POLITICAL TRADE PROTECTION IN DEVELOPING COUNTRIES: FIRM LEVEL EVIDENCE FROM INDONESIA*

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Abstract

Empirical tests of the "Protection For Sale" hypothesis typically involve regressing industry-average tariff or non-tariff trade barriers on campaign contributions or organized industry lobbies. In developing countries, politicians in power are typically interested in protecting the business interests of particular individuals "connected" to them, not industries as a whole. Political protection is therefore firm-specific and based on personal relationships between firm owners and influential politicians. Politicians rely on import licensing more than other trade barriers, since licensing requirements are easier to obfuscate from the public eye. This paper identifies "politically connected" firms from the entire population of over 20,000 manufacturing firms in Indonesia, and studies the impact of a connection to President Suharto on the probability that those firms are granted import licenses for raw-materials and for commodities for sale in local markets. We find that connected firms are between 6 and 22 percentage points more likely to receive a license than their competitors, and that these licenses often create monopolies for connected firms. We also show that licenses are valuable to those who receive them, and that there are economy-wide welfare costs of this system of corrupt protection. In particular, there is evidence that licensing increases industry concentration, and decreases the correlation between firm productivity and market share. Finally, we show that industry-level analysis of tariff rates or non-tariff barriers would miss important details of the system of corrupt trade protection prevalent in Indonesia.

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I. Introduction

The discrepancy between the "free trade" policies prescribed by economic theory and the protectionist policies actually practiced around the world is generally attributed to the role of politics in trade policy formulation. For example, in a prominent paper, Grossman and Helpman (1994) develop a model in which politicians "sell" protection in exchange for campaign contributions by industry lobbies.[1] Empirical tests of this model and some extensions (Goldberg and Maggi 1999, Gawande and Bandyopadhyay 2000, Eicher and Osang 2002, Mitra, Thomakos and Ulubaşoğlu 2002, Esfahani 2002, Ederington and Minier 2003, McCalman 2004, Bombardini 2004) use data from the United States, Australia and Turkey, and typically regress industry-level aggregates of tariff or non-tariff trade barriers on a measure of campaign contributions or an indicator for industries that are "organized lobbies."

While this approach yields valuable insights for developed countries where election campaign contributions and industry lobbies are important, it masks important details of the contributions-protection exchange for developing countries where such business-politics reciprocal relationships are more prevalent and arguably more costly. Protection typically involves more of a corrupt contract in most developing countries where politicians in power may provide trade licenses (e.g. a license to import raw materials) to certain *firms*, either in exchange for bribes or because that politician is a kin relation to the businessman running the firm. The purpose of the trade barrier is not to protect the industry as a whole, but to protect a particular businessman from both foreign

[1] See Rodrik (1995) for a survey of political economy models of trade protection that pre-date Grossman and Helpman (1994), including Findlay and Wellisz (1982), Hillman (1989), and Magee, Brock and Young (1989). Recent empirical papers on the link between politics and trade protection attempt to test theoretical propositions contained in Grossman-Helpman model.

competitors and other domestic producers in that industry. Industry lobbies and tariffs are therefore not the right setting in which to study trade protection in these countries.

In contrast to the existing empirical literature in this area, this paper takes advantage of some unique features of the politics of trade protection in Indonesia to create firm-specific indicators of political connections for over 22,000 manufacturing firms, and then studies their impact on the likelihood that those firms receive licenses to import raw materials used in their production processes or to import commodities for sale in local markets. These licensing requirements have been the major *firm-specific* trade protection measure employed by the Indonesian government.

We identify politically connected firms using a three-step process. Following Fisman (2001), we first examine the response of the share returns of firms traded on the Jakarta stock exchange to a string of adverse rumors about the state of President Suharto's health.[2] We then identify the major shareholders and members of the Board of Management of each of the firms whose asset returns suffered abnormal negative shocks in response to the rumors. Finally, we identify all conglomerates run by these businessmen, and all other manufacturing firms which belong to those conglomerates.[3]

To measure firm-specific trade protection, we focus on import licenses for raw materials and for imported commodities sold in local markets. We identify all firms which possess import licenses and the product categories in which they operate, and as

[2] Fisman (2001) uses these same events coupled with consulting firm data on the strength of ties between roughly 80 firms and Suharto to estimate the value of the firms' political connections. We carry out this event study for all 285 firms traded on the Jakarta Stock Exchange as a starting point, and then combine it with information on the identities of major players in these firms and the conglomerations they belong to, in order to identify several hundred connected firms from the entire population of 22,000+ manufacturing firms in Indonesia. Leuz and Oberholzer-Gee (2003) uses a method similar to the first step of our process (the stock return regressions) to create a political connections indicator for 130 Indonesian firms.

[3] As an alternative, and to avoid any econometric problems associated with this procedure, we restrict our definition of 'politically connected' firms to only those that are directly owned or managed by a Suharto family member.

their control group, other firms which are not licensed, but producing in those same product categories. During Suharto's Presidency, the Indonesian government erected many licensing requirements, and assigned import licenses at its own discretion. This was a very effective method of protection, since this created either a monopoly or at least a competitive advantage for certain firms within each industry. For example, although there are 20 firms in Indonesia producing powdered, condensed and preserved milk, only 8 of those firms are classified as 'approved importers' by the government. A member firm of Suharto's son's conglomerate *Bimantara Citra* has been granted import licenses for 12 commodities necessary for milk production, whereas some of its competitors either cannot directly import any raw materials, or have been granted licenses for 3 or 4 commodities only. In such cases, competitors have to rely either on Bimantara, or on higher priced or poorer quality domestic substitutes for required raw materials.

This trade policy discussion is not meant to suggest a strict dichotomy between developed and developing countries in terms of licensing versus tariff protection. Licensing is ubiquitous all over the developing world, but tariffs are also common. Conversely, licensing as an entry barrier exists in many developed countries. According to annual *Trade Policy Reviews* published by *General Agreement on Tariffs and Trade* (GATT) and the *World Trade Organization* (WTO), various forms of import licensing are common mechanisms of trade protection all over the developing world. The justifications provided for licensing varies across countries and years, and range from public health, security, balance of payments and religious concerns to the protection of domestic industries. Trade Policy Reviews for India, Malaysia, Thailand, Indonesia and Philippines between 1990 and 1993 explicitly cite the protection of domestic industries as

a motivating factor behind licensing, although in recent years these countries have eliminated many licensing requirements that are based on this objective. Various GATT reports suggest that these licenses impose costs on importers both in terms of direct fees and application processing delays, and governments often restrict the quantities allowed per approved importer. Many developing countries also exercise related forms of protection (such as importer registration, quotas and state trading) that are subject to the types of corrupt political influences discussed in this paper. For example, 29 percent of total imports in Bangladesh in 1991 can be attributed to state trading and government procurement.

Import licenses are a common trade protection measure in developing countries because (a) it differentially protects certain firms within an industry, (b) recipient firms are protected from both domestic and foreign competition, and (c) even in corrupt countries, a direct sale of higher tariff rates for campaign contributions is implausible. Tariff rates are easily verifiable, and voters would respond by punishing the incumbent party in the next election, which is a mechanism not available to voters in the Grossman and Helpman (1994) model. Tariff rates are also subject to conditionalities imposed by international trade agreements, and it is easier for multi-lateral institutions to impose penalties based on observed tariff protection. In reality, politicians are forced to rely on less visible forms of protection such as import licensing. The licensing requirement may simply mean that the firm has to apply for and receive a signature from the government. Such licensing protection is easier to obfuscate from the public eye, because on paper it is a simple requirement, but the government assigns licenses at its own discretion.[4] From

[4] We examined all licensing regulations in Indonesia, and most often, the requirement is simply a two-page form where applicant firms have to fill out very basic information. Moreover, there are other ways to

the perspective of a corrupt politician, licensing schemes have the added benefit that when the signature is obtained, a bribe is transferred that enters the politician's pocket directly rather than the government coffers.

The firm-level approach to analyzing political protection outlined in this paper also has significant methodological advantages. Aggregate industry-level studies are likely to suffer from large measurement error if there is significant dispersion in tariff rates within an industry. For example, in Indonesia in 1997, the average nominal tariff for the 3-digit industry "Transport Equipment" was 25%. However, at a more disaggregated (5-digit) level, manufacture of automobiles, two-wheelers and bicycles were protected by tariff rates greater than 50%, while ship-building carried a tariff of only 5%. The truth is that different sets of firms are involved in the production of bicycles versus ships, and the government is differentially protecting the former set.

Another advantage of the firm-level analysis is that in an industry-level regression of trade protection on campaign contributions, some unobserved characteristic of the industries correlated with the ability to lobby (such as the industries' level of organization, profits or concentration) may impact trade barriers, and confound empirical inference. We can control for industry fixed effects in order to account for such impacts.

This paper conducts a firm-level study that creates indicators of political connections for over 20,000 Indonesian manufacturing firms for the mid-1990s (a period when Suharto was in power, and political connections therefore mattered a lot), and

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camouflage protection to certain firms through licensing. For instance, a state-trading company named Bulog is the sole licensed importer of wheat in Indonesia, but the major beneficiary of this monopoly has been Bogasari Flour mills, owned by a long-time Suharto ally named Salim. Bogasari has special rights to mill Bulog's wheat into flour. Major newspapers have reported that Bulog sold wheat to Bogasari for well below the world market price, which gave Salim monopolistic control over all of Indonesia's flour, and subsequently allowed him to monopolize the lucrative instant noodle market (Jakarta Post 1997, Aditjondro 1998b).

studies the impact of connections on both firm-specific licensing protection and industry-level tariff and non-tariff barriers. Controlling for industry fixed effects, location fixed effects, and a variety of firm characteristics such as size, profits, productivity, ownership, and export orientation, we find statistically strong evidence that politically connected firms are between 6 and 22 percentage points more likely to receive an import license compared to competitors. In addition, we find no evidence that industry level tariffs or non-tariff barriers bear any relationship to political connections. An industry-level study would thus miss important details of the system of political protection in Indonesia. Finally, we show that licenses are valuable to those who receive them, in the sense that they increase firms' market share and size. However, the correlation between market share and productivity decreases in licensed industries following the introduction of licensing, while market concentration increases. This licensing system thus likely imposed efficiency costs on the Indonesian economy, both in terms of productivity loss (due to a non-competitive mechanism for license allocation) and more concentrated markets. Politically connected firms suffered differentially larger losses during the 1998 Asian Financial Crisis, which also suggests that the Suharto regime chose 'weaker' firms to protect.

The next section describes the corrupt setting in which the business-politics exchange takes place. Section III outlines the dataset we construct, and details our methodology for creating indicators for political connections, and for licensing and tariff protection. Section IV presents the regression results. Section V presents some evidence on the welfare costs of corrupt protection and Section VI concludes.

II. Business-Politics in Indonesia During Suharto's Presidency

A few features of the nepotistic business-politics structure in Indonesia make it an ideal setting in which to empirically examine the politics of corrupt trade protection. First, policy-making in Indonesia is highly centralized and directed by the President through his Cabinet. Trade policy is formulated through the Ministry of Industry and Trade and the Ministry of Finance. The Ministers are directly appointed by the President, and need not even be elected officials. The central role played by the President in policy formulation creates a direct mechanism through which a connection to the President can affect the protection a firm receives. In other countries with more decentralized political authority, such as empirical exercise would constitute a greater challenge.

Second, it is widely recognized that Indonesia under Suharto had an extremely corrupt business environment. Transparency International (TI) has consistently ranked Indonesia as one of the most corrupt countries in the world, in the same group as Kenya, Nigeria, Bangladesh and Azerbaijan (TI 2004). TI estimates Suharto's family fortune at around $30 billion, built over three decades from the President's control over vast sectors of the Indonesian economy (TI 1998). Suharto's children have often played the role of middlemen for government purchases and sales (Ehrlich 1998). For example, the Humpuss Group owned by Suharto's youngest son Hutomo Mandala Putra was granted a clove trading monopoly by the Trade Ministry in 1992 despite fierce opposition from major clove cigarette manufacturers (kompas.com 2000). Henderson and Kuncoro (2004) conduct a firm survey in Indonesia and report that these firms spend on average over 10% of costs on bribes and over 10% of management time "smoothing business operations" to obtain licenses and permits.

Third, the fact that Suharto suffered some adverse health shocks during his Presidency, and that news about these events was reported in the media, allow us to create measures of political connections for firms based on the response of their stock price to these news events. Our measures are therefore derived from information available to market participants aggregated in the Jakarta Stock Exchange (JSX), rather than surveys or consulting firm reports. This approach is beneficial for two reasons. Survey data or "expert reports" are typically based on subjective judgments of certain individuals, and also do not provide a quantitative measure of the strength of political connections, which our approach yields. Second, the Suharto influence on Indonesian business groups has an inter-connected expansive pyramidal structure (see Appendix A3) where each group connected to the family is in turn connected to yet more business groups through joint ownership or management. This makes it difficult to derive an objective classification rule to separate connected firms from un-connected ones. Almost all Indonesian firms could be categorized as "connected" due to the indispensable influence of the Suharto family. As a sensitivity check, we present some estimation results with the set of politically connected firms restricted to only those that are owned or managed by a Suharto family member, in order to avoid any potential econometric problems associated with the stock-return based procedure to identify connected firms.

Two recent papers that study the impact of political connections on capital controls and credit access rely on either expert assessments of which companies are connected (Johnson and Mitton 2003, for Malaysia), or use firms controlled by the wealthiest families (Charumilind, Kali and Wiwattanakantang 2006, for Thailand). In their study on bank lending in Pakistan, Khwaja and Mian (2004) move away from

subjective judgment and define a firm as "political" if its director participates in an election. In a cross-country study, Faccio (2004) defines companies to be politically connected if a controlling shareholder or director of the company holds political office.

III. Data and Methodology

Our empirical analysis of the relationship between political connections and licensing protection requires us to undertake five major tasks:

(a) Identify politically connected firms

(b) Identify industries and commodities that are governed by import licensing requirements from government regulation manuals.

(c) Identify firms which possess licenses, what raw material they are allowed to import with that license, and what outputs they produce using that raw material.

(d) To construct an appropriate "control group" (i.e. firms without licenses), identify other firms competing in the same product categories as the firms who possess import licenses. To gauge how protective a particular license is, ascertain how many other firms doing business in that same product have been granted licenses.

(e) Gather data on firm characteristics (location, size, profits, ownership, age, etc.) and associated industry characteristics (including other tariff and non-tariff protection measures) for all firms in the licensed and non-licensed groups.

We now describe these tasks and the data generated in greater detail:

A. Measuring Political Connections of Firms

How strong the connection is between particular firms and influential politicians is of course not directly observable. To identify politically connected firms in Indonesia

and to get a sense of the strength of those connections, we first examine how the stock price of 285 firms traded on the Jakarta Stock Exchange (JSX) responded to adverse news about Suharto's health between 1994 and 1997. Suharto suffered some health shocks during the final years of his reign which were covered by the news media. The stock prices of certain firms traded on the JSX experienced sharp drops in response to such news events. For example, on July 4th, 1996, it was announced that Suharto would leave for Germany for a medical check-up. The stock price of the firm Bimantara Citra, owned by Suharto's son Bambang Trihatmodjo, dropped by 3.6% that day, although the Jakarta Stock Exchange only fell by 0.9% in the aggregate. Between 1994 and 1997, there were 15 days in which a local Indonesian newspaper, *Bisnis Indonesia*, reported some adverse news regarding Suharto's health. Using daily stock price data for the 985 market trading days between 1994 and 1997, we run a set of firm-specific regressions of abnormal stock returns for each firm on aggregate movements in the JSX, the average return for the industry category in which that firm belongs, movements in the exchange rate and interest rate, and an indicator variable for days when the news about Suharto's health was reported by the press (see Appendix A1 for example regressions for the firm *Bimantara*).[5] A firm is defined to be "politically connected" if the Suharto health news indicator has a negative coefficient which is significantly different from zero at the 95% confidence level. The size of this coefficient is used as a measure of the strength of the connection between this firm and Suharto.

[5] We use three different definitions of firm stock returns, including the actual return, the deviation of the actual return from its average, and the abnormal return net of movements correlated with the aggregate JSX market return. We also variably define the event dates to be the day the illness occurs or the day it is reported in the press. The identities of 'politically connected' firms are roughly invariant to the particular definition of returns or event dates used.

The stock price regressions are run for 285 of the 293 firms traded on the Jakarta Stock Exchange with enough trading-day observations to justify a firm-specific regression. Of these, 29 firms (10.2%) are identified as "connected" to Suharto. This set of connected firms lost 3.7% of their value on the median "bad health day" for Suharto[6], which translates into a $2.3 million (6.2 billion Rupiah) median loss per connected firm. Our estimates for the loss in firm value attributable to the adverse health news ranged from 0.5% to 19.6%, which yields significant variation in our measure of the strength of firms' political connections to Suharto. Some of the largest losses accrued to *Sinar Mas Multi Artha* (a loss of 5.5%, or $110 million per day on average) and *Bimantara Citra* (a loss of 2% or $16.7 million per day).[7] The identities of the major players in the set of politically-connected firms we identify coupled with newspaper reports about their relationships to Suharto provide good external validity of our estimation procedure.[8]

The identities of the key personnel running the 29 politically connected firms also allow us to identify, by proxy, other firms that are connected to Suharto, but not traded on the Jakarta Stock Exchange. We do this by locating all other firms that share ownership and management with those 29 firms. We first identify each member of the Board of Directors and Board of Commissioners of each of the 29 firms using the *Indonesian*

[6] This is the effect attributable to the revelation of adverse news about Suharto's health in our regressions, after controlling for other determinants of movements in the firms' stock returns.

[7] A business partner of the Suharto family, Eka Tjipta Widjaja is the principal founder of Sinar Mas Group, the second largest private business group in Indonesia (Pusat Data Bisnis Indonesia 1997). Sinar Mas has various joint ventures with the Bimantara group, founded by Suharto's second son Bambang Trihatmodjo and his son-in-law Indra Rukmana, including the prominent Plaza Indonesia shopping mall in Jakarta.

[8] There were a few firms in the list of 29 connected firms that we initially could not validate with external sources. For example, we were surprised by the fact that PT Charoen Pokphand Indonesia (CPIN) and the cosmetics producer PT Mustika Ratu were identified as politically connected. We later discovered that PT Mustika Ratu is involved in many joint ventures with companies owned by Suharto's children (*Conglomeration Indonesia*, 1997). It was recently reported that the Director of CPIN was arrested along with the former head of the state-trading company BULOG amidst allegations of corruption worth 841 billion Rupiah (*Media Indonesia Online*, 2004).

Capital Market Directory 1998. We then use the publication *400 Prominent Indonesian Businessmen* to find the names of all business groups (conglomerates) to which the individuals running the connected firms belong. Finally, we turn to *Conglomeration Indonesia* to identify all subsidiary firms of the 'connected' business groups.

We restrict attention to manufacturing firms in our empirical analysis, since the annual comprehensive firm survey in Indonesia – an important source of data on firm characteristics - covers the manufacturing sector only. Only 16 (55.2%) of the 29 'connected' firms we identify make this restricted sample, since only 152 (53.3%) of the 285 firms traded on the Jakarta stock exchange are in the manufacturing sector. Through the procedure described in the preceding paragraph, we identify 237 manufacturing firms which are subsidiaries of the politically connected business groups.[9] These 237 firms form our sample of connected firms, out of a population of 22,386 total manufacturing firms in 1997 for which we have data on firm location, size, ownership, and industry. These 22,386 firms operate in 308 different ISIC-5 digit industries.[10]

B. Measuring Firm-Specific Trade Protection: Import Licensing

The two principal instruments of trade protection used in Indonesia are tariffs and import licensing. Indonesia's import licensing system is administered by the Ministry of

[9] The subsidiary firms of 'connected' business groups identified through *Conglomeration Indonesia* had to be merged to the 1997 *Annual Manufacturing Survey*, which contains information on production, profits, age and ownership for the entire universe of medium and large manufacturing firms in Indonesia. Firm location, industry and size were used as matching variables in the merge, because firm identities are concealed in the survey. The connected business groups we identify actually have 2126 subsidiaries, of which 408 are manufacturing firms. However, we are able to confidently identify the industry, number of workers and locations for these 237 firms only. We thus lose some firms from our dataset through this merging procedure, but there is nothing systematic to the set of firms that are lost – it is simply that their location, size and industry do not uniquely identify them.

[10] The industry classification we use is the 5-digit Klasifikasi Lapangan Usaha Indonesia (KLUI). KLUI augments ISIC to accommodate industries that are specific to Indonesia, such as the Balacan Paste industry.

Industry and Trade. This system classifies goods according to the type of importer permitted to import the product. In 1997, over 97% of all tariffed items were unrestricted, which means that they could be freely imported by any registered importer. 197 commodities were classified as restricted goods that only specific license holders were allowed to import. License holders are categorized in the following way:

(a) "*Producer Importers* (IP)" for a particular *raw material* are allowed to import that raw material for use in their production process;

(b) "*Registered Importers* (IT)" for a particular commodity are allowed to import that commodity, either as a raw material or for sale as a final product;

(c) Designated state-owned enterprises are given "sole importer" status for certain commodities (e.g. BULOG for some food items). Some *quasi*-government institutions are also assigned monopoly status, like the Humpuss Group for the clove trading case mentioned above.

Comprehensive import licensing regulation was established in 1987, and the government started assigning licenses to private firms in 1991. The number of commodities subject to import licensing has progressively fallen from 650 in 1991 to 381 in 1993 and to 197 in 1997 (see Table 1). Despite the reduced commodity coverage of import licenses, the share of domestic production covered by restrictive licenses remained steady at around 22% between 1991 and 1995 (GATT, 1995). Import licensing regulation is more common for manufacturing products. In 1997, 91% of the 197 commodities subject to licensing were manufacturing products from 49 different industries. Of these, 31% are for metal products, followed by food (22%), basic metals (17%) and chemicals (9%).

Using data from the Directorate General of Customs and Excise for 2000, we are able to identify the entire set of IP and IT importers, and the commodities for which each of these firms holds the import license. Although only 42% of government import licensing regulations apply to raw materials (IP) imports, 90% of all licenses are awarded for such imports. There are 340 license holders in our sample of 22,386 manufacturing firms, and these license-holders have production activities in 106 different ISIC-5 digit industries.[11] We use only non-license holder firms in these 106 industries as the 'control group' in most of our regressions, while in others, we use only firms in the 49 industries regulated by the Ministry of Industry and Trade (which encompass the 197 'restricted' goods subject to licensing).

Issuing an import license to a firm is more protective if not many competitor firms are granted a license to import that same commodity. Similarly, giving a firm several IP licenses (so that the firm can import several different raw materials used in their production process) is more protective than granting the firm fewer licenses. To examine the varying degrees of protection received by license-holders, we create more refined measures of licensing protection that take into account the number of licenses a firm has, as well as the number of competitor firms who are also awarded the same licenses. The three types of licensing protection measures used in the empirical analysis are:

(a) Indicator variable for firms which have at least one license,

(b) Count of the number of licenses each firm has, and

[11] Although there are 506 total import license-holder manufacturing firms in Indonesia, our process of merging by firm location, industry and size (see footnote 9) allowed us to identify the industry, number of workers and locations for only 340 licensed firms.

(c) Inverse of the number of license holders for that commodity (with zeros assigned to non-licensed firms). The maximum value of 1 for this measure would indicate that the firm is a monopoly importer of that commodity.[12]

There is quite a bit of variation in the numbers of IT and IP license holders for different commodities, which in turn generates variation in the extent of licensing protection within the set of protected firms. There are certain firms assigned as the sole license-holder for some food and beverage products, while over 30 firms are allowed to import polypropylene. Our measures therefore code certain food importers as more protected than the importers of polypropylene.

C. Industry-Wide Protection Measures: Tariff and Non-Tariff Barriers

To show the relationship between political connections and aggregate industry-wide protection measures, we compute tariff rates and non-tariff barriers for each industry. We collect data on tariff rates in May 1997 for 9,324 HS-9 commodities from the Tariffs Team of the Ministry of Finance in Jakarta. We then match each of these commodities to one of 266 ISIC-5 digit industries, and create an industry average nominal tariff variable. Thirteen of these industries (5%) have zero tariff protection.

Following Goldberg and Maggi (1997) we compute the coverage ratio for non-tariff barriers (CR-NTB) in each industry as $\sum_k n_k^i w_k^i$, where the indicator variable n_k^i equals one if product *k* in HS-9 digits is covered by some non-tariff barrier (licensing and/or import prohibition), the weight w_k^i is the import share of product *k* relative to the

[12] If a firm has more than one license, then we compute the inverse of the number of "approved importers" of each commodity it possesses an import license for, and then use the maximum value of these numbers across different commodities. As an alternative, we sum the inverses instead of taking the maximum value. These measures ensure that all else equal, firms with multiple licenses will be more likely to have greater values for protection than firms with a single license.

total freight-on-board (FOB) value of all imports in the ISIC-5 digit industry *i*, and we sum over all *k* products in industry *i*.[13]

As a third industry-wide protection measure, we create an industry-level licensing indicator. An industry is defined as 'protected' if at least one firm in the industry has an import license. This variable will be used to examine whether industries chosen for licensing are systematically related to sectors where politically connected firms operate.

D. Firm and Industry Control Variables

We use firm characteristics relating to age, ownership, size, profits, productivity, etc., obtained from the *Annual Manufacturing Survey* conducted by Statistics Indonesia (1997) as control variables.[14] This dataset reports the location of each firm, which allows us to control for province fixed effects in all regressions. Firms in our sample are located in all 27 provinces of Indonesia, spread out over six islands. Close to 80% of the firms are located in Semarang, Jakarta, and Surabaya, which are the three major cities on Java island with highly developed business and transportation infrastructure. The Manufacturing Survey reports the 5-digit industry in which each firm operates, which allows us to control for industry fixed effects. The survey also contains information on the number of workers employed, wage payments, total value of production and value added, value of exports, firm age, and ownership structure. For some specifications, we

[13] Other types of non-tariff barriers such as marketing and pricing arrangements, local-content requirement, and investment controls also exist in Indonesia for ISIC-4 digit industries (GATT 1995). Licensing and import prohibition are the most common non-tariffs barriers used in manufacturing sector, which is why our CR-NTB measure is based on these two barriers. As a sensitivity check, we included all types of non-tariff barriers at the ISIC-4 level and calculated an ISIC-3 digit level CR-NTB. The results don't change substantially under this alternate measure.

[14] This is actually a plant level survey, and thus the "firm" characteristics we obtain from it are actually more disaggregated "plant" specific characteristics. However, the main variables of interest in the empirical analysis (political connections and licensing indicators) are measured at the firm-level, and so we refer to some plant-specific characteristics as firm characteristics in the paper for ease of exposition.

aggregate these data up to the industry level, and create additional indicators such as a concentration index for the industry. We supplement these with data on the total cost, insurance and freight (CIF) and FOB values of imports for each industry from Statistics Indonesia (1996). From trade regulations data, we identify the nine state-owned companies that are categorized as "strategic producers" by the government, and therefore protected. We create a "strategic production industry" indicator for the fourteen industries in which these nine companies operate. Similarly, the government protects the production of eleven commodities (rice, sugar, margarine, beef, milk, kerosene, etc.) through a special provision for basic necessities. We create a "strategic consumption" indicator for the twelve industries in which these basic commodities are produced.

IV. Empirical Analysis of Licensing and Political Connections

A. Summary Statistics

Panel A of Table 2 reports summary statistics for firm level variables across three different samples used in the regression analysis. The first sample consists of 22,386 manufacturing firms operating in 308 ISIC 5-digit industries. The third sample consists of only firms in the 49 industries that, according to government regulation manuals, contain the commodities that fall under import licensing regulation. The licensed firms in these 49 industries use their imported raw materials to produce multiple commodities which span a total of 106 industries. Since firms producing in all 106 industries compete with the set of licensed firms, the 9627 firms in these 106 industries form our second sample. Most of the results we report are based on this 9627-firm sample.

Only 1.5% of the firms in our large 308-industry sample are licensed. This ratio increases to 3.5% in the 106-industry sample, and further to 4.2% in the 49-industry sample. Similarly, only 1% of firms are 'politically connected' in the large sample, but larger fractions of the smaller samples (1.6% and 3.6% respectively) are connected. The annual production of the average firm in the 9627-firm sample is valued at 16.7 billion Rupiah (US$5.6 million), with profits around 6.3 billion Rupiah (US$2.1 million) in 1997. These firms operate at 67% of capacity, export about 10% of their output and were about 13 years old on average in 1997. The vast majority of these firms are largely privately owned.

Panel B of Table 2 presents summary statistics for industry-level variables of interest. In the full industry sample, 90 industries (33.5%) have at least one connected firm and 97 industries (36.1%) have at least 1 licensed firm. The average tariff rate is 13.5%, and the NTB coverage ratio was only 1.5%. In the raw data, there does not appear to be any statistically significant difference in the tariff rates or CR-NTB across the sets of "politically connected" and "un-connected" industries.

B. Benefits of Licensing and Political Connections

Table 3 compares changes in production, total profits and profitability (rate of return) from a pre-licensing (1990) to a post-licensing (1997) period, between licensed, politically connected, and un-connected firms to examine whether licenses are beneficial to the firms that receive them, and whether certain types of firms differentially benefit more from licensing. Table 3 shows the results of difference-in-difference means tests in the raw data, based on the set of manufacturing firms in existence in both 1990 and 1997.

Licensed firms experienced larger increases in production and profits between 1990 and 1997 compared to un-licensed firms. The production of licensed firms in 1997 was 16.5 times their production in 1990, and the corresponding multiple for un-licensed firms was 2.7. Licensed firms' profits experienced an eight-fold increase over this period, while profits of unlicensed firms grew four-fold. These benefits of licensing appears to be limited to a size effect, as there is no evidence that licensed firms' profitability improved between 1990 and 1997. This calls into question whether the protection accorded to these firms had any positive impact on firm fundamentals. Comparing licensed firms that are connected to Suharto against licensed firms that are not connected, we find that connected firms grew more in terms of production and profits over this period, but the sample available for these comparisons is small.

The bottom panel in Table 3 shows that in the pre-licensing period (1990), un-connected firms which eventually received licenses were larger in size, total profits and profitability than firms that remained un-licensed. This is merely suggestive that firms without a 'connection' to Suharto that ultimately received licenses probably had a better ability and willingness to bribe.

C. Regression Results: The Impact of Political Connections on Licensing

Table 4 reports results of linear probability models of the likelihood that firms are given an import license for any commodity.[15] The coefficient of interest is on the indicator for whether the firm is politically connected to President Suharto, which is first constructed using the 3-step procedure that involves examining firm stock price

[15] The linear probability model (LPM) is not necessarily the most appropriate, since our dependent variable has a low mean. The LPM results are presented first for ease of interpretation of the coefficients. In Table 5, we run Probit specifications and show that marginal effects are generally smaller under the Probit than the LPM, but that all the major results of interest are statistically significant under both estimation methods.

responses to adverse news about Suharto's health, identifying the businessmen running each of those firms, and the conglomerates controlled by those businessmen.

In specification 1 we control for province fixed effects of the firm's location in addition to various characteristics for the industry, including its size, market structure, value of imports and indicators for whether it is issued a "strategic production" or a "strategic consumption" status by the government. We find that firms that are politically connected are 17.4 percentage points more likely to possess an import license compared to other firms, and this effect is statistically significant at the 99% confidence level. This represents an eleven-fold increase at the mean in the likelihood of receiving a license. We also find that firms in larger and more concentrated industries and in "strategic consumption" industries are more likely to be granted a license. "Strategic consumption" industry firms are 1.2 percentage points more likely to be granted an import license than other firms. A one standard deviation increase in our industry concentration ratio (which corresponds to a large 24.7 percentage point increase in the four largest firms' share of the market) leads to a 1 percentage point increase in the probability of a license for firms in that industry. A one standard deviation or 8% increase in the size of the industry increases the likelihood of firms in that industry receiving a license by 3.2 percentage points. The impact of being politically connected is clearly much larger than the effects of even large changes in these other control variables. When a full set of industry fixed effects are included in specification 2 instead of the industry characteristic variables, the fit of the regression improves. The effect of being 'politically connected' now increases to 18.3 percentage points, and remains statistically significant.

Specification 3 adds controls for other firm characteristics in addition to industry and province fixed effects. Some firm characteristics like size or profits are potentially endogenous, since protection may have itself allowed these firms to become larger or more profitable. We test for this possibility explicitly by gathering data on the same firm characteristics (production, profits, productivity, capacity utilization and workforce) in 1990, before the licenses whose effects we are examining were introduced. Appendix A2 reports regressions of the impacts of being licensed on percentage changes in firm size, profits and capacity utilization between 1990 and 1997. Licensed firms did experience a differentially larger increase in work-force over this period, but there was no statistically significant impact on profits or capacity utilization. We therefore omit 'number of workers' from the set of firm controls in our main licensing – political connections regressions, since there is some indication of reverse causality with respect to this variable. It is important to note that these percentage change regressions are not formal statistical tests of endogeneity. However, in our main licensing regressions reported in Tables 3 and 4, we are only concerned with examining whether the impact of political connections on licensing protection is invariant to the inclusion of other firm characteristics. We want to guard against the possibility that, say, the 'political connections' indicator merely picks up the effect of firm size. We then show that the effect of political connections on licensing remains roughly invariant to the inclusion (or exclusion) of firm characteristics on top of the industry fixed effects.

In specification 3, we find that larger firms – measured in terms of the value of production – are more likely to possess an import license. A 10% increase in firm size improves the probability of getting a license by about 11 percentage points. Firms with

larger profits – measured by their value added net of wage payments – are also more likely to be given "approved importer" status. Every 10 billion Rupiah (approximately US$3.3 million) increase in annual profits is associated with a 1.1 percentage point increase in the probability of receiving a license. Interestingly, we find no evidence that firm productivity, profitability or capacity utilization increase the likelihood of an import license. The government appears to selectively protect firms based on their political connections rather than firm fundamentals. Leaving out the domestic private ownership share of firms as the base category, we find that the probability of being licensed increases with foreign ownership share, but decreases with central government ownership share. A 10% increase in foreign ownership share increases the license probability by 0.41 percentage points, and the effects of changes in government ownership share are even smaller.

Most importantly, the impact of political connections on licensing is robust to the addition of these firm characteristics. In specification 3, connected firms are 15.7 percentage points more likely to receive a license compared to other firms. Again, this impact is large relative to the effects of plausible changes in other firm characteristics.

D. Sensitivity Tests: Restricting the Sample

Various specifications reported in Table 5 re-run specification 3 with incremental changes to examine the impact of that change on the link between licensing and political connections. This table only reports the coefficients on the 'political connections' indicator. Specifications 4 and 5 truncate the sample to include only medium and large firms, with at least 100 workers and 800 workers respectively. Small firms are probably less likely to have a strong demand for an import license. In addition, Suharto and his

family have less use for forming relationships with small firms with limited bribing or profit-sharing capacity. These two facts together could bias the impact of political connections on licensing protection upward in a regression where small firms with no demand for an import license are included in the sample. Excluding small firms reduces the coefficient of political connections somewhat. In the sample of firms that employ more than 100 workers (the largest 30% of firms), politically connected firms are 13 percentage points more likely to receive a license than other firms. This impact is about 14 percentage points in the largest 5% of sample firms that employ 800 workers or more.

In specification 6 we restrict our sample to 9627 firms operating in the 106 industries that have at least one licensed firm. Only firms competing in the market with a license-holder is included in this regression. This is another attempt on our part to exclude firms that may not have a strong demand for a license. In this sample, connected firms are 21 percentage points more likely to receive a license than other firms.

In specification 7 we further restrict our sample to only firms in the 49 industries that contain commodities directly governed by import licensing. This is an overly restrictive definition of the non-licensed control group, since firms competing with the set of licensed firms in the output market, but not necessarily producing in the industry where the particular raw material being imported through the license, are being excluded. Even in this sample we find that connected firms are 13.2 percentage points more likely to be licensed, and this effect is statistically significant.

E. Probit Models and Alternative Definitions of Licensing and Political Connections

We perform additional robustness checks in Table 5 by changing the estimation method and the measures of licensing and political connections used. Specifications 8-11

are Probit regressions of the indicator for whether firms are licensed. The second column reports the sample average marginal effect of being politically connected. The magnitudes of the 'political connection' impacts are smaller in the Probit regressions than they are in the linear probability models. Politically connected firms are 5.8 percentage points more likely to be licensed according to specification 8, and the effect is significant at the 99% level of confidence. Specifications 9 and 10 run this regression for IT (registered importers) and IP (producer importers) license-holders separately, with the control groups restricted (respectively) to only those firms operating in industries with some IT or some IP license-holders. Connected firms are over 3.6 percentage points more likely to receive an IT license than other firms, while they are 5.3 percentage points more likely to receive an IP license. The effect is therefore not entirely driven by any particular type of license.

In specification 11 we replace the political connections indicator with a measure of how close the relationship between Suharto and the connected firms are. This measure is based on the percentage loss in firm value in the Jakarta Stock Exchange attributable to "bad health news" for Suharto. The effect of political connections continues to be statistically significant, but it is difficult to meaningfully interpret the coefficient on this variable. The elasticity of the licensing probability with respect to the measure of the 'strength of political connections' appears to be small.

In specifications 12 and 13, we replace our licensing indicator with measures of the stringency of licensing protection. By these measures, a firm is *more* protected if there are fewer other license-holders for the same commodity, and if the firm has a larger number of licenses for different commodities. Being politically connected reduces the

number of *other* (competitor) license holders in the same industry by 2 firms (or 15-20%) in specifications 12 and 13.[16,17] In a Poisson model of the count of licenses for each firm (specification 14), being politically connected raises the expected number of licenses by 0.023. This is a large effect, since the average number of licenses held by this sample of firms is about 0.05.

F. Endogeneity of Political Connections and Licensing

Since our main results concern the impact of political connections on licensing protection, we take the possibility of reverse causality and omitted variable bias driving these results seriously, and present some additional evidence below in order to build confidence in the causal interpretation of the empirical effect we uncover.

One concern may be that both political connections and the assignment of licenses are somehow simultaneously determined. Managers of firms that would benefit from licenses became politically connected, either through bribes or by marrying into the Suharto family, and then received the required licenses. While we are not too concerned about this type of a simultaneous mechanism since it is still consistent with the corrupt trade protection story we have constructed, it is worthwhile to note that external evidence from newspaper and magazine articles make this mechanism unlikely. Press reports indicate that the relationships between Suharto and the 'politically connected' individuals our estimation procedures identify were formed over many years, and usually pre-date

[16] The mean of dependent variable for *max* (1/*n*) is 0.079. This means on the average, the number of license holders (*n*) in the industry is 13 firms. Being connected has increased the dependent variable to 0.093, which implies that *n* reduces to about 11 licensed firms. In specification 13, being politically connected reduces the number of other competitors by 2 firms from 10 to 8 (or 20%).

[17] In another specification whose results are not reported in the tables, we augment the dependent variable with the number of firms in the industry. Licensed firms are relatively more protected in a many-firms-industry than in a few-firms-industry. So, this alternate measure of protection multiplies the licensing indicator with the proportion of non-licensed firms in the industry. We find that being connected has a statistically and quantitatively significant impact on this measure in the expected direction.

the introduction of the 1991 import licensing regulations whose effects we are studying. This is of course true for Suharto's children and other relatives who run some connected firms, but also for other prominent 'connected' businessmen, including Salim of Salim Group, Eka Tjipta Widjaja of Sinar Mas Group, and Bob Hasan of Nusamba Group (Asiaweek 1996, Colmey and Liebhold 1999). Salim's and Hasan's associations with Suharto began when they were suppliers for the Army's Diponegoro Division in the 1950s, at a time when General Suharto was the division's commander (Aditjondro 1998a). Once Suharto became President of Indonesia, his fortunes began to soar along with those associates.

It is still possible that the first step of our method of identifying connected firms (i.e. the firm-specific stock price regressions) picks up firms that are not really connected but who suffer a negative stock return response to adverse news about Suharto's health, just because they possess a license the market deems a "Suharto regime protection measure" that might be lost in the event of a regime change. One way to check the substantive importance of this concern is to examine whether the stock market responds to the awarding of licenses on the days they are announced and awarded to certain firms. We ran such daily stock price regressions with indicator variables for "news breaks" that licenses were awarded, and find that this is not the case. As a representative example, consider the milk producer PT. Ultra Jaya that received an import license from the government on June 3, 1991. Ultra Jaya's average stock return overall was lower in June 1991 than in the previous month (-0.8% vs. 0.7%).

This and other such regressions make us reasonably confident that our method of identifying politically connected firms is not falsely picking up the effect of licensing.

However, we cannot verify this for every connected firm in our sample, because not every license is "unexpected news" on the day it is awarded, and not all firms identified as "connected" in our three-step procedure are traded on the stock exchange. Therefore, to further guard against this criticism, we (quite restrictively) define a firm as politically connected only if that firm has a Suharto family member in its Board of Management, as identified by a business consulting firm in Jakarta named Castle Group. The identifying assumption here is that being a member of the Suharto family is not endogenous to licensing. Under this definition, politically connected firms are 8.9 percentage points more likely to receive an import license in the Probit specification 15 of Table 5.

To establish a clean causal effect of being associated with the Suharto family on the probability of receiving a license, we would like to further rule out firms which strategically invited a Suharto family member to join its Board of Directors in order to receive preferential access to licenses.[18] To this end, we further restrict our definition of the "politically connected" to only those firms that are subsidiaries of business groups that *belong to* the Suharto family. This definition includes, for example, the firm *Bimantara Citra* which was founded by Suharto's son Bambang Trihatmodjo in 1982, but it excludes the firm *PT Barito Pacific* founded by businessman P. Pangestu in 1976, who invited Suharto's daughter Tutut to join the venture only in 1992. In specification 16, these firms were 3.8 percentage points more likely (i.e. twice as likely at the mean) to receive an import license, and this effect is again statistically significant. Finally, to satisfy the more subtle concern that individuals with strong demands for licenses and

[18] It has been noted in the press that many Indonesian businessmen have had to embark in joint ventures with Suharto's family, or have made a family member either a major shareholder or a member of the company's board of directors in order to receive market access and preferential treatment from the government (Tempo Interaktif, 2003).

protection were more likely to marry in to the Suharto family, we note in specification 17 that firms that belong to Suharto's "blood relatives" (excluding those who marry in to the family) were 4.8 percentage points more likely to receive an import license. These marginal effects are based on the more conservative Probit specifications. This is strong causal evidence of a corrupt nepotistic trade protection structure, and makes it very unlikely that our main results concerning preferential access to licensing for the entire set of politically connected firms is entirely endogeneity – driven.

In specification 18 we simultaneously control for two measures of political connections: (a) Suharto family owned firms, and (b) other firms identified as connected through the JSX event study. Suharto family firms are 3.6 percentage points more likely to receive a license, while other connected firms are 5.1 percentage points more likely. In truth, the event study identifies some firms which can be verified through secondary (newspaper) sources as 'connected', but which are left out in the alternative Suharto-family-based definitions of political connectedness because they are not owned or managed by the Suharto family. The event study is the preferable way to identify connected firms, but the Suharto family based definition is econometrically 'cleaner'.

G. Political Connections and Firm Size

Figure 1 shows that the impact of political connections on licensing varies across different types of firms. These graphs are the result of a set of regressions that add interaction terms between the connections indicator and measures of firm size, profits and capacity utilization. We would expect political connections to have more of a positive impact on licensing for larger and more profitable firms, since the gains to the corrupt relationship between Suharto and business-owners are larger when the stakes are higher.

This is simply a scale effect: the value of a license is probably greater for larger firms, and size of the kickback the Suharto family can expect to receive from a larger firm is correspondingly bigger.

There does appear to be some non-linear impacts of political connections on the likelihood of licensing. The top panel of Figure 1 plots the marginal effect of the political connection indicator against the value of firm production. The impact of connections on licensing probability is positive for the largest 80% of firms. In the largest 10% of firms, being connected increases the probability of a license by over 20 percentage points! There is weaker evidence that firms with greater capacity utilization benefit more from a connection, but no evidence of non-linearity with respect to profits.

H. Industry-Level Regressions of Tariffs and Licenses

Table 6 aggregates our data up to the ISIC 5-digit industry level and examines the impact of political connections on: (a) the average nominal tariff rate for the industry, (b) the coverage ratio for non-tariff barriers; and (c) licensing protection in the industry. We define an industry to be politically connected if it has at least one connected firm. In specifications 19-23 we control for various characteristics for the industry, including its production size, imports, profits, concentration ratio (CR-4), location, and "strategic production" and "strategic consumption" industry indicators. There is no statistical evidence that "connected" industries are more likely to be protected by tariffs or non-tariff barriers, or that licensing regulation is more likely to apply to industries which have connected firms. This is not surprising, since "political connectedness is really a firm-level concept in Indonesia, and protection is typically not aimed at industries as a whole.

The analysis underscores that political protection is firm-specific, and an industry-level analysis in this setting would suffer from large measurement and conceptual errors.

Specifications 22 and 23 are regressions of tariffs and non-tariff barriers in the structural form suggested by the Grossman and Helpman (1994) model.[19] The estimate of the inverse of import penetration ratio and its interaction with the political connections indicator are positive in the tariff regression (but not significantly different from zero), which runs counter to the predictions of the model. When CR-NTB is used as the dependent variable, the coefficient signs of the inverse of import penetration ratio and the interaction support the model's prediction, but are again not significantly different from zero.[20] In the linear regressions, we do find that smaller industries and industries that import more have lower levels of tariff and licensing protection, but these results should be interpreted cautiously, as there are obvious simultaneity issues here.

V. Welfare Costs of Licensing Protection

This paper has thus far demonstrated that trade protection in Indonesia is firm-specific, and that the Suharto regime was more likely to assign valuable trade licenses to "politically connected" firms than to their competitors, creating competitive advantages

[19] We cannot include the elasticity of demand for imports, a variable suggested by the Grossman-Helpman model, due to lack of data at ISIC-5 level. We include several other controls to ensure that the effects of the import penetration ratio and its interaction with the political connections indicator are not driven by omitted variables.

[20] The parameter estimates can be used to retrieve the Grossman-Helpman structural parameters: (1) the weight the government attaches to aggregate social welfare relative to political contribution a, which can take any positive value; and (2) the proportion of the country's population that is organized, α_L. Specification 23 implies $\alpha_L = 0.22$ and $a = 2.05$. This α_L estimate is lower than the values obtained by Gawande and Bandyopadhyay (2000) ($\alpha_L \approx 1$), and Goldberg and Maggi (1999) ($\alpha_L \approx 0.85$), which have been criticized as unrealistically high. The estimate is higher than the value Bombardini (2004) reports using U.S. data ($\alpha_L \approx 0.02$), but one would expect interest group activity to be greater in Indonesia than in the United States. It is important to point out that our α_L estimate is derived under an extreme assumption that elasticity of demand for imports across industries is unrelated to import penetration ratios.

for the chosen firms in the process. While these results are important in themselves because they shed light on the nature of corrupt trade protection in developing countries, we would like to dig deeper and ask whether such a system of political protection imposes a welfare cost on Indonesian society. Such costs can take many forms, including the welfare loss from the monopolies that the licensing system creates, or the efficiency loss from assigning licenses through nepotism rather than on merit. .

Panel A of Table 7 compares a measure of industry concentration from pre-licensing (1990) and post-licensing (1997) periods across licensed and un-licensed industries. The market share of the four largest firms in licensed industries increased by 11 percentage points on average between 1990 and 1997 (a statistically significant increase), while the corresponding increase in un-licensed industries was only 3 percentage points. This differential increase in market concentration in licensed industries is likely causally related to the licensing system. It is largely driven by increases market share of *licensed firms*, which averaged 10 percentage points between 1990 and 1997.[21]

Greater market concentration is not necessarily welfare reducing if there are returns to scale in production and if the most productive firms gain market share. Panel B in Table 7 examines the change in the correlation between firm market share and firm productivity between 1990 and 1997 across licensed and un-licensed industries. This correlation declined from 0.41 to 0.25 for licensed industries during this period, while it

[21] Our data indicate that 31.5% of our licensed firms were among the top-4 producers in their respective industries in 1997, a significant increase from 16% in 1990. However, licensing does not automatically endow firms with greater market share. Between 1990 and 1997, PT Nestle Indonesia, a firm affiliated with Suharto's son, replaced PT Mirota (whose market share declined from 20.6% to 1.3%) as the dominant player in the milk industry, although both firms were assigned licenses in 1991. Import activity data reveals that PT Nestle Indonesia was permitted to carry out 191 import transactions of 12 licensed imported commodities in a year, ranging from processed whole milk, buttermilk to sugar. In contrast, PT Mirota only had 10 transactions of 2 licensed commodities necessary for its production.

increased for un-licensed industries from 0.23 to 0.29. It is therefore unlikely that the most productive firms were chosen for protection by the Suharto-era licensing system.

To build a final piece of corroborative evidence on the nature of firms chosen for protection, we compare financial statements of politically connected firms and un-connected firms, and show that connected firms were more likely to collapse during the 1998 Asian Financial Crisis.[22] This has a welfare cost because efficiency would require that the government in assigning licenses, seek out firms with the most solid underlying fundamentals rather than protect the politically connected. This evidence should be viewed as merely suggestive, since there are reasons other than inefficiency why those firms may have collapsed. Suharto resigned following the crisis, and firms with licenses may have faced greater exposure due to the fact that they were more integrated into the global economy.

Figure 2 compares changes in profits before taxes, earnings per share, and returns on investment across the 27 'connected' firms and 252 un-connected firms based on financial statements data for all 279 firms traded on the JSX in 1997 and 1998. Connected firms suffered an average loss (negative profits) of 907.3 billion Rupiah (around $90.7 million) in 1998, a significant decline from the loss of 3.9 billion Rupiah in 1997. Un-connected firms recorded losses of 515.2 billion Rupiah on average in 1998, up from 9 billion Rupiah a year earlier.

Some back-of-the-envelope calculations are suggestive of how large these excess losses were for the entire Indonesian economy. If the connected firms had the same

[22] Scholars have argued that the adverse effects of the 1997-98 Asian financial crises were exacerbated in Indonesia because bad investment decisions were made initially on the basis of the political connectedness of certain firms. The fact that investment decisions were not based on firms' underlying fundamentals led to the massive outflow of foreign capital during the crisis (Fisman 2001).

percentage decline in profits as the un-connected firms, the total loss across all connected firms traded on the JSX that could have been avoided would be 681.6 billion Rupiah, or 75 percent of the actual loss. If we extrapolate these numbers to all manufacturing firms, a very rough estimate of losses to the entire Indonesian economy is 4.2 trillion Rupiah, which amounts to about 0.44% of Indonesian GDP in 1998.[23] This number is only meant to be suggestive, not definitive, since arriving at this number required us to make some heroic assumptions. It does suggest, however, that the welfare costs of the corrupt, nepotistic system of trade protection were substantial for Indonesia.

VI. Conclusion

All previous empirical papers on the political economy of protection have used average tariffs and non-tariff barrier coverage ratios at a high level of aggregation (usually the 3-digit industry aggregate) to measure trade protection. Since protection in developing countries occurs on the basis of personal relationships between politicians and firm owners, this paper computes a measure of licensing protection that is specific to each firm. Licensing requirements as a method of protection is easier to obfuscate from the public eye than tariffs, and is used extensively in developing countries (e.g. see annual GATT and WTO reports). Even though the requirements are simple on paper, our data analysis uncovers that it is actually a very special set of firms that are ultimately awarded licenses to import raw materials.

[23] Total profits of all manufacturing firms in Indonesia were around 138.2 trillion Rupiah in 1998, and 16.54 percent of this amount (around Rp. 22,867 billion) was contributed by licensed firms. 24.36 percent of licensed firms' profits are contributed by 'connected' firms, so that this very, very rough calculation suggests that the total excess loss that could have been avoided from corrupt licensing across all manufacturing firms is about 4.2 trillion Rupiah (138.2 trillion x 0.1654 x 0.2436 x 0.75)

On the politics side, previous research has used either reported campaign contributions or union-membership based measures of how organized industries are. As far as political corruption is concerned, campaign contributions or organized industries are at best second-order concerns in developing countries. Bribery and nepotism are of first-order importance, and even though these are not directly observed, we are able to use adverse health shocks to Suharto (in addition to identities of Suharto family owned firms) as instruments to identify the strength of political connections between individual firms and a key trade and industrial policy maker.

This paper finds that political connections are important determinants of the protection provided to individual firms, but no evidence that it influences industry-wide protection in terms of tariff and non-tariff barriers. The political economy of trade protection in developing countries has to be analyzed and understood at the firm level. Furthermore, this is an instrument of protection that has bite. We have shown that firms benefit from licensing, that markets become more concentrated (and monopolies are often created) due to licensing, and that the correlation between productivity and market share decreases in licensed industries. Furthermore, there is some suggestive evidence that the form of business-politics exchange studied here imposed substantial welfare costs on the Indonesian economy.

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Table 1. Commodities subject to Import Licensing Requirements: 1991-1997

Number of Commodities	Year in which Licensing Regulation Released					
	1991[a]	1993[b]	1994[c]	1995[d]	1996[e]	1997[f]
A. Based on License Type/Holder:						
1. IT (Registered Importer)	321	110	112	108	90	90
2. IP (Producer Importer)	165	116	110	52	55	51
3. BULOG (the Food Logistic Agency)	43	32	32	30	21	19
4. BPPC (the Clove Support and Marketing Board)	-	-	-	2	2	2
5. Pertamina (the State Oil Producer)	3	3	3	3	3	3
6. Dahana/MNK (the State Explosives Company/Multi Nitrotama Kimia)	2	3	3	4	4	4
B. Based on Sector:						
Agriculture commodities	38	15	15	25	18	18
Manufacturing commodities	612	366	282	190	192	179
1. Food	58	68	73	60	41	40
2. Textile	228	2	2	6	16	16
3. Wood	-	-	-	-	-	-
4. Papers	1	1	1	9	9	9
5. Chemicals	15	21	21	21	21	25
6. Non-metal minerals	-	-		-	1	1
7. Basic metals	165	163	86	16	38	31
8. Metal products	145	108	99	76	64	55
9. Other	-	3	-	2	2	2
Total	650	381	297	215	210	197

[a]Decree of the Minister of Trade No. 135/KP/VI/1991 on June 3, 1991

[b]Decree of the Minister of Trade No. 209/KP/1993 on October 23, 1993

[c]Decree of the Minister of Trade No. 125/KP/VI/1994 on June 24, 1994

[d]Decree of the Minister of Trade No. 155/Kp/VII/95 on July 18, 1995

[e]Decree of the Minister of Industry and Trade No. 14/MPP/SK/I/96 on January 25, 1996

[f]Decree of the Minister of Industry and Trade No. 230/MPP/Kep/7/97 on July 4, 1997

Table 2. Summary Statistics

Panel A: Firm Level Data

Variables	All Firms (22386 firms in 308 industries)		Firms in Industries which have at Least 1 Licensed Firm (9627 firms in 106 industries)		Firms in Industries Governed by Import License Regulation (1868 firms in 49 industries)	
	Mean (Std. Dev.)	Range	Mean (Std. Dev.)	Range	Mean (Std. Dev.)	Range
Firm Granted an Import License (Indicator)	**0.0152** (0.122)	(0-1)	**0.035** (0.184)	(0-1)	**0.0418** (0.2)	(0-1)
Degree of Licensing Protection (1/No. license holders - max value in case of multiple licenses)*100	0.119 (2.513)	(0-100)	0.2759 (3.826)	(0-100)	0.3955 (3.945)	(0-100)
Degree of Licensing Protection (1/No. license holders - sum across in case of multiple licenses)*100	0.1492 (3.11)	(0-200)	0.3462 (4.736)	(0-200)	0.5568 (5.242)	(0-141.67)
Number of Licenses Held per Firm	0.0218 (0.202)	(0-6)	0.0504 (0.306)	(0-6)	0.0712 (0.401)	(0-6)
Firm is Politically Connected (Indicator)	**0.0105** (0.102)	(0-1)	**0.0164** (0.127)	(0-1)	**0.0359** (0.186)	(0-1)
Degree of Firm's Political Connection ("Suharto ill" coef. in stock market regs)	0.0005 (0.006)	(0-0.2)	0.0007 (0.007)	(0-0.17)	0.0013 (0.007)	(0-0.11)
Firm is a Subsidiary of a Business Group Owned by the Suharto Family	0.0036 (0.06)	(0-1)	0.0045 (0.067)	(0-1)	0.0096 (0.098)	(0-1)
A Suharto Family Member is in the Board of Management (BOM) of the Firm	0.0046 (0.067)	(0-1)	0.0065 (0.081)	(0-1)	0.0112 (0.105)	(0-1)
Firm is a Subsidiary of a Business Group Owned by Suharto's "Blood Relatives" (excluding relations by marriage)	0.0033 (0.06)	(0-1)	0.0043 (0.065)	(0-1)	0.0091 (0.095)	(0-1)
Value of Firm Production in 1000 Rupiah (logged)	13.6559 (2.098)	(7.22-22.71)	14.1064 (2.121)	(7.22-22.71)	14.6007 (2.276)	(8.27-22.05)
Total Profits: Value Added by Firm net of Wage Payments (in trillion Rupiah)	0.004 (0.05)	(-0.02-5.1)	0.0063 (0.07)	(0-5.1)	0.0115 (0.083)	(0-2.17)
Capacity Utilization: Percentage of Firm Realized Production from Its Capacity/100	0.6676 (0.293)	(0-1)	0.6666 (0.283)	(0-1)	0.6738 (0.276)	(0-1)
Fraction of Production that is Exported	0.0995 (0.275)	(0-1)	0.1032 (0.276)	(0-1)	0.0773 (0.235)	(0-1)
Central Government Ownership Share of Firm	0.0191 (0.134)	(0-1)	0.0144 (0.117)	(0-1)	0.0518 (0.218)	(0-1)
Local Government Ownership Share of Firm	0.0059 (0.072)	(0-1)	0.006 (0.072)	(0-1)	0.0061 (0.07)	(0-1)
Foreign Private Ownership Share of Firm	0.0474 (0.192)	(0-1)	0.0653 (0.221)	(0-1)	0.0724 (0.229)	(0-1)
Firm Age/10 Years	1.2944 (1.321)	(0-9)	1.3567 (1.395)	(0-9)	15.8721 (16.864)	(0-96)

Table 3. Benefits of Licensing and Political Connections

Categories	Obs.	Year	Log of Production (in million Rp)			Total Profits (in billion Rp)			Profitability		
			Level	Diff.	Difference in Difference	Level	Diff.	Difference in Difference	Level	Diff.	Difference in Difference
Licensed	81	1990	14.82			1.03			8.69		
			(0.97)	1.22***		(1.16)	4.25***		(13.9)	0.95	
		1997	16.04	(2.19)		5.27	(11.32)		9.65	(31.28)	
			(1.29)		0.79***	(11.21)		3.65***	(18.42)		1.39
Unlicensed	3492	1990	12.93		(2.35)	0.32		(11.29)	4.20		(31.42)
			(1.56)	0.43***		(0.76)	0.60***		(9.73)	-0.44**	
		1997	13.37	(3.28)		0.92	(3.78)		3.76	(17.28)	
			(1.73)			(3.54)			(7.84)		
Licensed, connected	7	1990	15.01			1.61			7.99		
			(1.08)	1.92***		(2.32)	8.65		(12.38)	15.05	
		1997	16.93	(2.07)		10.26	(16.39)		23.03	(38.55)	
			(1.16)		0.76	(17.24)		4.82	(35.25)		15.43
Licensed, unconnected	74	1990	14.80		(2.22)	0.97		(16.08)	8.76		(38.71)
			(0.97)	1.15***		(0.99)	3.83***		(14.11)	-0.38	
		1997	15.96	(2.17)		4.80	(10.59)		8.38	(29.6)	
			(1.27)			(10.52)			(15.84)		
Licensed, unconnected	74	1990	14.80			0.97			8.76		
			(0.97)	1.87***		(0.99)	0.65***		(14.11)	4.56***	
Unlicensed	3492	1990	12.93	(1.04)		0.32	(1.00)		4.20	(14.23)	
			(1.56)			(0.76)			(9.73)		

Standard deviation in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Notes:

Production is measured by value of firm production in 000 rupiah (logged).

Total profits is measured by firm value added net of wage payments for production workers (in billion Rp).

Profitability is measured by total profits divided by total expenditures for workers.

Observation is limited only for firms in industries which have at least 1 licensed firm and the firms were in existence in both 1990 and 1997.

We exclude 2 licensed holders that received license before 1990 (Source: Gabungan Importir Nasional Seluruh Indonesia, 1987).

All are measured in average. All values in 1997 have been deflated using a set of 23 wholesale price indices for manufactured commodities (Source: Statistics Indonesia).

Table 4. Firm Licensing Protection Regressions:
Linear Probability Model Estimation of the Likelihood that the Firm is Granted an Import License

Variables	(1)	(2)	(3)
		All Firms	
Firm is Politically Connected (Indicator)	0.174***	0.183***	0.157***
	(6.32)	(7.03)	(6.04)
Value of Firm Production in 1000 Rupiah (logged)			0.011***
			(13.10)
Total Profits: Value Added by Firm net of Wage Payments (in trillion Rupiah)			0.155***
			(4.33)
Productivity: Value of Production divided by Number of Workers/1000000			-0.008
			(1.51)
Profitability: Total Profits divided by Expenditures on Workers/1000000			-0.025
			(0.01)
Capacity Utilization: Percentage of Firm Realized Production from Its Capacity/100			-0.0004
			(0.13)
Fraction of Production that is Exported			-0.011***
			(3.01)
Central Government Ownership Share of Firm			-0.022***
			(3.14)
Local Government Ownership Share of Firm			-0.014
			(1.61)
Foreign Private Ownership Share of Firm			0.042***
			(4.48)
Firm Age/10 Years			0.001
			(1.40)
Value of Total Production in the Industry (logged)	0.004***		
	(6.39)		
Value of Imports for the Industry (logged)	-0.0003		
	(0.66)		
Industry Concentration: Four Largest Firms' Production as Fraction of Total	0.040***		
	(7.67)		
Indicator for Strategic Consumption Industry	0.012*		
	(1.78)		
Indicator for Strategic Production Industry	-0.003		
	(0.35)		
Constant	-0.099***	-0.011*	-0.182***
	(8.23)	(1.94)	(10.66)
Industry Fixed Effects?	No	Yes	Yes
Province Fixed Effects?	Yes	Yes	Yes
Observations	20974	22386	20882
R-squared	0.03	0.12	0.15

Robust t statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 5. Firm Licensing Protection Regressions: Sensitivity Tests

	Obs.	Coefficient on Connected Firms Indicator (Identified through JSX event study)[a]	Connected Firms Indicator (Identified as Suharto Family Firms)	Coefficient on Degree of Connection[b]
Linear Probability Model: Different Samples				
(4) Firms with more than 100 workers	6282	0.130***		
		(4.84)		
(5) Firms with more than 800 workers	1016	0.141**		
		(2.16)		
(6) Firms in Industries which have at least 1 Licensed Firm	9627	0.216***		
		(6.09)		
(7) Firms in Industries Governed by Import Licensing	1868	0.132***		
		(2.78)		
Alternative Definitions of Connection and Protection				
(8) Firms Granted an Import License (indicator)	9382	0.058***		
Estimation: Probit		(5.36)		
(9) Firms Granted an IT License (indicator)	1984	0.036***		
Estimation: Probit		(3.13)		
(10) Firms Granted an IP License (indicator)	9379	0.053***		
Estimation: Probit		(5.08)		
(11) Firms Granted an Import License (indicator)	9382			0.070***
Estimation: Probit				(5.35)
(12) Degree of Licensing Protection (Max 1/n * 100)	9627	1.407**		
Estimation: OLS		(2.23)		
(13) Degree of Licensing Protection (Sum 1/n * 100)	9627	2.313***		
Estimation: OLS		(2.78)		
(14) Total Number of License Held per Firm	9627	0.023***		
Estimation: Poisson		(3.29)		
Alternative Definitions of Political Connection: Firms Associated with the Suharto Family (Probit Regressions)[c]				
(15) A Suharto Family Member is in the Board of	9382		0.089***	
Management (BOM) of the Firm (indicator)			(4.49)	
(16) Firm is a Subsidiary of a Business Group Owned by	9382		0.038*	
any member of Suharto's family (indicator)			(1.89)	
(17) Firm is a Subsidiary of a Business Group Owned by	9382		0.048**	
Suharto's "blood" relatives - i.e. excluding those who			(2.19)	
have married in to the Suharto family (indicator)				
(18) Two Measures of Connectedness Controlled for	9382	0.051***	0.036*	
Simultaneously		(4.79)	(1.95)	

Robust t statistics (robust z statistics for Probit and Poisson) in parentheses; * significant at 10%; ** significant at 5%; ***significant at 1%

Notes:

All regressions control for industry fixed effects, province fixed effects and other firm-level control variables shown in specification (3) except productivity and profitability.

We drop productivity and profitability variables in the right hand side of regression equation.

[a]In probit estimation, marginal effects reported instead of regression coefficients. The average marginal effect measures the change in the probability that the firm is granted an import license, in response to a discrete 0 to 1 change in the binary variable.

In Poisson estimation, the average marginal effect measures the increase in the number of licenses granted to the firm in response to a discrete 0 to 1 change in the binary variable.

[b]Degree of Political Connection is the coefficient of "Suharto's bad health day" in Jakarta Stock Exchange regression.

Elasticities reported instead of regression coefficient. Elasticity measures percentage change in the probability that the firm is granted an import license, in response to 1 percent increase in the (continuous) degree of firm's political connection.

[c]Alternative definitions of Firm's Political Connection using Castle's Roadmap to Indonesian Business Groups (1997)

Table 6. Industry-Level Regressions of Trade Protection:
Tariffs, Coverage Ratio for Non-Tariffs Barriers, and Industry-Level Licensing

Dependent Variable	(19) Average Nominal Tariff Rates	(20) CR-NTB	(21) Industry with License Holder (Indicator)	(22) Tariff/ (1+Tariff)	(23) CR-NTB/ (1+CR-NTB)
Estimation Method	OLS	Tobit	Probit	OLS	OLS
	Coeff.	ME/Elasticity[a]	ME/Elasticity[b]	Coeff.	Coeff.
Industry has a Politically Connected Firm (Indicator)	-1.650	0.205	0.061		
	(1.09)	(1.25)	(1.02)		
Connection*Inverse of Import Penetration Ratio in the Industry				1.217	0.440
				(1.34)	(0.48)
Inverse of Import Penetration Ratio in the Industry				0.376	-0.097
				(0.99)	(0.41)
Value of Total Production in 1000 rupiah in the Industry (logged)	1.479***	0.071	3.079***		
	(2.60)	(1.29)	(5.97)		
Value of Imports for the Industry (logged)	-1.472***	-0.025	-0.691**		
	(3.69)	(0.81)	(2.42)		
Total Profits in the Industry (in trillion rupiah)	2.434	-0.012	-0.093	0.020	0.005
	(0.70)	(0.14)	(0.43)	(1.28)	(0.74)
Industry Concentration: Four Largest Firms' Production as Fraction of Total	4.130	0.706	1.905	-0.033*	0.012
	(0.81)	(1.47)	(0.88)	(1.68)	(0.53)
Percentage of Firms in the Industry Located in Java	-1.209	-0.592	8.921***	0.016	-0.030
	(0.19)	(1.61)	(2.73)	(0.54)	(1.41)
Indicator for Strategic Consumption Industry	-6.352**	0.797**	-0.040	-0.039**	0.047
	(2.09)	(2.05)	(0.31)	(2.17)	(1.01)
Indicator for Strategic Production Industry	-4.660	0.320	0.132	-0.045***	0.002
	(1.59)	(1.28)	(1.02)	(2.64)	(0.21)
Constant	21.338	-2.554*	-7.944***	0.168***	0.027
	(1.61)	(1.88)	(5.47)	(4.01)	(1.09)
Observations	263	252	271	263	252
R-squared	0.12			0.10	0.06

Robust t statistics (or z statistics for Tobit and Probit) in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

All regressions control for average government and foreign ownerships in the industries, average exports, and average capacity utilization.

Notes:

[a]Marginal effects reported insted of regression coefficients. The marginal effect for indicator variable shows the change in the dependent variable in response to a discrete 0 to 1 change in the binary variable. For continuous variables, the marginal effect measures the change in the dependent variable in response to a marginal increase in the independent variable.

[b]Marginal effects and elasticities reported instead of regression coefficients. The average marginal effect measures the change in the probability that the industry has at least 1 licensed firm, in response to a discrete 0 to 1 change in the binary variable. The elasticity measures percentage change in the probability that the industry has at least 1 licensed firm, in response to 1 percent increase in the

Table 7. Cost of Licensing:
Concentration Ratio, Firm Market Share and Productivity

Panel A
Concentration Ratio and Firm Market Share

Categories	Obs.	Year	Concentration Ratio of 4-Largest Firms in the Industry			Market Share of Licensed Firms	
			Level	Diff.	Diff. in Diff	Level	Diff.
Licensed Industries	48	1990	0.54			0.18	
			(0.27)	0.11**		(0.20)	0.10**
	104	1997	0.65	(0.43)		0.28	(0.46)
			(0.25)		0.08	(0.29)	
Unlicensed Industries	225	1990	0.70		(0.70)		
			(0.30)	0.03			
	197	1997	0.73	(0.56)			
			(0.26)				

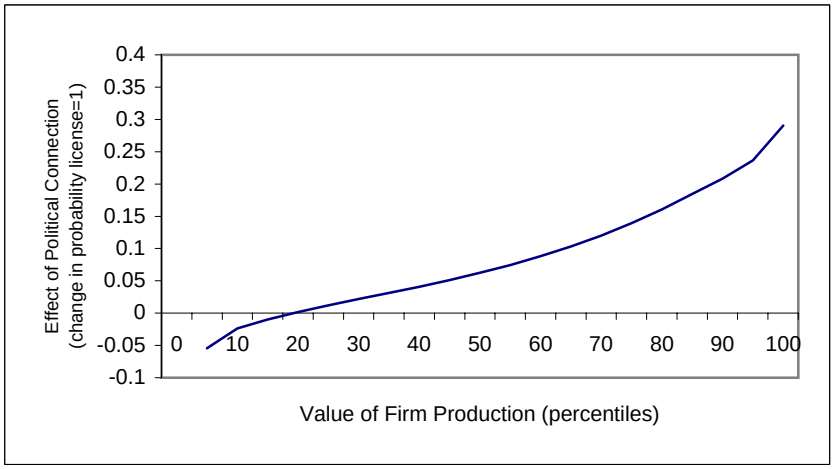
Standard deviation in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

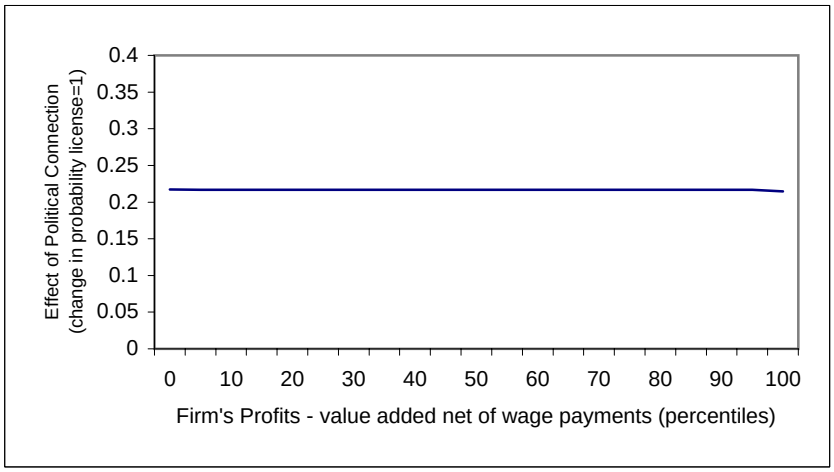
Panel B
Correlation between Firm Productivity and Firm Market Share

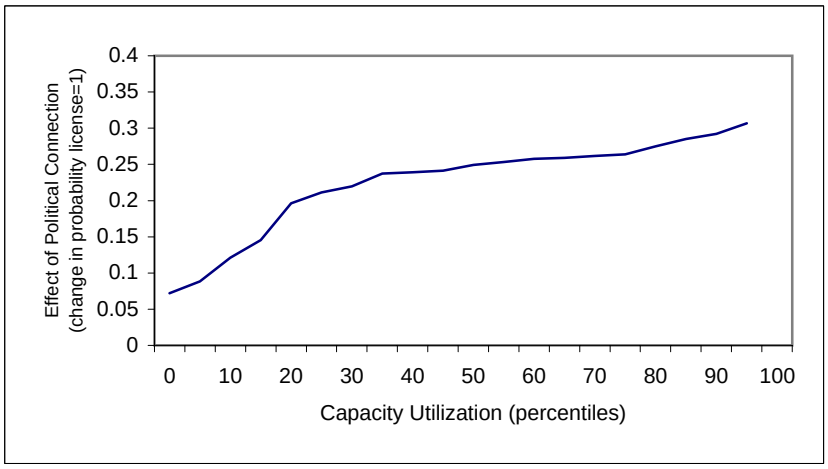
	Obs.	1990	1997
Firms in Industries subject to Licensing	3570	0.410	0.246
Firms in Industries not subject to Licensing	4037	0.232	0.288

Notes:
Firms were in existence both in 1990 and in 1997
Firm productivity is measured as output per worker.

Figure 1. The Marginal Effect of Political Connections Across Percentiles of Firm Production, Total Profits and Capacity Utilization [a]





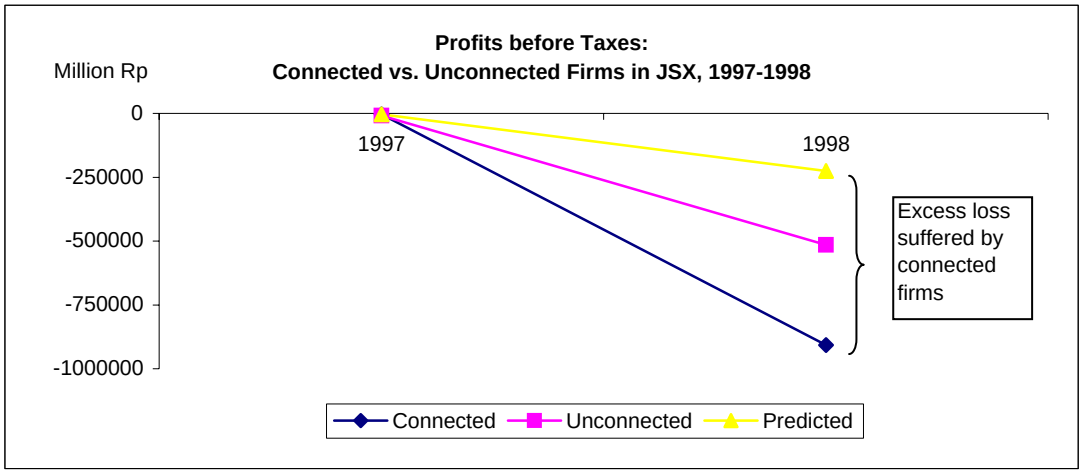


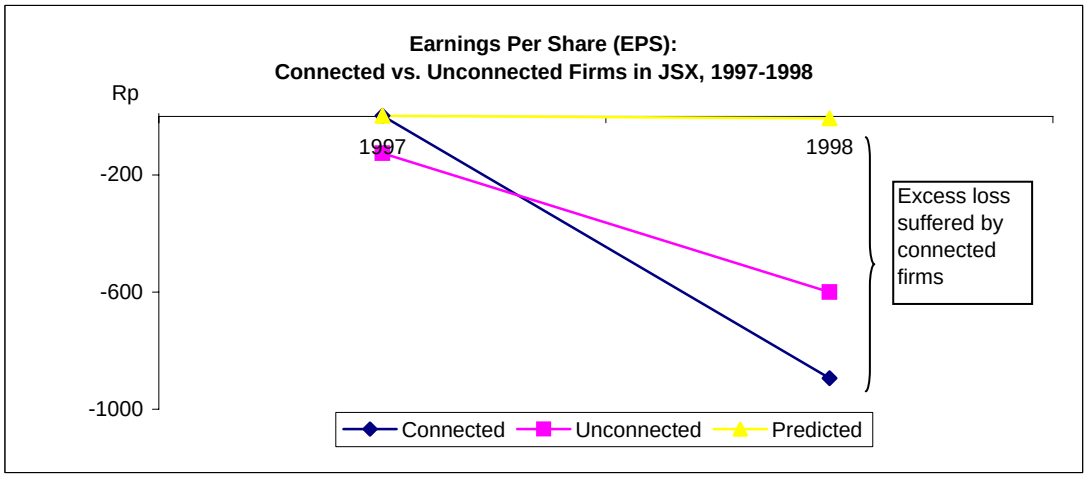
[a] Based on firm licensing protection regressions with interaction variables:
- license = b0 + b1 connection + b3 (connection * firm production) + …
- license = b0 + b1 connection + b3 (connection * firm profits) + …
- license = b0 + b1 connection + b3 (connection * capacity utilization) + …

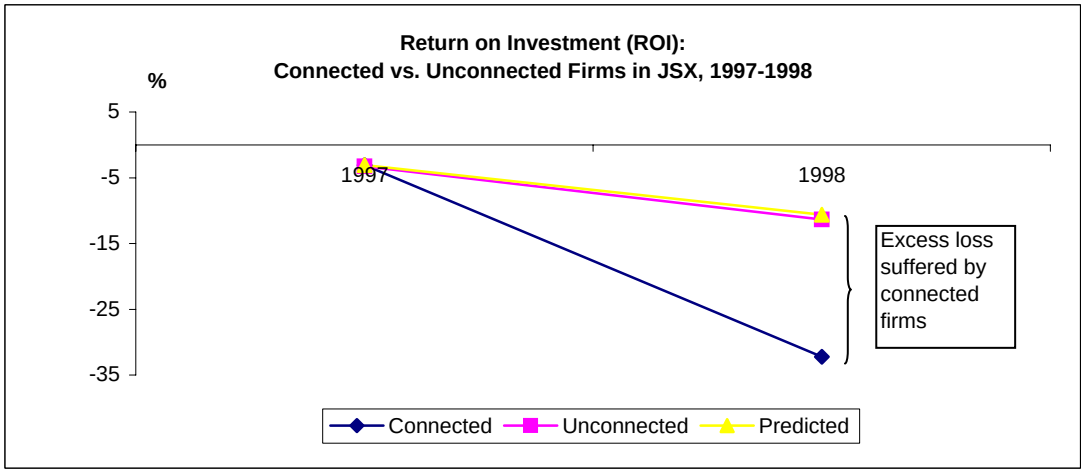
Estimation method: linear probability model

All regressions control for industry fixed effects, province fixed effects and other firm-level control variables shown in specification (3)

Figure 2. The Incremental Loss due to Political Connection and Licensing







Notes:
Profits before taxes is net sales minus costs of goods sold minus operating expenses and other expenses.
Earnings per Share (EPS) is net profits divided by number of shares.
Return on Investment (ROI) is net profits divided by total asset.

Appendix A1. Effect of Suharto's Bad Health Days on Bimantara's Returns: Ordinary Least Squares Estimation

Dependent Variable	(1) Daily Stock Price Return	(2) The Deviation of Firm Return from the Average	(3) The Deviation of Actual Firm Return from the Predicted
Indicator for Days when the News about Suharto's Bad Health was reported by the press	-0.020***	-0.020***	-0.020***
	(3.15)	(3.15)	(3.15)
Jakarta Stock Exchange (Market) Return	0.790***	0.790***	-1.005***
	(7.74)	(7.74)	(9.85)
Average Return for the Sub-industry Category in which the Firm belongs	0.846***	0.846***	0.846***
	(15.19)	(15.19)	(15.19)
Change in Rupiah/USD Exchange Rates from Previous Date	0.058	0.058	0.058
	(0.71)	(0.71)	(0.71)
Interest Rate set by Bank Indonesia for 30-days period	-0.0002	-0.0002	-0.0002
	(0.64)	(0.64)	(0.64)
Constant	0.003	0.004	0.003
	(0.67)	(0.69)	(0.60)
Observations	573	573	573
R-squared	0.60	0.60	0.31

Absolute value of t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

[a]Predicted value is the fitted value of daily firm returns regression on market returns.

Appendix A2.
Effect of Import Licenses on Firm's Production, Profits, Capacity Utilization and Workers

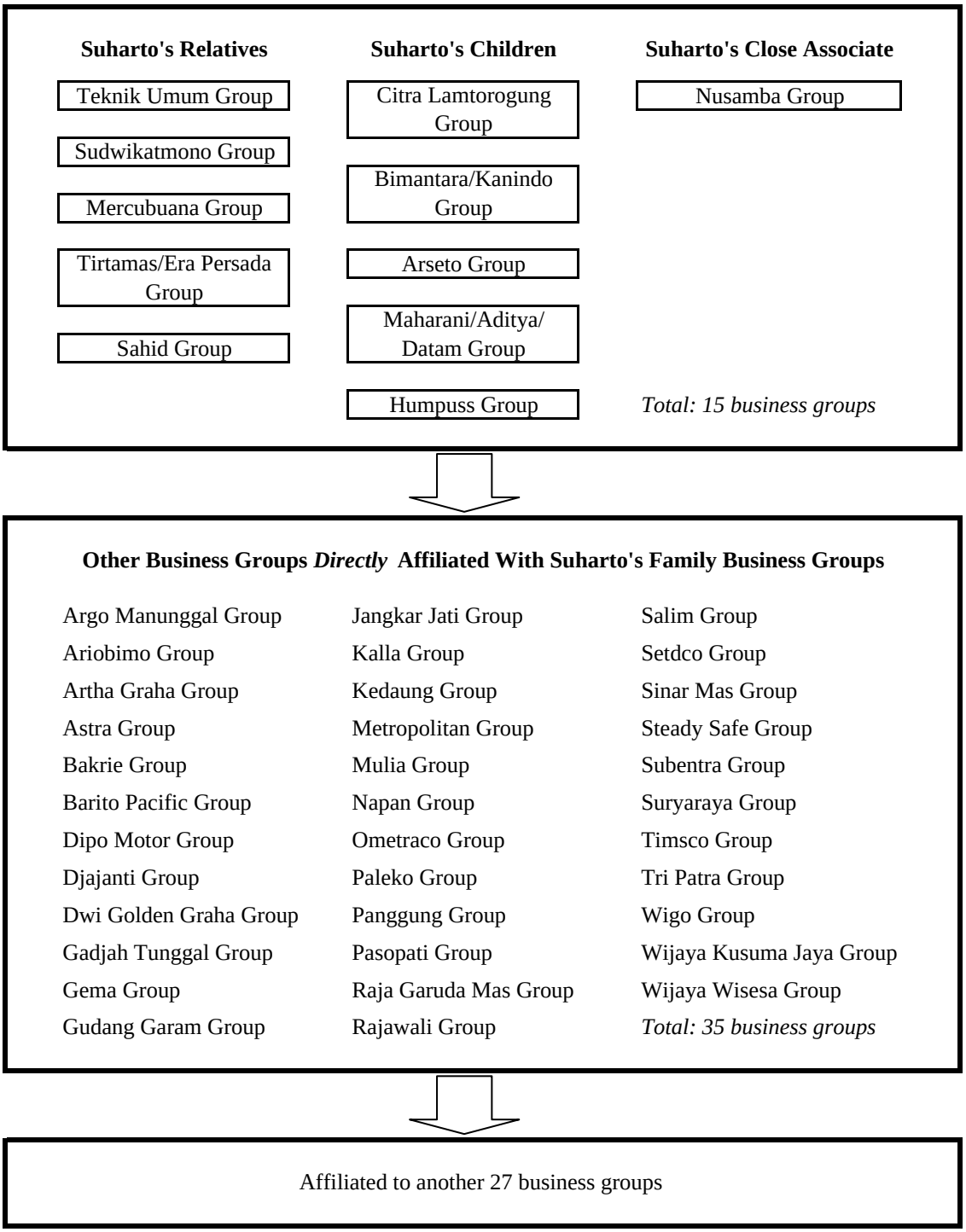
Dependent Variable	(4) Percentage Change in Firm's Production	(5) Percentage Change in Firm's Profits 1990-1997	(6) Percentage Change in Firm's Capacity Utilization 1990-1997	(7) Percentage Change in Firm's Workers
Firm is Granted an Import License (Indicator)	5.366	-2.262	0.127	0.369**
	(1.64)	(0.47)	(0.80)	(2.41)
Constant	69,588***	-1.639	-318.035	1,291
	(3.57)	(0.99)	(0.98)	(1.11)
Observations	3396	3297	3396	3396
R-squared	0.32	0.35	0.01	0.08

Robust t statistics in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

All regressions control for indicator for connectedness and percentage change in firm level variables in 1990-1997

Number of observation is smaller because (1) some firms in 1990 do not exist in 1997 (exit); and (2) some firms in 1997 do not exist in 1990 (entry)

Appendix A3. Pyramidal Structure of Suharto's Family Business Groups



Source: Castle's Roadmap to Indonesian Business Groups (1997)