Does Cronyism Curtail Competition?

Evidence from Indonesia[†]

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Abstract: This paper assesses whether Suharto's fall had a pro-competitive effect on Indonesian manufacturing sectors in which his family and cronies had extensive interests using plant-level Indonesian manufacturing census data. While firms with connections to Suharto saw their market shares decline after his ousting, the attendant reduction in their market power was not associated with improved competition. Sectors with greater aggregate market shares of connected firms during the Suharto era (at the 5-digit level) did not experience differential entry and exit, lower markups, reduced concentration, or lower prices in the post-Suharto era. The contrasting results at the firm- and sector level suggest that political turnover had desirable distributional impacts but did not improve aggregate efficiency.

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1. Introduction

How do state-business relationships shape competition? In spite of in-depth theoretical analysis of the links between corruption and competition (Shleifer and Vishny, 1993, 1994; Bliss and Di Tella, 1997; Ades and Di Tella, 1999; Acemoglu and Verdier, 2000; Emerson; 2006) and a number of studies on the economic consequences of political turnover (Londregan and Poole, 1990; Earle et al., 2013), empirical evidence of the impact of crony capitalism on industry structure and firm dynamics remains limited. Political connections have been shown to be highly valuable (Fisman, 2001; Faccio, 2006; Ferguson and Voth, 2008), and associated with a range of anti-competitive practices including cheaper access to finance (Johnson and Mitton, 2003; Khwaja and Mian, 2005; Faccio et al., 2006), tax evasion (Rijkers et al., 2015) and privileged access to operating and import licenses conferring monopoly rents (Mobarak and Purbasari, 2006; Rijkers et al., 2014). An important question is to what extent such practices undermine aggregate efficiency, in addition to having inequitable distributional consequences.

This paper examines the impact of political connections on industry structure and firm dynamics using plant-level manufacturing census data from Indonesia in which 269 firms connected to the Suharto family are identified. It first documents how politically connected firms differ from non-connected ones, and how the prevalence of firms with political connections varies with industry characteristics. We then assess the impact of political turnover on both firm-level and industry outcomes exploiting the fall of President Suharto as a quasi-natural experiment generating variation in the value of political connections to him. The focus is on entry and exit rates, markups, profit elasticities, concentration, and prices as these are important markers of competition as well as determinants of productivity growth (Nickell, 1996; Blundell et al., 1999; Aghion et al., 2005). By comparing firm-level impacts of political turnover with sector-level impacts we aim to quantify both the distributional as well as the aggregate efficiency implications of political connections.

Indonesia provides a suitable environment for analyzing the effect of crony capitalism on industry structure. Suharto was a notoriously corrupt president, whose family is estimated to have amassed a total wealth of $35 billion during his time in office.[1] His family's business interests were both extensive and highly diversified. Cronyism was rampant and it was well known that ingratiating one-self with the President's family was an important enabler of business success (McLeod, 2000; Basri, 2001; Mobarak and Purbasari, 2006). Moreover, the fall of the Suharto regime in the wake of the financial crisis was largely unexpected. Last but not least, Indonesia has a high-quality plant-level manufacturing census data spanning the Suharto era, the crisis and its aftermath in which firms with political connections to the Suharto regime were identified by Mobarak and Purbasari, 2006, who kindly shared their data with us.

[1] http://www.slate.com/articles/news_and_politics/explainer/2004/03/how_did_suharto_steal_35_billion.html

The main hypothesis assessed in this paper is that Suharto's fall had a pro-competitive impact on Indonesian manufacturing sector. If political turnover resulted in a reduction of anti-competitive practices conferring advantages to companies connected with Suharto, one would anticipate greater competition and more vibrant firm dynamics in those industries where his cronies had extensive business interests after his removal from power. In addition, one might expect sectors supplied by connected firms to benefit from enhanced competition upstream. A crucial identifying assumption is that the collapse of the Suharto regime reduced the value of connections to Suharto and attendant anti-competitive privileges received by politically connected firms. Fisman (2001) provides strong support for this assumption, showing significant movements in the stock prices of firms with connections to Suharto in response to the news regarding his health. Empirically, the main challenge is to isolate the impact of Suharto's fall from potentially confounding changes due to inter alia the financial crisis, and deregulation policies. To this end, a difference-in-difference strategy is deployed in which industry and time fixed effects are controlled for. In addition, we control for pre-crisis industry characteristics and allow their impact to differ after the crisis. We also run regressions in which we control for time varying determinants of our competition indicators.

Previewing our main findings, although the number of politically connected firms in our dataset is relatively small, 1-1.2 percent of the sample, they matter from a macroeconomic perspective, accounting for 16 percent of total output on the eve of the crisis. Politically connected firms employ more workers, produce more output and have greater shares of foreign and state ownership than non-connected firms. They are active in more productive, but less competitive industries, in which entry restrictions are more prevalent. There is substantial variation in the prevalence and importance of connected across 5-digit industries across sectors, which facilitates identification.

Although politically connected firms witnessed sizeable and statistically significant reductions in their market shares after Suharto's fall, they remained large.[2] In spite of the reduction in market power of connected firms, Suharto's fall did spark not greater dynamism at the sector level; sectors in which connected firms had more market power during the Suharto era did not witness significant increases in entry, lower markups, or more intense competition as measured by the profit elasticity with respect to marginal costs. They also did not witness significant changes in concentration or prices. These contrasting results at the firm and sector level suggest that political turnover had desirable distributional impacts in terms of dislodging privileges enjoyed by connected firms but that turnover per se did not improve aggregate efficiency.

One potential explanation for this result is that the nature of state-business relationships altered very little, even though political turnover reduced the (anti-)competitive benefits enjoyed by Suharto's cronies. An alternative

[2] This finding may in part reflect the fact that some of the connected firms we identify were "too big to fail". As explained in more detail below, the method we use to detect political connections is more likely to identify large firms (Mubarak and Purbasari, 2006).

explanation is that the privileges that the Suharto regime bestowed on its cronies were particularistic, i.e. firm- and not sector-specific, and thus had limited impact on the nature of competition.

Our study complements existing literature on politically connected firms (Fisman, 2001; Faccio, 2006; Ferguson and Voth, 2008; Mobarak and Purbasari, 2006; Rijkers et al., 2014), by assessing which industry characteristics are associated with a greater prevalence of politically connected firms. While previous studies have mostly focused on the mechanisms by which anti-competitive advantages are conferred to connected firms, this study examines the impact of such practices on competition and firm dynamics. Our comparative analysis of firm and industry performance helps assess the impact of cronyism on aggregate efficiency, and the spillovers of anti-competitive practices on non-connected firms. Moreover, we empirically distinguish between direct competition with connected firms as well as the impact of distortions generated by the presence of connected firms upstream and downstream. e.g. by distinguishing between direct competition with connected firms, and presence of politically connected firms in upstream and/or downstream sectors.

Our paper also contributes to the growing literature on the economic consequences of political turnover. Though most of this literature has focused on macroeconomic outcomes (Londegran and Poole, 1990), a few micro-economic studies are closely related to ours. Earle et al. (2013) examine the productivity consequences of the Orange Revolution in the Ukraine and show that firms in regions supportive of Viktor Yushchenko improved productivity much faster after his election than firms in regions that did not support him. Naido et al. (2014) demonstrate that Haitian importers who participated in coups benefitted from it in their aftermath by being able to charge higher prices for the goods they imported. Acemoglu et al. (2014) document how street protests in Egypt were associated with reduced stock valuation of firms connected to the prevailing regime relative to those connected to groups not in power, and interpret these findings as suggesting popular mobilization can help reduce rent seeking. Rijkers et al. (2015) show that Tunisian firms owned by former president Ben Ali's family were more likely to evade tariffs when he was in power, but that their evasion reduced significantly in the aftermath of the Arab Spring which led to his departure.

The remainder of this paper is organized as follows; section 2 provides background on the Indonesian context. Section 3 discusses the data sources, including the identification of political connections. Descriptive on statistics on the characteristics and sorting patterns of politically connected firms are presented in section 4. Section 5 examines the impact of political turnover on firms. Section 6 presents our main results, notably the impact of political turnover on competition at the sector level. A final section concludes.

2. Country Context

2.1 The Suharto Era

President Mohamed Suharto (Soeharto) was notoriously corrupt. His New Order regime, which started in the late 1960s, is often cited as a quintessential example of crony capitalism. It is often characterized as a pyramid, with power centralized among Suharto, his children and his close confidantes, and characterized by intimate state-business relationships with military officers, ethnic Chinese businessmen, and a select few indigenous Indonesian businessmen. Many former military officers were appointed as ministers, high-level bureaucrats, and directors of state-owned companies. In exchange for political support and kickbacks, loyal businessmen received privileges and protection from the government.

Such privileges were manifold and included (i) licensing arrangements providing monopoly rents inter alia in importing, distribution, and exploitation of natural resources (ii) privileged access to inputs including finance and land (iii) tax breaks and subsidies (iv) privileged treatment in public procurement (iv) designation as mandatory partners in foreign joint ventures and (v) price regulation resulting in supra-normal profits (McLeod, 2000). A few examples illustrate these mechanisms. The national car program, for instance, conferred a plethora of tax breaks on Timor, a car-manufacturing company owned by Suharto's son Tommy (Aswicahyono, 2006), who also benefitted from an exclusive monopoly on cloves. As another example, price-setting in the cement industry, whilst officially the domain of the Ministry of Trade, was heavily influenced by the Indonesian Cement Association, which acted like a cartel (Maarif, 2001). Such practices were detrimental to competition, and, by raising input prices, also hampered the performance of downstream industries that relied on inputs provided by sectors dominated by connected firms.

In spite of extensive corruption, Indonesia, like many other countries in the region, grew rapidly during the 1980s and 1990s, a phenomenon often referred to as the "East Asian Paradox" (McLeod, 2000; Hadiz and Robison, 2005; Vial and Hanoteau, 2010). This economic success is often ascribed to a combination of liberalization efforts during 1980s and competition between cronies. Yet Suharto's economic model was ultimately unsustainable and ended with a financial crisis, which hit the country at the end of July in 1997. Notwithstanding sound macroeconomic fundamentals, relative to other East Asian economies from which the crisis originated, Indonesia was deeply affected and the economy contracted by almost 14%. Public protests forced Suharto to resign by May 1998, and he was replaced by his protégé B.J. Habibie.

2.2 The Post-Suharto Era

The crisis and political transition sparked a substantial number of reforms. Moreover, the attendant financial turmoil forced many big firms to restructure or close altogether (Hill, 2007; Brown, 2006). Some conglomerates closely connected to Suharto (e.g, Bimantara and Humpus) collapsed, while others managed to survive but lost at least

some of their privileges. For instance, production and trade monopolies in some intermediate good producing industries (i.e., cement, plywood, rattan, pulp, paper and clove) were eliminated (Pangestu et al., 2002).[3] The national car program was abolished. Import protection and export taxes were reduced. In addition, restrictions on FDI were relaxed in many industries, and foreigners were allowed to fully own banks and companies through acquisition (IPA, 2011). Some state dominated sectors (e.g., civil aviation and telecommunications) were deregulated.[4] In addition, a competition commission (KPPU) was established in 1999 aiming to dissolve anti-competitive practices.[5]

In spite of the large reform agenda and significant changes in the aftermath of the regime collapse, many regulatory reforms were piecemeal and often slow.[6] For example, it was not until 2007 that Indonesia issued a new list with industries restricted to investment. The functioning of the competition commission was severely constrained by limited capacity and legal obstacles (Hadiz, 2004; Hill, 2007). Decentralization reforms that redistributed political, administrative, and economic power to provinces, districts and even cities, also resulted in a renegotiation of state-business relationships (Hill, 2007). In fact, some businessmen were elected as heads of administrative units. In many other cases, they managed to win the support of heads of local cabinets by backing-up them during election campaigns (Hadiz, 2004). Thus, the "gift-exchange" nature of doing business appears to have changed very little. This may help explain why even greater changes are not seen among the firms and industries that had been connected to Suharto. Another possible explanation is that competition in the manufacturing sector, which we focus on, benefitted less from these reforms than the services sectors.

Many of those with close connections to Suharto managed to maintain their positions of power and prominence. While all children of Suharto, except Titiek, were accused of corruption at some point, none of them were convicted on such charges. Tommy Suharto was convicted for ordering the assassination of a Supreme Court Judge in 2002, but was released in 2006, having served only 4 years of his 15 year sentence. Testimony to the Suharto' family's lasting political prominence was the candidature Suharto's son in law, Prabowo Subianto, for the presidency in June 2014. He did not succeed.

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[3] In 1999 Indonesia's parliament passed the Anti-Monopoly and Unfair Business Competition Law No. 5. The monopoly of the state logistics agency Bulog over the price and supply of rice was abolished in 1998. Since February 2000, the law prohibits any individual company from holding more than a 50% share of the domestic market.

[4] Indonesia agreed, in its 1998-2003 pacts with the IMF, to end virtually every existing state monopoly.

[5] Among other policies: Law No. 8 regarding Consumer Protection was passed in 1999; *Yayasan* law promoting transparency and accountability of state-controlled charities has been submitted in 2000 to the parliament and ratified in 2001; government eliminated import tariffs for sugar, limited import license to producers-importers.

[6] Note also that many changes did not directly impact the manufacturing sector.

While economic growth in Indonesia turned to positive again by 2000, it is never reached its pre-crisis levels. Productivity growth did not recover fully after the crisis, and the process of "creative destruction" did not improve much (Hallward-Driemeier and Rijkers, 2013; Poczter et al., 2014). Hill (2007) suggests that slow recovery was due to imperfect implementation of the reforms and political instability. To sum up, the collapse of the regime decreased the value of connections to Suharto, and the attendant privileges extended to companies connected to him. The restructuring of politically connected companies, the elimination of a number of production and trade monopolies and investment restrictions are arguably all manifestations of reduced capture. If that is indeed the case, one would anticipate increased competition especially in sectors where firms with connections to Suharto accounted for substantial market share, and possibly also in industries for which connected firms were important suppliers. This study examines this prediction for manufacturing subsectors.

3. Data

The plant-level data come from the Annual Manufacturing Survey (*Survei Tahunan Perusahaam Industri Pengolahan*) collected by the Central Bureau of Statistics (*Badan Pusat Statistik*, BPS) of the Republic of Indonesia. The survey covers all formal manufacturing establishments with more than 20 employees, which account for about 80% of all manufacturing output.[7] For each year we have approximately 20,000 plant-level observations.[8] Our sample spans the period from 1993 up until 2003, which enables us to study industry structure during the last years of Suharto's reign and after his departure. We exclude the crisis years 1997-1999, as these are characterized by high turmoil and volatility.[9] The survey contains detailed information on industry, employment, production, and other firm characteristics. Given the richness of the data it has been used by many to examine different dimensions of firm productivity, reallocation, and firm dynamics (Blalock and Gertler, 2006, 2009, Blalock et al, 2008, Harrison and Scorse, 2010, Javorcik and Arnold, 2009, Hallward-Driemeier and Rijkers 2013).

Data on political connections are from Mobarak and Purbasari (2006). Identification of politically connected firms is based on a two stage procedure. First, following Fisman's (2001) the authors identify firms whose market value on the Jakarta Stock Exchange exhibited abnormally negative movements in response to news episodes about Suharto's deteriorating health during the period 1994-1997. Second, they trace the major shareholders and members of the Boards of Management and Commissioners of each of the adversely affected

[7] We obtain this number by dividing total output produced by all firms in our sample on total manufacturing output reported by the World Development Indicators from the World Bank.

[8] Hereafter we use terms "plant" and "firm" interchangeably.

[9] Moreover our interest is in examining the impact of turnover on (medium-term) firm dynamics net of adjustment to the crisis. [move into text?]

firms. Then they list all conglomerates owned by each of the members, as well as all firms that are part of these conglomerates. Finally, Mobarak and Purbasari (2006) merge these companies to manufacturing census survey in 1997 and identify in total 269 of "politically connected" firms. Among these firms 97 (36%) have a Suharto family member as one of their owners or on their board. We refer to such firms as benefiting from "family connections." To the remainder of the politically connected firms we refer to as benefitting from "cultivated connections." In a robustness check we demonstrate that the nature of connections does not appear to have a bearing on the results.

A few limitations of the Mobarak and Purbasari's (2006) approach have to be borne in mind when interpreting our results. To start with, some publicly traded firms might spuriously react to news about Suharto's health and could consequently be incorrectly identified as politically connected. This is a concern for firms with cultivated connections, but less so for firms with family connections. Second, it is likely that there are other privately held politically connected firms that are not captured by the authors' strategy.[10] Thus, our measure likely underestimates the prevalence and importance of political connections. This issue is compounded by the fact that politically connected firms are identified in the manufacturing survey from 1997 only, so that firms that enjoyed connections but exited before 1997 (or lost their connections prior to 1997) are never identified as being connected in our sample. In the same vein, we don't know what happened to connected firms after Suharto's resignation and whether new connections were formed. The number of politically connected firms that we observe increases progressively from 208 in 1993 to a maximum 269 firms in 1997, and then decreases to 241 firms in 2003. However, there is no exit recorded between 1997 and 2000, the crisis years.[11] Since the information on connected firms is most accurate in 1997 and 1996 is the last pre-crisis year, in our industry-level analysis we proxy connections with the Suharto regime by the average of the sum of the market shares of politically connected firms within a given 5-digit industry in 1996 and 1997. The construction of this de facto time-invariant industry-level presence of politically connected firms also helps alleviate endogeneity concerns related to entry and exit of connected firms and measurement errors. Appendix A presents detailed definitions of all other variables.

In addition, we construct new data on investment regulation in Indonesia during the pre- and post-Suharto periods. Information on investment regulations was obtained from Presidential Decrees issued in 1993, 1995 and 2000. More specifically, we create an investment regulation indicator variable that equals 1 if an industry is

[10] The methodology used by Mobarak and Purbasari may not identify the relatively smaller politically connected firms that are not part of large conglomerates. Another limitation of our study is that we are restricted to manufacturing sector only, while political connections are prevalent in other economic sectors (see e.g. Brown, 2006; Bourbakri et al., 2008)

[11] The spectacular survival rate of connected firms might reflect the fact that some of the weaker firms might already have been weeded out, that the strategy is more likely to identify relatively larger firms part of extended business networks, and that some of the connected firms were "too big to fail." Another possibility is that the timing of exit of these firms was not accurately recorded in the survey, which is another motivation for discarding the crisis years.

completely closed to investments or closed unless the firm in question meets certain conditions, and zero otherwise. Industries that are reserved for small businesses are not considered as regulated. Thus for 1993-1994 we have 25 regulated industries, for 1995 and 1996 – 15, and for 2000-2005 – 14 industries. Two industries became deregulated and one newly regulated after the crisis.

Prior to empirical analysis, we perform firm-level data cleaning, described in the Appendix and also drop some industries as outliers. In particular we drop industries that are not present over the entire sample period, that produce less than 3000 USD of output, that do not have enough firms to compute price-cost margins and profit elasticities in a reasonable range. This leaves us with 221 industries.

4. Characteristics of Politically Connected Firms and Industries

4.1. Characteristics of politically connected firms

In spite of accounting for only 1.1 percent of the firms in our sample, in 1996 the 269 connected firms matter from a macroeconomic perspective. As Table 1 shows, these firms produced 15 percent of total manufacturing output, and employed 4 percent of formal manufacturing workers in 1996.[12] They account for 5 percent of manufacturing exports in our sample. Politically connected firms are thus among the larger firms and oriented towards production for domestic consumption.

Table 2 shows the average characteristics of politically connected and non-connected firms and compares the difference between these averages within 5-digit industry during the final years of Suharto's tenure: 1993-1996. Connected companies significantly outperform non-connected ones by size and other indicators. For example, an average connected firm generates almost 12 times more output than non-connected firm when operating in the same 5-digit industry. The superior size of connected firms also reflects in higher employment and higher market shares. They also have higher shares of foreign and state ownership, and import and export more. These observations are consistent with anecdotal evidence on the tendency of the Suharto's family to partner with foreign firms, and to control big businesses by means of state ownership. Privileged access to import licenses reported by Mobarak and Purbasari (2006) explains the greater import propensity of connected firms.

4.2. Characteristics of politically connected industries

[12] We focus on 1996 as it is the year right before the financial crisis.

We next characterize industries depending on the importance of political connections. As described in the data section, we measure the importance of politically connected firms (*PCpresence*) in a 5-digit industry with the share of output produced by these firms averaged over 1996-1997. Politically connected firms are present in 98 out of 221 industries (i.e. 44 percent of all industries) at the -digit level of disaggregation.[13] Across these 98 industries the mean value of *PCpresence* is 0.19, the median is 0.11 and the maximum is 0.97. For instance, industries with the largest markets shares of connected firms are Manufacturing of macaroni, spaghetti, noodles and the like (0.82), Manufacture of explosives and ammunition (0.92), and Manufacture of railroad equipment (0.97).

Table 3 reports pairwise correlations between the aggregate market share of politically connected firms and various industry characteristics (Corr. I). The sorting of connected firms across industries is by no means random. Industries where politically connected firms are more imported generate significantly more output and value added but do not offer more jobs. Industries where connected firms have greater market shares are also characterized by greater state ownership penetration, rely more on imports and are less likely to export. The latter finding suggests that politically connected firms sort into non-tradable sectors (note also that this contrasts with the finding that politically connected firms export more than non-connected firms (Table 2).

Politically connected firms tend to locate in industries that appear less competitive. Higher market share of connected firms is associated with significantly lower industry entry and exit rates, including the natural entry rate, suggesting that these correlations are not (solely) driven by potential endogeneity of competition indicators with respect to political connections. Industries where politically connected firms are more important are more concentrated, and have fewer firms. More connected industries are also more likely to be subject to investment regulation. These results suggest that connected firms are more likely to be important players in industries which are less competitive, and presumably, are important for the Indonesian government either for strategic or rent-seeking purposes, or both.

5. The Impact of Political Turnover on Firms

To set the stage for the sector analysis of competition, we first assess what happened to the market shares of connected firms after Suharto's resignation. If Suharto's ousting reduced the value of privileges received by companies connected to him, we would expect politically connected firms to experience a reduction in market power.

The key challenge in our analysis is to disentangle the impact of the fall of Suharto from the potential confounding effects of the events that happened in the country at the same time: The Asian financial crisis led to

[13] The distribution of the presence of politically connected firms by 5-digit industry is available in Online Appendix.

drastic currency devaluation, collapse of the banking system and numerous defaults. Therefore, firms (and industries) that were more import oriented, less export oriented and more reliant on external finance before 1997 were most likely hit harder by the crisis, and had different recovery trajectories. Moreover, Suharto's fall precipitated regulatory reforms.

To isolate the impact of political connections, we use a difference-in-difference strategy to assess performance differences between connected and non-connected firms before and after the fall of Suharto. His fall was largely unexpected, and anticipation effects likely limited, which aids identification. Following Blalock et al., (2008) we exclude the crisis period and it's immediate aftermath (i.e., 1997, 1998 and 1999) since it was characterized by turmoil and adjustment. Our most general specification is:

$$MarketShare_{ijt} = \alpha PC_i + \beta PC_i \times PostSuharto_t + \gamma X_{ijt} + \delta X_{ijt} \times PostSuharto_t + \mu_i + \tau_t + \varepsilon_{ijt}$$

where $Market\ Share_{ijt}$ is the market share of firm i in industry j at time t; PC_i is a dummy variable indicating whether or not a firm is politically connected; $PostSuharto_t$ is a dummy variable indicating the 2000-2003 period; X_{ijt} is a set of firm characteristics such as indicators of foreign and state ownership, importing, exporting and the logarithm of firm age. We add interactions between the post-Suharto dummy and these firm characteristics to allow for a differential impact of these determinants of market share after Suharto's ousting. τ_t are year fixed effects, μ_i are industry fixed effects, and ε_{ijt} is i.i.d. error term. To control for changes in credit market effects, we also add to our regressions indicators of the interaction between the post-Suharto period and indicators of dependence on external finance and asset tangibility (note that they are time-invariant and thus already observed by the industry fixed effects). In addition, we include an interaction between being subject to stringent investment legislation during the Suharto era and the post-Suharto era. In our most stringent specifications we control for sector-year fixed effects. We also run regressions in which we control for firm-fixed effects (in which case industry level fixed effects drop out). Standard errors are clustered by sector.

Table 4 presents the results. Panel A presents specifications in which we assess how the performance of firms that were operating in the Suharto era evolved following his departure by fixing explanatory variables in the post-Suharto period to be equal to their 1996 values. This forces us to restrict the sample to firms that were already operating in the Suharto period but has the advantage of minimizing potential biases arising because of the endogeneity of these explanatory variables due to political turnover. Panel B uses current year values for the explanatory variables for each year. This has the advantage of using the entire sample and minimizing potential omitted variable bias, though some of the explanatory variables might be endogenous with respect to political turnover.

Both sets of regressions confirm that politically connected firms have substantially and significantly more market power than non-connected firms. The regressions shown in panel A show that conditional on ownership structure and sector, connected firms enjoy a pre-crisis market share premium of 4.9 percentage points (see column 1). The estimated premium is robust to controlling for firm age, trade participation, and changing credit market conditions (as is done in column 2), as well as adding sector-year fixed effects (column 3). When using time-varying explanatory variables instead of using only pre-turnover variation, the qualitative patterns of results remains the same, as is demonstrated in panel B.

More importantly, connected firms experienced a significant reduction in their market power after the crisis. On average, they remained larger than non connected firms but their market shares reduced by between 0.9 and 1.2 percentage points ceteris paribus. This result is not only robust to adding controls for firm age, trade participation, changing credit market characteristics, controlling for firm fixed effects, as is done in column 4, 5 and 6, which replicate the specifications in column 1,2,3 but now adding firm fixed effects. The finding that connected firms were disproportionately adversely impacted by the crisis and lost substantial market power is consistent with Fisman and lends credence to our identification strategy at the sector level.

6. The Impact of Political Turnover on Competition

We now assess the impact of political turnover on competition. We use the Suharto regime collapse as a quasi-natural experiment by which the value of political connections was changed, and employ a difference-in-difference approach. Our empirical specification is:

$$Y_{it} = \alpha PCpresence_i \times PostSuharto_t + \beta X_i \times PostSuharto_t + \gamma Z_{it} + \delta Z_{it} \times PostSuharto_t + \mu_i + \tau_t + \varepsilon_{it},$$

where Y_{it} is one of the outcome variables in 5-digit ISIC industry i at time t. These include measures of competition intensity, notably entry and exit rates, the price-cost margin and profit elasticity, as well as indicators of concentration, notably the the Herfindahl-Hirschman index, the market share of four largest companies as measures of industry concentration, the number of firms and prices.[14] The key variable of interest is the interaction term between the measure of the presence of politically connected firms in an industry ($PCpresence_i$) and the dummy variable ($PostSuharto_t$). $PCpresence_i$ is the output based market share of politically connected firms at 5-digit industry level, averaged over 1996-1997. $PostSuharto_t$ is an indicator variable that assumes the value 0 in the pre-

[14] Although these competition measures are widely used in the literature, they all have limitations and drawbacks; therefore, we use all of them in attempt to represent a more complete picture of industrial organization (Jerbashian and Kochanova, 2011).

crisis period (1993-1996), and equals 1 for 2000-2003. The crisis years 1997-1998 and the immediate recovery year 1999 are again excluded from the sample. X_i is a vector of time-invariant industry characteristics, and Z_{it} is a vector of time-varying variables, which we discuss below. Appendix A provides definitions of all the variables, and explains how they are constructed. Finally, we control for 5-digit industry fixed effect μ_i and year fixed effects τ_t in all specifications.

Our main hypothesis is that Suharto's fall reduced the value of privileges received by companies connected to him and thereby had a pro-competitive impact on Indonesian manufacturing sector. If so, this impact should be more pronounced in industries where politically connected firms accounted for a larger share of output at the eve of the fall of the regime. We therefore test the null hypothesis that this is not the case, i.e. that $\alpha = 0$. Since we control for industry fixed effects, the coefficient α measures how the change in the outcome variables associated with the regime collapse varies with the extent to which the industry had been dominated by politically connected firms.

In robustness checks we control for 4-digit sector-specific trends, and in another robustness check we control for 4-digit sector-time fixed effects δ_{jt} (instead of τ_t) to account for all possible sector-specific shocks. Thus in our most restrictive specifications, identification is based on comparing 5 digit industries to their peers within the same 4-digit sector grouping. We also test for pre-trends, assess whether results vary with the strength of political connections, assess the impact of outliers, and experiment with alternative measures of political connectedness. Moreover, we assess the impact of political turnover on upstream and downstream industries by adding measures of the presence of politically connected firms in supplying or buying industries interacted with the post-Suharto dummy.

Turning to the results, Table 5 presents the estimation results from our baseline empirical specifications examining how political turnover impacted industry structure. The specification in Panel A only includes an interaction term between the presence of politically connected firms at the eve of the crisis and post-turnover dummy. Panel B, which is our preferred specification, adds additional controls variables – pre-crisis industry shares of imports, exports, foreign ownership, state ownership, investment regulation, dependence on external finance, and asset tangibility - all interacted with the post-Suharto dummy. Panel C presents estimates that control for time-varying covariates and their interaction with the post-crisis dummy. All specifications include industry and year fixed effects. Standard errors are heteroscedasticity robust and clustered at the industry level.

Even though point estimates are generally consistent with a pro-competitive impact of Suharto's fall, the data do not reject the null hypothesis that Suharto's fall did not improve competition in sectors in which his cronies had more market power during his tenure. The coefficient on the interaction between the post-Suharto dummy and the Suharto-era market share of politically connected firms is consistently statistically insignificant in all

regressions, except when exit is the dependent variable.[15] We do not find evidence that Suharto's fall had a differential impact on entry rates, price costs margins, the profit elasticity, the Herfindahl index, the market share of the largest 4 firms, the number of firms, and output prices in sectors where firms with political connections to him had more market power. These findings obtain irrespective of which specification is chosen; Importantly, the inclusion of additional industry-levels controls that aim to disentangle the impact of political turnover from the financial crisis and deregulation reforms aftermaths does not alter the estimated coefficient of interest much. In short, competition did not improve significantly more (nor deteriorate) in sectors in which cronies had more extensive interests.

Table 6 and Figure 1 present robustness checks. To start with, we allow for heterogeneity in the impact of political connectedness over time by interacting the Suharto era of politically connected firms in 1996 and 1997, with year dummies. The results are presented in Figure 1, which plots the resulting coefficients of interest and their 95% confidence interval. Note that 1996 is the omitted category (hence there is no confidence interval for 1996). The plots show that results are not driven by a lack of parallel trends pre-crisis, and, moreover, that by using a single post-Suharto era dummy we are not masking meaningful temporal heterogeneity in the impact of political connectedness.

Second, we replicate our preferred regression (which was presented in Panel B) but add industry time trends. The results are presented in column A. The coefficient on political connections interacted with the post-Suharto era dummy now becomes insignificant in all regressions. Third, we add 3-digit sector*year dummies, which help to control for sector-specific shocks. The qualitative pattern of results does not change very much, suggesting our results are robust to the inclusion of controls for sector-specific shocks.

Fourth, we experiment with alternative proxies for political connectedness. To start with, we use a dummy variable for whether or not any firm in a given sector was politically connected interacted with the post-Suharto dummy. This specification exploits only the "extensive margin" of political connectedness. The overall pattern of coefficient estimates does not change very much, though the coefficient on the interaction between the post-Suharto era and the presence of any politically connected firm in a sector is now significantly negative at the 10% level. In panel D we use an alternative dummy that takes the value 1 if politically connected firms jointly accounted for more than 25% of all output. Results are again very similar to those obtained in our main specifications, and the positive

[15] Although the sign of most estimates is consistent with improved competition as the results point towards more entry and exit, more firms, higher profit elasticities, and lower concentration and lower prices in the post-Suharto era in sectors in which cronies had extensive interests, none of these associations are statistically significant.

association between political connections and post-Suharto era entry rates disappears, suggesting it is not robust and was driven by a few sectors where politically connected firms were not very important.

Fifth, we exploit variation in the strength of political connections by separately controlling for family connections, which are presumably stronger, and cultivated connections. We would expect firms with family connections to enjoy bigger benefits, and would thus anticipate greater pro-competitive effects in sectors where such firms had higher market shares. Although the results do suggest that concentration rates as proxied by the joint market share of the 4 biggest firms decreased somewhat in these sectors, the profit elasticity also reduced significantly, pointing towards less competition. All in all, results are not consistent with improved competition in these sectors and inconsistent with the hypothesis that results vary substantially with strength of political connections.

Sixth, we exclude sectors in which state-owned enterprises were active, since state interventions to protect SOEs might attenuate the results. The results remain.

Seventh, to assess whether outliers may be driving our (non-)results, we exclude industries where connected firms had held more than 90% and 50% of output, respectively. The coefficient on the interaction between political turnover and the Suharto-era market share of politically connected firms is consistently insignificant in all specifications. Note that this suggests that the positive association between exit rates and the interaction between political turnover and political connections to Suharto is driven by a select few sectors.

Last but not least, we allow for potential impacts on competition arising because of exposure to politically connected firms via supply chain linkages by adding controls for forward and backward linkages. Controlling for these does not alter our main findings. Moreover, controlling for these linkages does not improve predictive power. The null hypothesis that political turnover did not differentially impact competition in sectors supplying more and/or buying more from industries in which politically connected firms held more market power is not rejected. In short, the results seem robust.

6 Conclusion

Using plant-level census data spanning the collapse of the Suharto's regime this paper analyzes the impact of cronyism on industry structure and competition in Indonesian manufacturing. We exploit the fall of Suharto as a quasi-natural experiment inducing variation in the value of political connections with him and control for potential confounders such as changing credit market conditions and other sector-specific shocks.

Politically connected firms were adversely impacted by Suharto's removal, losing roughly a full percentage point of market share on average on account of his departure. The attendant reduction in market power did not result

in improvements in competition at the sector level. Thus political turnover per se did not yield systemic improvements in aggregate efficiency, in spite of eroding the (anti-)competitive advantages of being politically connected enjoyed by individual firms.

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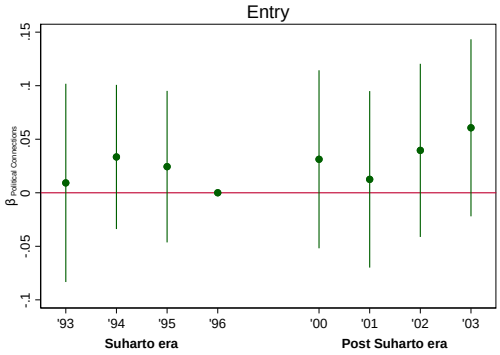
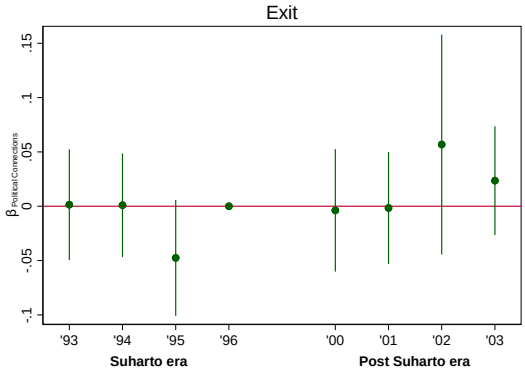
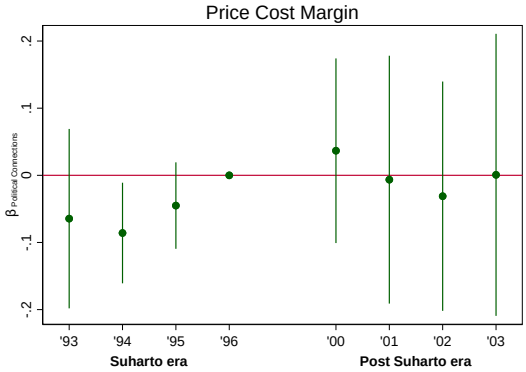
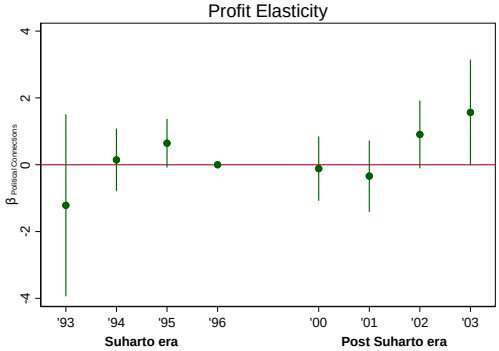
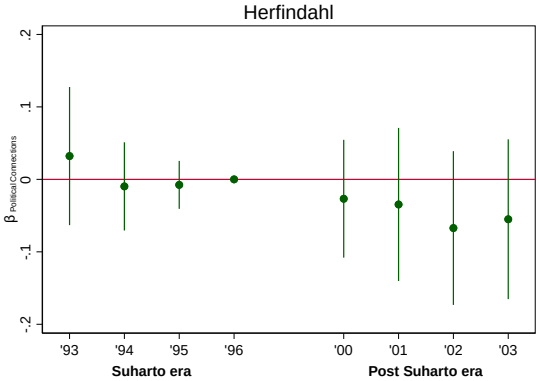
Figures and Tables

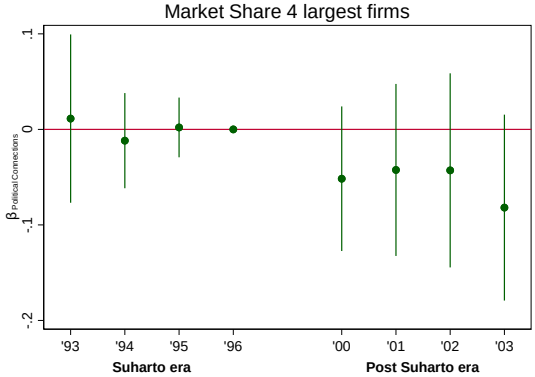


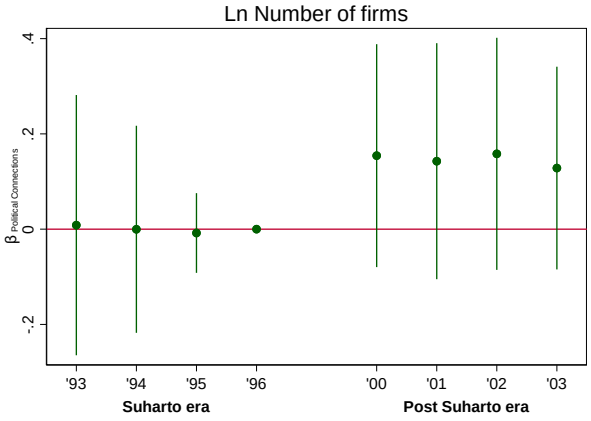








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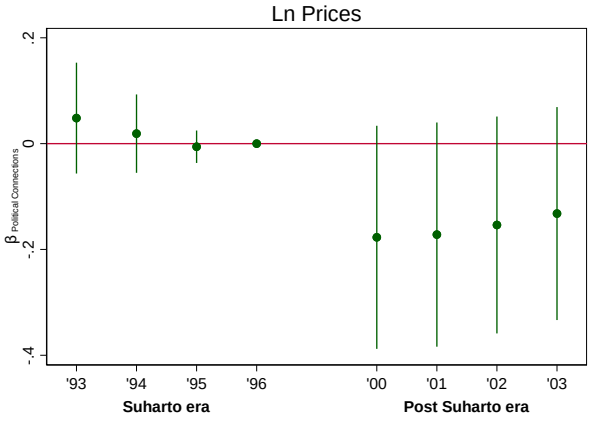
Suharto era
Post Suharto era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Suharto era
Post Suharto era

Table 1: Economic importance of politically connected firms

N of firms	Output	Labor	Import	Export
1.05	14.99	4.32	12.90	4.82

Note: Table reports shares (in percent) of total manufacturing sector economy attributed to PC firms in 1996.

Table 2: Connected vs non-connected firms during the Suharto era

Variable	Variables in levels						
	Connected firms			Non-connected firms			Diff.
	N	Mean	SD	N	Mean	SD	
log Output	867	18.30	1.69	79720	14.45	2.04	2.48***
log Labor	867	5.95	1.15	78987	4.21	1.18	1.30***
Import	864	0.30	0.36	77979	0.09	0.24	0.12***
Export	867	0.16	0.29	79720	0.12	0.30	0.05***
Foreign	867	0.14	0.25	79720	0.04	0.17	0.06***
State	867	0.18	0.37	79720	0.03	0.15	0.12***
Market share	867	0.08	0.14	79720	0.01	0.04	0.06***
log Age	867	2.31	0.93	79720	2.21	0.90	0.04

Note: Table reports average characteristics of politically connected and non-connected firms in levels and in changes for 1993-1996. The differences reported in the last column account for 5-digit industry fixed effects: these are the coefficients β estimated from the regression $Y_{ij} = \alpha + \beta PC_{ij} + u_j + \theta_t + \varepsilon_{ij}$, where Y_{ij} is an outcome characteristic, PC_{ij} is a dummy variable indicating politically connected firm, u_j is a set of 5-digit industry fixed effects, and θ_t is a set year fixed effects. Standard errors are clustered at the 5-digit industry level. *** indicates significance at the 1% level, ** - at the 5% level, and * - at the 1% level.

Table 3: Pairwise correlations with the presence of politically connected firms

Variable	Correlation	Variable	Correlation	Variable	Correlation
Log Output	0.18***	Exit	-0.17***	EFD	0.03
Log Labor	0.01	PCM	0.18***	Natural entry	-0.07**
Import	0.14***	PE	0.06*	Investment reg.	0.10***
Export	-0.17***	HHI	0.21***		
Foreign presence	-0.04	MS4	0.15***		
State presence	0.42***	Log N	-0.13***		
Entry	-0.12***				

Note: Table reports pairwise correlations between industry characteristics and industry presence of politically connected firms for 1993-1996. External finance dependence (EFD) and Natural entry are constant over time. *** indicates significance at the 1% level, ** - at the 5% level, and * - at the 1% level.

Table 4: The Impact of Political Turnover on Firm Performance

	Market Share					
	(1)	(2)	(3)	(4)	(5)	(6)
A: Controlling for Suharto-era firm characteristics						
Politically Connected	0.049***	0.049***	0.049***			
	(0.008)	(0.008)	(0.009)			
Politically Connected*Post Suharto	-0.013**	-0.013**	-0.013**	-0.011**	-0.009**	-0.011**
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Ownership controls (pre-crisis)	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls (pre-crisis)	No	Yes	Yes	No	Yes	Yes
Firm FE	No	No	No	Yes	Yes	Yes
Industry FE	Yes	Yes	No	Yes	Yes	No
Industry-Year FE	No	No	Yes	No	No	Yes
Number of observations	137,302	137,302	137,302	137,302	137,302	137,302
Number of firms	26,254	26,254	26,254	26,254	26,254	26,254
Adjusted R2	0.254	0.255	0.265	0.004	0.006	0.093
B: Controlling for time-varying firm characteristics						
Politically Connected	0.055***	0.050***	0.049***			
	(0.009)	(0.008)	(0.009)			
Politically Connected*Post Suharto	-0.012**	-0.011**	-0.010*	-0.011**	-0.010**	-0.011**
	(0.005)	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Ownership controls (time-varying)	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls (time-varying)	No	Yes	Yes	No	Yes	Yes
Firm FE	No	No	No	Yes	Yes	Yes
Industry FE	Yes	Yes	No	Yes	Yes	No
Industry-Year FE	No	No	Yes	No	No	Yes
Number of observations	163,537	160,110	160,110	163,537	160,110	160,110
Number of firms	35,057	34,281	34,281	35,057	34,281	34,281
Adjusted R2	0.215	0.239	0.253	0.003	0.006	0.085

Note: Standard errors are clustered at the 5-digit industry level. *** indicates significance at the 1% level, ** - at the 5% level, and * - at the 1% level. The sample period spans 1993-1996 and 2000-2003. Definitions of the variables are provided in the Appendix. Ownership controls include controls for Foreign and State Ownership, as well as their interactions with the Post Suharto dummy. Firm controls include the log of firm age, imports, exports, whether or not the sector in which the firm is operating is subject to entry restrictions, and their interaction with the post-Suharto era dummy. It also includes interactions between Dependence on External Finance and Asset Tangibility and the Post-Suharto era dummy (note that the inclusion of industry fixed effects prohibits the inclusion of their levels as these measures are time-invariant). In Panel A all explanatory variables assume their 1996 values for all of the post-Suharto period, to minimize endogeneity of these variables with respect to political turnover. Panel B instead allows for time-variation, using current year values of all the explanatory variables. The full set of coefficients is available in the online Appendix.

Table 5: The impact of political turnover on competition (sector-level outcomes)

	(1) Entry	(2) Exit	(3) PCM	(4) PE	(5) HHIY	(6) MS4	(7) lnN	(8) lnP
A. Baseline								
Political Connections (MS)*Post Suharto	0.038	0.041***	0.015	0.702	-0.034	-0.037	0.017	-0.164
	(0.030)	(0.014)	(0.060)	(0.477)	(0.040)	(0.039)	(0.111)	(0.108)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N - observations	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768
N - groups	221	221	221	221	221	221	221	221
Adjusted R2	0.305	0.093	0.008	0.072	0.008	0.013	0.171	0.930
B. With time-invariant Suharto era Controls*Post Suharto								
Political Connections (MS)*Post Suharto	0.024	0.031**	0.060	0.623	-0.036	-0.044	0.100	-0.159
	(0.035)	(0.013)	(0.071)	(0.547)	(0.052)	(0.048)	(0.126)	(0.119)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Post-Suharto*Industry controls (pre-crisis)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N - observations	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768
N - groups	221	221	221	221	221	221	221	221
Adjusted R2	0.310	0.093	0.030	0.076	0.026	0.040	0.237	0.933
C.With time-varying controls								
Political Connections (MS)*Post Suharto	0.015	0.035***	0.074	0.817	-0.011	-0.033	0.120	-0.191
	(0.032)	(0.013)	(0.075)	(0.579)	(0.052)	(0.050)	(0.118)	(0.116)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Controls (time-varying)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Post-Suharto*Industry Controls (time-varying)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N - observations	1,768	1,768	1,768	1,768	1,768	1,768	1,768	1,768
N - groups	221	221	221	221	221	221	221	221
Adjusted R2	0.314	0.092	0.034	0.089	0.049	0.05	0.239	0.933

Note: Standard errors are clustered at the 5-digit industry level. *** indicates significance at the 1% level, ** - at the 5% level, and * - at the 1% level. The sample period spans 1993-1996 and 2000-2003. Industry controls include imports, exports, the cumulative market shares of state owned and foreign owned firms, entry regulation, dependence on external finance and asset tangibility (note that we only include the interaction of these last two controls with the Post-Suharto era dummy since they are time-invariant and we are conditioning on sector fixed effects). In Panels A and B all explanatory variables assume their 1996 values for all of the post-Suharto period, to minimize endogeneity of these variables with respect to political turnover. Panel C instead allows for time-variation, using current year values of all the explanatory variables. Variable definitions are provided in the Appendix.

Table 6: Robustness Checks (Sector-Level)

	(1) Entry	(2) Exit	(3) PCM	(4) PE	(5) HHIY	(6) MS4	(7) lnN	(8) lnP
with 5 digit industry trends								
Political Connections (MS)*Post Suharto	-0.056	0.029	0.088	0.597	-0.051	-0.039	0.219	-0.106
	(0.050)	(0.018)	(0.083)	(0.567)	(0.090)	(0.067)	(0.169)	(0.106)
*with 3 digit industry*year FE*								
Political Connections (MS)*Post Suharto	0.004	0.030**	0.025	0.494	-0.052	-0.072	0.185	-0.016
	(0.038)	(0.015)	(0.074)	(0.695)	(0.052)	(0.050)	(0.141)	(0.110)
Alternative proxy for Political connections: dummy for whether any firms in sector was connected								
PC Dummy*Post Suharto	0.024***	0.010*	0.007	0.131	0.010	0.004	-0.013	-0.008
	(0.009)	(0.005)	(0.017)	(0.191)	(0.016)	(0.017)	(0.044)	(0.038)
Alternative proxy for Political connections: dummy for whether PC firms jointly had more than 25% of the market								
PC Dummy (MS>25%)*Post Suharto	0.003	0.031***	0.031	0.480	-0.057	-0.071	0.131	-0.160
	(0.034)	(0.012)	(0.072)	(0.501)	(0.050)	(0.044)	(0.119)	(0.111)
Family vs cultivated connections								
Family Connections (MS)*Post Suharto	-0.025	0.032*	-0.023	-1.728**	-0.120	-0.139**	0.214	-0.304
	(0.093)	(0.017)	(0.177)	(0.861)	(0.080)	(0.069)	(0.222)	(0.221)
Cultivated Connections (MS)*Post Suharto	0.046	0.030*	0.099	1.692***	0.002	-0.002	0.048	-0.093
	(0.030)	(0.017)	(0.080)	(0.547)	(0.067)	(0.059)	(0.161)	(0.114)
Excluding industries with any state ownership (N=1008, 112 industries)								
Political Connections (MS)*Post Suharto	0.021	0.039**	-0.034	-0.552	-0.055	-0.090	0.112	-0.196
	(0.065)	(0.016)	(0.108)	(0.879)	(0.077)	(0.064)	(0.189)	(0.206)
Excluding industries where PC firms accounted for more than 90% of market share								
Political Connections (MS)*Post Suharto	0.018	0.019	0.077	0.268	-0.031	-0.036	0.039	-0.100
	(0.040)	(0.012)	(0.078)	(0.545)	(0.056)	(0.053)	(0.128)	(0.121)
Excluding industries where PC firms accounted for more than 50% of market share								
Political Connections (MS)*Post Suharto	0.015	0.023	0.135	0.117	0.011	0.017	0.007	-0.211
	(0.047)	(0.021)	(0.112)	(0.829)	(0.093)	(0.089)	(0.199)	(0.181)
Allowing for upstream and downstream effects								
Political Connections (MS)*Post Suharto	0.022	0.028**	0.065	0.581	-0.054	-0.053	0.124	-0.109
	(0.035)	(0.014)	(0.065)	(0.542)	(0.055)	(0.047)	(0.129)	(0.095)
Backward PC*Post Suharto	-0.005	0.027	0.132	1.277	0.359	0.182	-0.516	-1.557**
	(0.123)	(0.092)	(0.290)	(2.743)	(0.231)	(0.207)	(0.554)	(0.690)
Forward PC*Post Suharto	0.034	0.033	-0.121	0.216	0.154	0.069	-0.193	-0.245
	(0.057)	(0.033)	(0.135)	(1.328)	(0.111)	(0.123)	(0.272)	(0.404)

Note: Table reports the results from the estimation of the specification (1) for the dependent variables specified in the headlines. The specifications are alternative version of the regressions presented in Panel B of Table 5: regressions include 5-digit industry and year fixed effects as well as interactions between a post-Suharto era dummy and the 1996 levels of imports, exports, the cumulative market shares of state owned and foreign owned firms, entry regulation, dependence on external finance and asset tangibility. Standard errors are robust and clustered at the industry level. *** p<0.01, ** p<0.05, * p<0.1.

Appendices

Industry-level variables

Presence (importance) of political connections (*PCpresence*) in industry i is the share of output produced by politically connected firms: $PCpresence_i = \frac{\sum_{j,j\in i} PC_j \cdot Y_j}{\sum_{j,j\in i} Y_j}$, where PC_j is a dummy variable indicating Suharto crony and Y_j is the output of firm j. The measure is averaged over 1996 and 1997.

Entry rate (*Entry*) in industry i at time t is the number of all new firms at time t divided by the total number of firms at time t-1.

Exit rate (*Exit*) in industry i at time t is the number of all firm that do not exist at time t+1 divided by the total number of firms at time t.

Price-cost margin *(PCM)* in industry i at time t is defined as $PCM_{it} = \frac{(Output - Variable\ cost)_{it}}{Output_{it}}$, where variable cost includes labor compensation and intermediate inputs.

Profit elasticity (*PE*) in industry i at time t is the vector of coefficients $\hat{\beta}_{it}$ estimated from the following econometric specification $lnProfit_{jt} = \beta_t \ln\left(\frac{Variable\ cost}{Output}\right)_{jt} + \mu_j + \theta_t + \varepsilon_{jt}$ for each industry i.

Herfindahl-Hirschman Index *(HHI)* in industry i at time t is defined as the sum of the squared market shares of firms in an industry: $HHI_{it} = \sum_{j,j\in i}\left(\frac{Output_{jt}}{\sum_{j,j\in i} Output_{jt}}\right)^2$.

Market share of the four largest firms *(MS4)* in industry i at time t is defined as $MS4_{it} = \frac{\sum_{j=1,2,3,4,j\in i} Output_{jt}}{\sum_{j,j\in i} Output_{jt}}$.

Industry size ($Size_{t-1}$) in industry i at time t-1 is a logarithm of industry-level real output (employment or the number of firms) lagged one period back.

Export ($Export_{bc}$) in industry i is the share of total exports out of total output, average over pre-crisis period, 1993-1996.

Import ($Import_{bc}$) in industry i is the share of total imported raw materials out of total material inputs, average over pre-crisis period 1993-1996.

Dependence on External finance (*External* fin_{bc}) in industry i is the share of the sum of financing obtained from equity, domestic loans, foreign loans, foreign investment, government investment and capital markets out of total investments, average over pre-crisis period 1993-1996.

Investment regulation (*Investment reg*) in industry i is the dummy variable that equals to 1 if industry was regulated. Source: Presidential Decrees issued in 1993, 1995 and 2000 in Indonesia.

Investment regulation (before the regime change) (*Investment* reg_{bc}) in industry i is the dummy variable that equals to 1 if industry was regulated in 1995.

Presence of state owned firms (*State* $presence_{bc}$) in industry i is the share of output produced by companies that have a majority of state ownership, measured in 1996.

Presence of foreign owned firms (*Foreign* $presence_{bc}$) in industry i is the share of output produced by companies that have a majority of foreign ownership, measured in 1996.