figure 9



Average Advalorem Equivalent, 2013-2018

Figure 10

Figure 11 (import duties)



APPENDIX

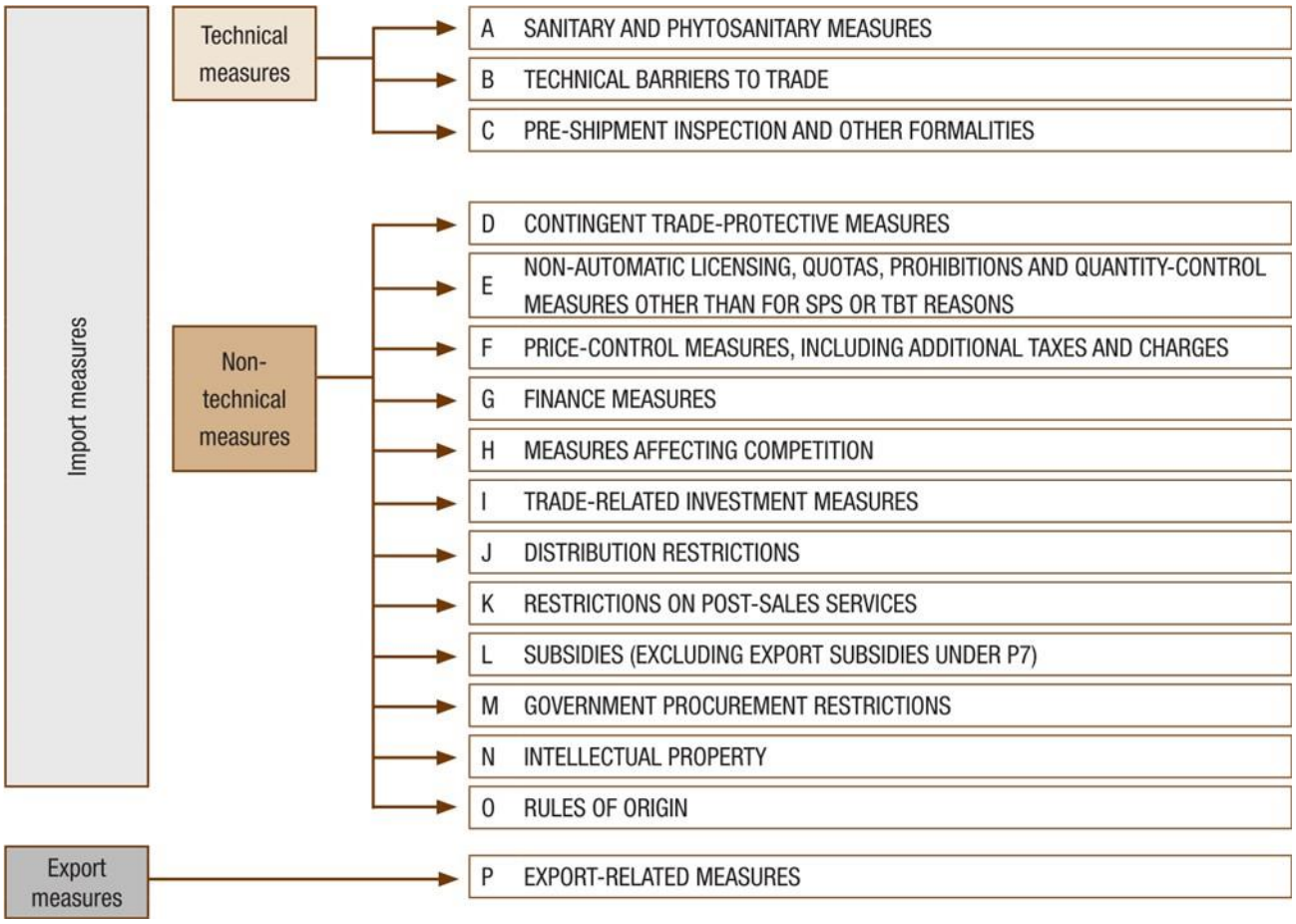

Import measures
Technical measures
A SANITARY AND PHYTOSANITARY MEASURES
B TECHNICAL BARRIERS TO TRADE
C PRE-SHIPMENT INSPECTION AND OTHER FORMALITIES
Non-technical measures
D CONTINGENT TRADE-PROTECTIVE MEASURES
E NON-AUTOMATIC LICENSING, QUOTAS, PROHIBITIONS AND QUANTITY-CONTROL MEASURES OTHER THAN FOR SPS OR TBT REASONS
F PRICE-CONTROL MEASURES, INCLUDING ADDITIONAL TAXES AND CHARGES
G FINANCE MEASURES
H MEASURES AFFECTING COMPETITION
I TRADE-RELATED INVESTMENT MEASURES
J DISTRIBUTION RESTRICTIONS
K RESTRICTIONS ON POST-SALES SERVICES
L SUBSIDIES (EXCLUDING EXPORT SUBSIDIES UNDER P7)
M GOVERNMENT PROCUREMENT RESTRICTIONS
N INTELLECTUAL PROPERTY
O RULES OF ORIGIN
Export measures
P EXPORT-RELATED MEASURES

Table 1: Difference-In-Differences Analysis for NTM Intensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Share of products covered by at least three NTMS								
Politically organized x Post2013	.265***	.261***	.270***	.234***	.240***	.240***	.252***	.210***	.274***
	(.069)	(.069)	(.070)	(.075)	(.076)	(.077)	(.076)	(.086)	(.074)
Controls x Year FE:									
MFN Tariff rate	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Import to GDP ratio	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Establishments	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Value-added	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Regulatory duty	No	No	No	No	No	Yes	Yes	Yes	Yes
Import elasticity of demand	No	No	No	No	No	No	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector x Year	No	No	No	No	No	No	No	Yes	No
Mean Outcome	0.492	0.492	0.492	0.492	0.492	0.492	0.492	0.492	0.492
Sectors	119	119	119	119	119	119	119	107	107
Observations	2,499	2,499	2,499	2,499	2,499	2,499	2,499	2,247	238
R-squared	0.56	0.561	0.565	0.567	0.568	0.565	0.578	0.529	0.048

Notes : This table provides difference-in-differences results of a regression of NTM intensity, defined as the share of products in an ISIC-4 sector that are covered by at least three NTMs. The Post2013 indicator is equal to one for the period 2013-2018. Politically Organized is a treatment variable that equals one for sectors that meet the following three conditions: they are organized, politically connected and controlled by powerful families. The sample consists of 119 ISIC-4 level manufacturing sub-sectors, unless otherwise specified, and the period of estimation is 1996-2088. Each control listed in the first column is averaged over the pre-period (1996-2012) and interacted with the full set of year fixed effects. All regressions include year and ISIC-4 sector fixed effects. Observations are at the sector-year level. Standard errors are clustered by ISIC-4 level sectors and reported in parentheses. Results in column 9 are for a two-period DID model. ***Significant at 1%

Table 2: Grossman Helpman OLS Results (Organized Sectors)

	(1) MFN	(2) MFN	(3) MFN+AVE	(4) MFN+AVE	(5) MFN+RD+AVE	(6) MFN+RD+AVE
Organized * Z						
Pre-2008	0.055**	0.016	0.00005	0.0076		
	(.023)	(.035)	(0.00005)	(.0243)		
2008 – 2013	-0.0011	-0.011	0.0031**	-0.0001	0.045	0.0027
	(0.0015)	(.061)	(.0014)	(.00060)	(.0454)	(.0231)
Post-2013	-0.014	-0.006	0.0046**	0.000	0.004	0.049**
	(.032)	(.039)	(0.0022)	(.0004)	(.0704)	(0.0228)
Import penetration ratio, elasticity (Z)						
Pre-2008	-0.051**	-0.030***	0.000	-0.033		
	(.022)	(.0085)	(0.00005)	(.0233)		
2008 – 2013	-0.31**	-0.024	-0.0038***	-0.0003	-0.011	-0.038
	(0.15)	(.057)	(.0014)	(.00057)	(.0104)	(.0248)
Post-2013	0.00093	-0.015	-0.0053**	0.000	-0.028	-0.082***
	(.014)	(-.015)	(.0022)	(.0004)	(.0368)	(0.0244)
Sector FE	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes
Sectors	119	119	119	119	119	119

Notes: ***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by sector

Table 3: Grossman Helpman OLS Results (Politically Organized)

	(1) MFN	(2) MFN	(3) MFN+AVE	(4) MFN+AVE	(5) MFN+RD+AVE	(6) MFN+RD+AVE
Politically Organized * Z						
Pre-2008	0.017**	0.023*	0.055**	0.023*		
	(0.010)	(.0128)	(.023)	(.0128)		
2008 – 2013	-0.17	-0.055	0.000	0.002	0.021	0.054
	(0.165)	(.131)	(.00067)	(.0017)	(.0706)	(0.0815)
Post-2013	-0.085	-0.005	0.000	-0.002	0.225	0.39***
	(.086)	(.091)	(.00030)	(.0895)	(.2373)	(.0804)
Import penetration ratio, elasticity (Z)						
Pre-2008	-0.030***	-0.013*	-0.051**	-0.013*		
	(.0085)	(.0069)	(.022)	(.0069)		
2008 – 2013	-0.163	-0.023	0.000	0.002	-0.04	-0.013
	(.159)	(.129)	(.00027)	(.0016)	(.0639)	(.0899)
Post-2013	0.075	-0.013	0.000	-0.018	-0.019	-0.026***
	(.084)	(0.090)	(.00013)	(.0887)	(.2346)	(.0089)
Sector FE	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes
Sectors	119	119	119	119	119	119

Notes: ***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by sector

Table 4: Grossman Helpman IV Results (Organized)

	(1) MFN	(2) MFN	(3) MFN+AVE	(4) MFN+AVE	(3) MFN+RD+AVE	(4) MFN+RD+AVE
Organized * Z						
Pre-2008	0.033**	0.010***	0.018**	0.090		
	(0.0058)	(0.003)	(.0091)	(0.0681)		
2008 – 2013	0.027	0.004	0.031	0.029	0.021	0.054
	(0.0835)	(0.0836)	(.2422)	(0.0441)	(.0706)	(0.0815)
Post-2013	0.072	0.019	0.820	0.410	0.225	0.25***
	(0.711)	(0.519)	(0.625)	(0.562)	(.2373)	(.0904)
Import penetration ratio, elasticity (Z)						
Pre-2008	-0.011***	-0.0078***	-0.007	0.000		
	(0.000023)	(0.00007)	(.0051)	(0.0223)		
2008 – 2013	-0.082	-0.060**	-.38***	-0.001	-0.030	-0.013
	(0.0938)	(0.028)	(.1402)	(0.0290)	(.0639)	(.0462)
Post-2013	-0.001	0.000	-0.530	-0.058	-0.014	-0.033***
	(0.095)	(0.0030)	(.22)	(0.0781)	(.3481)	(.0014)
Sector FE	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes
Sectors	119	119	119	119	119	119

Notes: ***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by sector

Table 5: Grossman Helpman IV Results (Politically Organized)

	(1) MFN	(2) MFN	(3) MFN+AVE	(4) MFN+AVE
Politically Organized * Z				
Pre-2008	0.021**	0.010***	0.018**	0.011
	(0.0062)	(0.003)	(.0091)	(0.0511)
2008 - 2013	0.048	0.0012***	0.031	0.00213
	(0.0532)	(0.0004)	(.2422)	(0.0061)
Post-2013	0.064	0.012	0.51	0.012
	(0.671)	(0.421)	(0.625)	(0.291)
Import penetration ratio, elasticity (Z)				
Pre-2008	-0.011***	-0.0078***	-0.007	0.000
	(0.000023)	(0.00007)	(.0051)	(0.0000693)
2008 - 2013	-0.082	-0.060**	-.38***	-0.001
	(0.0938)	(0.028)	(.1402)	(0.0290)
Post-2013	-0.001	0.000	-0.530	-0.058
	(0.095)	(0.0030)	(.22)	(0.0781)
Sector FE	No	Yes	No	Yes
Year FE	No	Yes	No	Yes
Sectors	119	119	119	119

Notes: ***Significant at 1%, **Significant at 5%, *Significant at 10%. Standard errors clustered by sector