

The Tip of the Pyramids: Cronyism and Private Sector Growth in Egypt

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Preliminary, please do not quote

Abstract. Using an original database of firms in Egypt, we explore the economic effects of cronyism. The unique dataset identifies 469 politically connected firms under the Mubarak regime in Egypt before the 2011 revolution. We combine this data with various other databases on Egyptian economic establishments and regulations to assess the relationship between political connections and private sector regulation as well as the effect of these on firm dynamics and ultimately job creation. We find that connected firms are more likely to benefit from trade protection, energy subsidies, access to land, and regulatory enforcement. Moreover, while connected firms exhibit superior corporate performance relative to unconnected firms, we show that their performance is systematically related to their ability to capture these policies. We also find abundant indirect evidence that the presence of more connected firms in a sector has adverse effects on aggregate growth. First, we show that the policy distortions, i.e., privileged access to energy subsidies and trade protection account for the higher profits of politically connected firms. Second, the presence of politically connected firms is associated with less competition, less firm entry, and a higher skewness in the firm size distribution due a decline in the number of medium or large firms and an increase in the number of small or micro firms. Third, we find that employment growth declines after politically connected firms enter into previously unconnected sectors. These findings are consistent with the model of Aghion et al. (2001) which shows that less neck-on-neck competition within sectors leads to lower growth.

1. Introduction

A wealth of research has documented the value of political connections, but has only begun to examine why these connections are valuable. This has important implications for development. Political connections may serve to insulate firms from predatory behavior by the state. In this case, however, connections may allow investments that would not otherwise occur. Alternatively, firms may use political connections to establish barriers to entry, suppressing investment and innovation that might otherwise occur. If the first hypothesis is correct, “cronyism” may be a second-best response to weak institutions. If the second hypothesis is correct, cronyism is more likely to hinder economic development.

Using novel data from Egypt, we make three contributions. First, in seeking to identify the policy benefits that connected firms might enjoy, past research has focused on privileged access to credit. We find that politically connected firms are more likely to benefit from subsidies, trade protection, access to land, and biased regulatory enforcement. Second, prior work has not explicitly linked policy benefits to firm value. We are able to show that privileged access to energy subsidies

and trade protection accounts for the higher profits of politically connected firms. Third, past research has not quantified the degree to which political connections establish barriers to entry hindering economic development. Our data suggest that rates of entry are lower in sectors with a greater presence of politically connected firms while firm distributions are skewed towards small and micro or old firms. In line with these findings, we show that employment growth declines after politically connected firms enter new, previously unconnected sectors.

The paper is organized as follows. Section 2 reviews our contributions to the literature on cronyism. Section 3 reviews the modalities and evolution of cronyism in Egypt. Section 4 details our sample of *connected firms* and describes their characteristics. Section 5 asks whether the connected firms profited disproportionately from protection and subsidies and evaluates their relative efficiency compared to unconnected firms. Section 6 examines whether the presence of connected firms reduced the dynamism and growth opportunities of the rest of the economy. Section 7 provides direct evidence that cronyism reduces economic growth based on a quasi-natural experiment. The final section concludes with a discussion of the broader implications of the results.

2. What do we know about cronyism?

Beginning with Fisman's (2001) seminal contribution, scholars have systematically documented the value of political connections.¹ Like Fisman, Chekir and Diwan (2012) use an event study methodology and apply it to Egypt. They estimate the value of political connections for 22 connected, publicly traded firms to be about 23 percent of the firms' value, similar to Fisman's estimates of the value of connectedness in Suharto's Indonesia. They also show that connected firms were less efficient than other large stock market firms in Egypt.

A large literature has also analyzed specific mechanisms through which firms may gain from political connections (e.g., Cull and Xu 2005 for China; Johnson and Mitton 2003 for Malaysia; Khwaja and Mian 2005 for Pakistan; Leuz and Oberholzer-Gee 2006 for Indonesia; Claessens, et al. 2006 for Brazil; and Faccio et al. 2006 based on cross-country panel data; see also Boubakri et al. 2010 and Goldman, et al. 2008). Most studies find that connected firms have better access to finance (higher debt). Some studies find that connected firms exhibit higher default rates and receive more frequent bailouts. Connected firms also enjoy tax advantages, greater market power and preferential access to government contracts. Boubakri et al. (2010) show that firms increase their indebtedness after establishing connections. Rijkers et al. (2014) examine the behavior of 214 firms that were expropriated after the Jasmine Revolution because they were owned by members of the Ben-Ali family; these companies disproportionately benefited from FDI restrictions and licensing requirements.

The literature is mixed on whether connected firms perform better than unconnected firms. Faccio (2007, 2010) concludes that connected firms perform worse than unconnected firms in her cross-country panel. Haber and Maurer (2007), in contrast, find that connected firms in Mexico were more productive than unconnected firms. Researchers focused on East Asia describe elaborate ties between business and the state that tilted the playing field sharply in favor of particular sectors and

¹ Other studies finding stronger firm performance of politically connected firms include Roberts (1990) and Goldman et al. (2009) for the U.S., Ramalho (2003) for Brazil, and Ferguson and Voth (2008) for Nazi Germany. Similarly, Boubakri et al. (2009) find that firms increase their financial performance after establishing connections.

families, but were nevertheless consistent with high rates of economic growth (Kang 2002, Khan 2010, and Rock and Bonnett 2003). In Egypt, the net effect of policies that favored connected insiders was at best mixed: economic growth never approached East Asian standards, private investment remained between 10 and 15 percent of GDP, and capital flight persistently fluctuated between 5 and 10 percent GDP. At the same time, formal private sector job creation stagnated at 15 percent of total employment.

Our research contributes to this large literature in several ways. First, ours is the first analysis that demonstrates that connected firms disproportionately benefit from energy subsidies, trade protection, and biased regulatory enforcement.² Second, we show not only that connected firms were larger and more profitable, but also that these performance differences originate entirely from their government privileges. Finally, we are the first to show that privilege retards firm entry and suppresses aggregate job creation.

3. Cronyism in Egypt

The Middle East literature on Arab capitalism contains rich analyses of how autocrats allowed business elites to dominate the business sector in exchange for support for the regime. Qualitative research has documented barriers to entry that excluded opponents and provided privileges to a small coterie of friendly capitalists (Henry and Springborg 2010, Owen 2004, Heydeman 2004, King 2009). In Egypt, observers argue that cronyism thrived in the “businessmen” cabinet headed by Ahmad Nazif from 2004 to 2011 (Kienle 2002; Sfakianakis 2004). In Tunisia, the Ben Ali and Trabelsi families monopolized business opportunities and even expropriated the real estate and business holdings of wealthy elites. Similar stories about favoritism and insiders abound in Syria, Libya, Yemen, and Algeria, where political cronies seem to control large chunks of the private sector (Albrecht 2002; Alley 2010; Haddad 2012; Tlemcani 1999).

In Egypt, the government erected barriers to entry even as it engaged in economic liberalization. In the early 2000s, President Hosni Mubarak’s son, Gamal, working closely with a group of economic experts and ambitious businessmen, shifted the country’s policies towards accelerated privatization and financial sector and trade reforms. Insider firms were able to capture the opportunities that emerged with the modernization of the economy. Over the decade ending with the 2011 uprising, these opportunities included massive housing projects and construction, tourism at coastal areas, the oil and gas sectors, the banking sector, and telephony, as well as local distribution of international consumer brands. Government decisions were key in all of these areas – tourist resorts were built on formerly government-owned land; investments in oil and gas required government approval; new banks or factories in specific manufacturing sectors such as cement required government licenses; etc. Consistent with this, our data on politically connected firms indicates that they are especially concentrated in tourism (hotel & restaurants, tour operators, transport), real estate, construction, wholesale & retail trade, mining, finance, business services, and manufacturing sectors (see Table 2 in the Appendix).

The analysis that follows suggests that connected firms involved in manufacturing benefited from protections from foreign competition, preferential access to subsidies, access to land, and

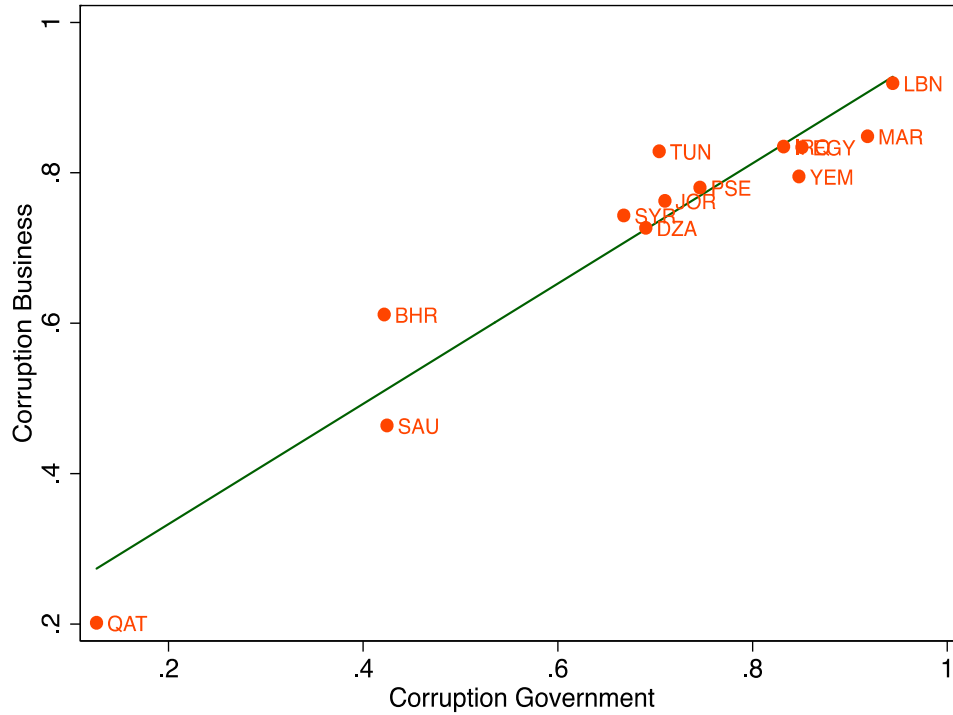
² Krozner and Statmann (1998) show that political influence affects regulatory protection in the United States, but influential firms are far from “cronyistic”. Rather, legislators simply pay more attention to, and are more susceptible to lobbying by, economic sectors that are important in their districts.

regulatory enforcement. Our data do not allow us to examine other mechanisms that explain crony presence in some sectors rather than others. However, anecdotal evidence points to plausible explanations. On the one hand, connected firms appear to have been the privileged recipients of exclusive licenses to distribute international brands in Egypt, shielding connected wholesale & retail firms from competition. On the other hand, connected families entered the real estate, tourism, and transport sectors by acquiring large sections of prime land from the government, reportedly, involving closed and non-transparent deals. Connected businessmen were well-placed to influence these decisions: they were not only personally well connected with the political leadership, but they themselves also occupied important post in government, the ruling party, parliament, and various influential boards and committees. Trials of leading businessmen since the Arab Spring have shed light on land appropriation at below-market prices; the manipulation of government regulations to stifle competition; subsidized borrowing from state banks; and privileged access to subsidized energy and state procurement contracts.

The favors offered by business elites to political elites have also been documented: official bribes, illegal funding of political campaigns, and the manipulation of the financial markets for the benefits of both firm and government insiders (Ahram Online, various issues). Figure 1 highlights one consequence of this: public perceptions of corruption in business are strongly correlated with perceptions of government corruption. Another is civil unrest: popular perceptions about business elites had become negative in the region in the years before the Uprisings.³

³ For example, the Pew survey reveals that in 2010, corruption was the top concern of Egyptians, with 46 percent listing it as their main concern even ahead of lack of democracy and poor economic conditions (Pew 2011). Also, changes in the corruption ratings of Arab countries in the Transparency International index confirm popular perception: in 2005, Egypt ranked 70, Tunisia ranked 43, Libya ranked 117 and Yemen ranked 103 out of 158 rankings on the Corruption Perceptions Index (CPI). Perceived corruption increased markedly in the following three years. In 2008, Egypt dropped to 115, Tunisia to 62, Libya to 126 and Yemen to 141 out of 180 rankings on the CPI.

Figure 1: Perceptions of corruption in Government and in Business, Arab Countries, 2011



Source: Gallup.

From Diwan (2012).

4. Data

To examine the economic effects of insider privilege, we need both a dataset of politically connected firms under the Mubarak regime in Egypt and information about firm performance. To identify politically-connected individuals, we followed Fisman (2001) and interviewed managers of banks and private equity funds, lawyers and NGOs (e.g., anti-corruption organizations) to create a list of politically connected businessmen. We confirmed the representativeness of this list in two ways. First, following Rijkers et al. (2014), we matched this list with the names of businessmen whose assets were frozen immediately after the revolution of February 2011. Second, following Faccio (2007), we pruned the list to include only those businessmen who had political posts in the ruling party or in the government, or whose immediate family members did. Unlike Faccio, we also had sufficient information to identify long-term friends of the Mubarak family; these were also identified as connected businessmen.⁴

The Orbis database includes information on the board members, managing directors, or major shareholders for 854 firms that are currently or were formerly traded on the Cairo stock

⁴ Out of the 32 PC businessmen, 18 had high political posts after 2002 (either in the ruling party or in the government) and controlled 307 of the 469 firms we ultimately identified as connected. Among the other 14 businessmen, the most important ones are long-term friends of Hosni Mubarak from military times or co-founders of a large investment bank partly owned by a Cyprus registered company owned the Mubarak family.

exchange.⁵ We were able to unambiguously match the names of the 32 businessmen identified in step one with board members, managers, or major shareholders of 104 firms.

Several of these firms are holding companies and investment funds. Using the Internet, we identified the names of all subsidiaries (up to two tiers) of these 104 firms and matched these subsidiaries with firms in the Orbis database. This process identified 469 firms that are unambiguously controlled, directly or indirectly, by a connected businessman. Of these firms, 47 have at least one politically connected businessman as a general manager (CEO), 140 have a connected board member, and in 334, at least one connected businessman or firm was unambiguously identified to have an ownership stake. In addition, in 172 firms a private equity fund owned by at least one politically connected businessman an ownership stake. The first column of Table 1 disaggregates politically connected firms by the type of political connection; the second column lists the number of 4-digit economic sectors that have at least one PC firm with each particular kind of connection.

Firms in Egypt operate in 320 non-farm, non-government 4-digit ISIC Rev.4 sectors and politically connected firms are widely spread across these. As Table 1 indicates, about half (49%) of the sectors include connected firms (186 out of 372). Within manufacturing, where 41% of the connected firms operate, they are present in 58 percent of the 4-digit industries (73 out of 126). Moreover, Table 3 in the Appendix reveals that there is also substantial variation of the presence of politically connected firms across 4-digit industries within the same 2-digit sector. It also shows that politically connected firms operate in some more mature traditional 4-digit sectors but not others; however, their activities are not constrained to more traditional sectors. They also operate in some younger modern sectors (e.g., manufacturing of batteries or computer programming services) while they did not enter others (e.g., manufacturing of optical instruments or specialized design services). These attributes of the distribution of connected firms across sectors aid in the empirical identification of the impact of political connections on 4-digit sector outcomes in the analysis below.

It is noteworthy that the presence of connected firms in Egypt appears to be much more widespread across various economic activities relative to information available from other countries (see Table 2 in the Appendix). In particular, the presence in various manufacturing industries, which are typically considered harder to protect from (international) competition, is striking. In contrast, in Tunisia only 29 politically connected firms (13%) operate in a few manufacturing industries according to Rijkers et al. (2014). The difference might simply reflect the smaller sample or different nature of the information available on connected firms. More generally, however, their stronger presence across sectors over the past decade might also indicate that the regime aimed to tighten control of the economy (i.e., the recipients of extracted rents and their potential use for political financing). In fact, Table 4 in the Appendix shows that connected firms entered various new sectors between 1997 and 2006 which had been open (i.e., not connected) before.

⁵ Many large firms were listed at stock exchanges in Egypt since gains from selling shares of listed companies are exempted from taxation. Reportedly, several politically connected firms exploited this legal tax loophole to avoid paying taxes for M&A transactions; i.e., instead of selling firms directly, which is taxable, the transaction was conducted as an untaxed market transaction by first listing the company for sale at the stock exchange (Ahram Online, various issues).

Table 1: Type of political connection across firms and by 4-digit sectors

Type of PC firm	Number of PC firms of that type	Number of 4-digit sectors with at least one PC firm of that type
Any type of politically connected firm	469	174
Politically connected CEO	47	50
Politically connected owner	334	148
Politically connected private equity ownership	172	108

Note that these types of political connections can be ranked according to their restrictiveness. The incentive of the connected individual to leverage connections on behalf of the firm is strongest if he is the CEO of the company (almost all politically connected CEOs almost also own at least part of their companies). It is less strong for politically connected owners and weakest for any type of connected firm for which we also include firms which received significant investments of politically connected private equity firms.⁶

We combine the information on political connected firms with four sources of establishment level data. First, the Orbis database itself has firm characteristics – including firm names - and balance sheet variables for a panel of over 20,000 establishments between 2003 and 2012, which allows us to compare the performance of connected and unconnected firms. While production data on small enterprises are frequently missing, the data on medium and large establishments, the right comparison group for politically connected firms, are comprehensive. In particular, employment is observed for about 20,000 establishments while operating revenues and profits are only available for about 700 and 400 large establishments, respectively.

Second, establishment census data from the department of statistics in Egypt (CAPMAS) do not contain firm names, but they do allow us to estimate how the dynamics across detailed 4-digit sectors change depending on the presence of connected firms. The census includes employment and firm characteristics of over two million (non-farm) economic establishments in 1996 and 2006 (repeated cross-sections). The database is combined with our information on politically connected firms at the (ISIC Rev. 4) 4-digit sector level (320 non-farms, non-government sectors).⁷

Third, World Bank Enterprise Survey (WBES) data allows us to assess correlations between the presence of crony firms and perceived policies. We pool all available surveys for Egypt between

⁶ The same ranking applies if we consider that information asymmetry matter among different type of ownerships; i.e., the connected CEO should be most effective in lobbying for privileges as he has the most accurate knowledge of firm specific information and cost structures; the connected owner has less information but still more than the connected private equity investor. Of course, it also matters how “close” the political connection to the businessman is, however, we do not have information to distinguish between different types of connections as all connected businessman are considered to have first tier political influence over regulations and their implementation.

⁷ We exclude the following sectors as firm dynamics in these sectors are driven by the government and not the private sector in Egypt: public administration, education, health, arts (4-digit ISIC Rev. 4 codes larger than 8400).

2004 and 2008 in order to maximize the representativeness of the perceived policy data at the sector level. Overall, there are more than 4,200 firms which are aggregated into 90 (ISIC Rev. 3.1) 4-digit sectors.⁸

Fourth, to investigate whether connected firms benefited from state-supported barriers to entry or energy subsidies, we use information on non-tariff barriers to trade (NTMs) from the World Bank (WITS) while the UN provides data on the energy intensities of manufacturing industries.

5. Do politically connected firms perform better and, if so, why?

In this section, we show that connected firms are more profitable and larger than unconnected firms. Our findings mirror those of previous studies that find that connected firms perform better. For instance, Roberts (1990) and Goldman et al. (2009) find stronger performance of politically connected firms in the U.S., Ramalho (2003) in Brazil, and Ferguson and Voth (2008) in Nazi Germany. Similarly, Boubakri et al. (2009) find that firms increase their financial performance after establishing connections. Like prior research, we cannot exclude the possibility that better performance is due to the greater entrepreneurial skill of the owners and managers of connected firms. However, we are able to go beyond prior research and link (in the following section) performance differences to specific policy benefits that connected firms receive, and which can contribute to their performance above and beyond any entrepreneurial advantage that they might have. We demonstrate that, in Egypt, connected firms enjoy substantial policy privileges which account for their better performance.

Relying on the Orbis data, Table 2 compares connected and unconnected firms for a range of production variables. We note that the Orbis data primarily include medium and large establishments which are the right comparison group when comparing politically connected and unconnected establishments. In fact, Table 19 in the Appendix reveals that large firms are well-distributed among connected and unconnected establishments with available data in the Orbis database.⁹ Table 2 shows that, on average, the 436 connected establishments with available pooled data have 941 employees, compared to 253 employees for the unconnected 19,375 establishments.¹⁰ Among the 678 establishments with non-missing revenue data in Orbis, the average revenues (\$172 million) of the 67 connected ones were more than four times the average of unconnected establishments (\$42 million). The average net profits were 13 times higher for the 49 connected establishments with available data indicating that at least part of the politically connected firms make excessively high profits. Among the establishments with available data in 2010, politically connected firms accounted for only 11 percent of total employment but 55 percent of total revenues and 60 percent of total net profits.

⁸ We exclude sectors for which we observe less than 4 firms leading to, on average, 38 firms per 4-digit sector.

⁹ There are 2,900 larger establishments in the Orbis database with more than 200 employees (including those that have missing revenue data). Of these, 344 are politically connected and 2,556 are not (see Table 19 in the Appendix).

¹⁰ We do not include the number of employees associated with holding companies. The largest establishment with available data has 13,256 workers (iron & steel); eight have more than 5,000 workers (hotels, food, vehicles, base metals, textiles, plastics, and ceramics); 21% have more than 1,000 workers; 36% more than 500; and 71% more than 100.

Table 2: Characteristics of politically-connected versus unconnected firms

	Politically connected establishments (of any type)			Other establishments			
	Number of est.	Average, (2003-2011)	Sum (2010)	Number of est.	Average, (2003-2011)	Sum (2010)	Share of PC est. in total (2010)
Employment	436	941	172,425	19,375	253	1,396,646	11%
Revenues	67	172,043	12,400,000	611	42,985	10,100,000	55%
Net profits	49	60,230	1,273,986	239	4,611	856,636	60%
Gross Profits	51	41,936	1,507,381	331	12,174	1,740,165	46%
Net profits per revenues	47	.229		236	.102		

Source: Orbis establishment database. Note: The establishment data are pooled across years (2003-2011) if not indicated otherwise.

Table 3 reports results of a more rigorous comparison. The fourth column reports the difference in the logged performance variables between connected and other firms; these differences are significant at the 5 percent level in all cases. The fourth column quantifies the difference between connected and other firms that operate in the same 2-digit sector. While the performance differences decline somewhat when exclusively comparing establishments within the same 2-digit sector, they are still significant at conventional levels in all cases. Thus, the performance differences are not specific to the broader sectors in which firms operate; i.e., they cannot be explained the fact that crony firms operate in 2-digit sectors with specific characteristics while others do not. In other words, if crony firms receive preferential benefits or treatment relative to other firms, these must not be sector specific but rather specific to the crony firm or the individual product it sells in the sense that other firms operating in the same sector do not have access to such privileges. In fact, the last column shows that after controlling for detailed 4-digit sectors (i.e., product classes), politically connected firms cease to have significantly higher profit margins relative to other firms suggesting that at least parts of their higher profits originate from characteristics specific to the product classes they are selling.

Table 3: Within-sector differences, politically connected (of any type) and other firms

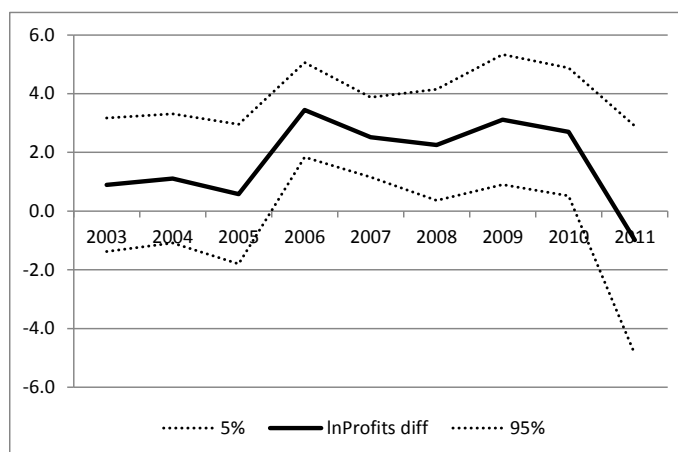
	No. of PC est.	No. of other est.	PC vs. other est.	PC vs. other est., within 2-digit sector	PC vs. other est., within 4-digit sector
Ln(Employment)	436	19,375	1.40** (15.88)	1.02** (12.39)	0.97** (11.82)
Ln(Revenues)	67	611	1.61** (6.46)	1.59** (6.27)	1.50** (5.56)

Ln(Profits)	49	239	1.43** (1.95)	1.37* (1.73)	1.29 (1.33)
Ln(Profits/Rev)	47	236	1.88** (3.03)	2.17** (3.29)	1.02 (1.16)

Source: Orbis establishment database. Note: The establishment data are pooled across years (2003-2011). The third and fourth columns report the coefficient and *t*-statistic on the politically connected dummy variable, from an OLS regression of the performance variable (e.g., Ln(employment)) on the dummy variable which is equal to 1 for politically connected establishments and 0 otherwise. In the fourth (fifth) column, we additionally include 2(4)-digit sector dummies so that the connection dummy coefficient measures the difference between connected and unconnected firms operating within the same 2(4)-digit sector. *, ** indicates that the coefficients are significant at the 5%, 10% level.

Figure 2 suggests that the significantly larger net profits of firms with political connections in the Mubarak regime relative to other large firms were systematically related to the survival of the regime. It shows the differential in net profits which is significantly (at the 5 percent level) larger than zero between 2005 and 2010. After the fall of the Mubarak regime on February 11, 2011, however, the positive profits differential of politically connected firms suddenly disappeared.¹¹ The finding suggests that the larger profits of politically connected firms originated from firm-specific factors directly related to the existing political regime such as firm-specific privileges (e.g., in the form of subsidies or trade protection) but not greater entrepreneurial skills of the managers (which are independent from regime shifts). The fact that the profit differential between connected and unconnected firms disappears shortly after the fall of Mubarak also corroborates the quality of our empirical measurement of politically connectedness in Egypt.¹²

Figure 2: The evolution of net profit differentials between connected and other firms



Source: Orbis establishment database.

¹¹ Unfortunately, longer time series data for profits are not available in Orbis. We note that the precision of estimated profit differential in 2003 and 2004 is low due to the few available observations.

¹² We note that most of the regulatory privileges favoring connected firms (e.g., energy subsidies to industry or trade protection) are still in place until today. Thus, the decline in the profit differential for connected firms immediately after Mubarak's fall might reflect that other policy privileges (temporarily) disappeared (e.g., implementation bias – see below) or that the new regime at least initially made it generally more difficult for these businessmen to operate in Egypt.

The Policy Advantages of Political Connections in Egypt

The most commonly documented advantage enjoyed by connected firms is access to capital. This was also the case in Egypt, prior to the financial crisis at the end of the 1990s, when connected firms enjoyed privileged access to credit from state-owned banks. Subsequent policy reforms circumscribed the activities of state banks, however. As this section documents, in the 2000s connected firms instead extracted large benefits from protection from foreign competition, privileged access to energy subsidies, and protection from the arbitrary or predatory application of business regulations more generally from state regulation and the allocation of subsidies.¹³ These benefits accrued to connected firms despite the fact that, at the same time, Egypt was acclaimed for its efforts to reverse decades of state control of the economy.¹⁴

Politically connected firms are more likely to sell products protected from foreign competition

Tariff rates were reduced in Egypt at the end of the 1990s, but a new World Bank database measuring NTMs in various countries (Malouche et al., 2013) suggests that Egypt potentially responded by increasing the use of non-tariff technical import barriers.¹⁵ Figure 3 illustrates the decline in average weighted tariffs from about 16.5 percent in 1995 to 8.7 percent in 2009 – but also a steady and offsetting increase in NTMs. Of the 53 different NTMs in place in Egypt in 2009, almost half (24) were introduced or amended around 2000 and 21 percent between 2005 and 2009. Of these, most were issued by the Ministry of Industry and Trade, which was headed at the time by a prominent businessman. As a result, Egypt had one of the highest NTM frequencies in the world in 2010 (Malouche et al., 2013).

The evidence also indicates that NTMs disproportionately benefitted politically connected firms. In order to test this hypothesis, we first match data on NTMs (at the 6-digit product level harmonized system classification) from the World Bank dataset with the Orbis data (which is at the 4-digit industry level).¹⁶ The NTM measures are available for tradable goods, corresponding broadly to manufacturing and mining industries. We therefore limit the analysis of NTMs to these 147 sectors. Our data includes 200 politically connected firms operating in at least one of these sectors.¹⁷

¹³ These are only some of the regulatory channels that advantage connected firms. Others include the benefits of FDI restrictions for specific service sectors or fewer licensing restrictions (e.g., related to operating licenses), for which we do not have data.

¹⁴ That is, even as the formal rules of the game appeared to improve (as measured, for example, by sharp improvements in “Doing Business” indicators), connected firms were, in the terminology of Hallward-Driemeier, et al. (2010), able to make “deals” with government to tilt the playing field in their favor.

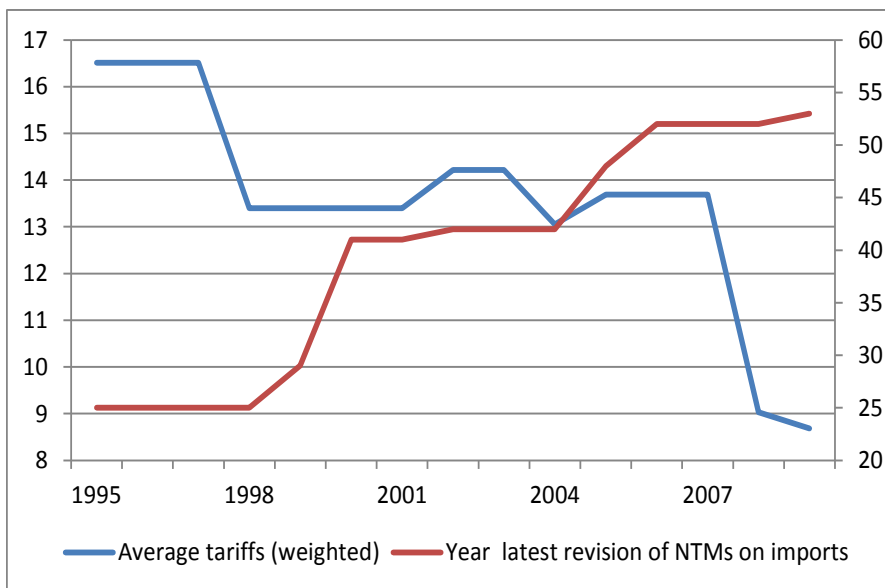
¹⁵ The World Bank database on NTMs provides either the year when a particular NTM has been introduced or the latest year in which it has been substantially revised. Unfortunately, the database does not distinguish between the two.

¹⁶ We convert the NTM data from 6-digit (HS Rev. 2002) product classification to the 4-digit industry ISIC Rev. 4 classification by using concordance tables from HS Rev. 2002 to ISIC Rev. 3 to ISIC Rev. 3.1 to ISIC Rev. 4, respectively. Several firms are operating in more than one 4-digit industry so that in total we have 230 industry-firm observations in manufacturing or mining.

¹⁷ Three politically connected firms are in two 4-digit ISIC Rev. 4 industries, *Casting of non-ferrous metals* and *Forging, pressing, stamping and roll-forming of metal*, which we had to drop from the NTM analysis since these industries have no equivalent HS (Rev. 2002) product code.

Most NTMs in Egypt are “Class B” NTMs, legal technical barriers to import, including license or registration requirements for importers, packaging requirements, regulations on production or distribution processes, traceability, and product-quality requirements. These restrictions are imposed on 65 percent (96 out of 147) of the 4-digit manufacturing industries. On average, these 96 industries confront 3-4 different Class B restrictions. The second most common NTMs are sanitary restrictions (Class A). These affect 65 manufacturing industries, mostly in the food sector. Price controls (Class F) and export-related measures (Class P) are also imposed on 60 and 16 manufacturing industries, respectively.

Figure 3: The evolution of average (weighted) tariffs and NTMs on imports since 1995



Source: WITS. Rate reflects most-favored nation tariffs. The NTMs data provides either the year when an NTM has been introduced or the latest year in which it has been substantially revised.

Manufacturing and mining industries in which politically connected firms are present are more likely to be protected from import competition by NTMs than those without politically connected firms. We observe at least one Class B NTM in 76 percent of all industries with at least one politically connected firm of any type but only in 55 percent of the industries without connected firms (Table 4); the differences are statistically significant at the 1 percent level. These results do not necessarily imply that connected firms benefit more than unconnected firms; there might also be more unconnected firms in industries that are protected by NTMs and have connected firms. However, Table 4 demonstrates that politically connected firms are also more likely to be protected by NTMs at the individual firm level; i.e., 82 (78) percent of all politically connected manufacturing and mining firms of any type (directly owned by a connected businessmen) sell products that are protected by technical non-tariff import barriers.¹⁸ In contrast, only 56 percent of all manufacturing or mining firms in Egypt in 2006 operate in these sectors; the differences are statistically significant

¹⁸ The significance levels drop somewhat for the most restrictive measure of political connections (i.e., also managed by a connected CEO) due to the smaller sample sizes.

at the 1 percent level.¹⁹ In addition, Table 4 shows that measures of price control and restrictions on export are also disproportionately protecting politically connected firms while sanitary NTMs, benefiting mostly firms in the food sector, exhibit no significant difference across connected and unconnected firms.

Table 5 shows that the gap in trade protection between politically connected and all firms increases substantially with the number NTMs imposed on a single product class. In particular, 82 percent of connected firms of any type but only 27 percent of all firms sell products that are protected by at least two technical import barriers. This difference increases further among firms protected by at least three NTMs (Class B) in which case 71 percent of politically connected firms but only four percent of all firms benefit. This stark difference remains when we use the more restrictive measures of political connections. That is, 67 (66) percent of firms managed (directly owned) by a politically connected businessmen sell goods that are protected by at least three technical import barriers including authorization requirements, quality inspections, are traceability requirements.

Table 4: Politically connected firms benefit more from Non-tariff Trade Measures

	Share of PC CEO firms	Share of PC owner firms	Share of PC broad firms	Share of all firms	Share of PC CEO ind.	Share of PC owner ind.	Share of PC broad ind.	Share of NOT- PC ind.
Technical import barriers (Class B)	89%	78%	82%	56%	69%	74%	76%	55%
	(0.073)	(0.000)	(0.000)		(0.230)	(0.027)	(0.008)	
Authorization required (B140)	0%	5%	11%	1%	6%	7%	8%	4%
	(0.678)	(0.663)	(0.000)		(0.554)	(0.364)	(0.254)	
Quality inspection required (B840)	67%	63%	67%	22%	50%	54%	51%	38%
	(0.011)	(0.000)	(0.000)		(0.390)	(0.069)	(0.113)	
Traceability required (B859)	89%	78%	82%	56%	69%	74%	76%	52%
	(0.073)	(0.000)	(0.000)		(0.224)	(0.012)	(0.003)	
Sanitary measures (Class A)	0%	18%	27%	28%	19%	28%	31%	15%
	(0.033)	(0.005)	(0.199)		(0.482)	(0.070)	(0.021)	
Price-control (Class F)	44%	38%	37%	26%	38%	33%	34%	22%
	(0.249)	(0.057)	(0.029)		(0.191)	(0.145)	(0.109)	
Export promotion (CLASS P)	0%	4%	5%	1%	13%	7%	7%	3%
	(0.776)	(0.291)	(0.078)		(0.147)	(0.231)	(0.226)	

Source: WITS. Note: The significance level (p-values) for the statistical difference between politically connected firms (industries) relative to all firms (not connected industries) is reported in parenthesis; it is based on a Pearson Chi2-test. We use the Fisher-test (instead of the Chi2-test) to test for the significance in differences between PC and NOT-PC industries (and for firms also managed by connected CEOs) for NTMs *CLASS P* and *CLASS B140* due to the small sample sizes.

¹⁹ The distribution of non-tariff technical barriers to import across all manufacturing or mining firms and industries suggests no systematic pattern to benefit larger manufacturing or mining industries (with more firms) in Egypt. If anything more concentrated sectors benefitted disproportionately since 65 percent of all industries had some NTM protections but only 56 percent of all firms.

Table 5: Share of politically connected and all firms protected by non-tariff trade barriers

NTMs (class B)	Share of PC CEO firms	Share of PC owner firms	Share of PC broad firms	Share of all firms	Share of PC CEO ind.	Share of PC owner ind.	Share of PC broad ind.	Share of NOT-PC ind.
at least 1 per industry	89% (0.073)	78% (0.000)	82% (0.000)	56%	69% (0.230)	74% (0.027)	76% (0.008)	55%
at least 2 per industry	89% (0.073)	78% (0.000)	82% (0.000)	27%	69% (0.174)	74% (0.012)	76% (0.003)	52%
at least 3 per industry	67% (0.029)	66% (0.000)	71% (0.000)	4%	50% (0.390)	60% (0.016)	59% (0.010)	38%
at least 4 per industry	11% (0.490)	21% (0.000)	26% (0.000)	3%	13% (0.293)	23% (0.009)	22% (0.010)	7%
at least 5 per industry	0% (0.575)	11% (0.028)	18% (0.000)	3%	13% (0.293)	14% (0.086)	15% (0.053)	5%
at least 6 per industry	0% (0.605)	8% (0.234)	15% (0.000)	2%	13% (0.293)	12% (0.144)	9% (0.083)	3%
at least 7 per industry	0% (0.758)	7% (0.017)	13% (0.000)	0%	6% (0.452)	9% (0.132)	9% (0.086)	3%
at least 8 per industry	0% (0.864)	3% (0.211)	10% (0.000)	0%	6% (0.329)	5% (0.223)	5% (0.187)	1%

Source is WITS. Note: The significance level (p-values) for the statistical difference between politically connected firms or industries relative to all firms or industries is reported in parenthesis; it is based on a Pearson Chi2-test. We use the Fisher-test because of small samples to test for the significance in differences between PC and NOT-PC industries (and firms also managed by a connected CEO) for all comparisons with less than 5 NTMs per industry.

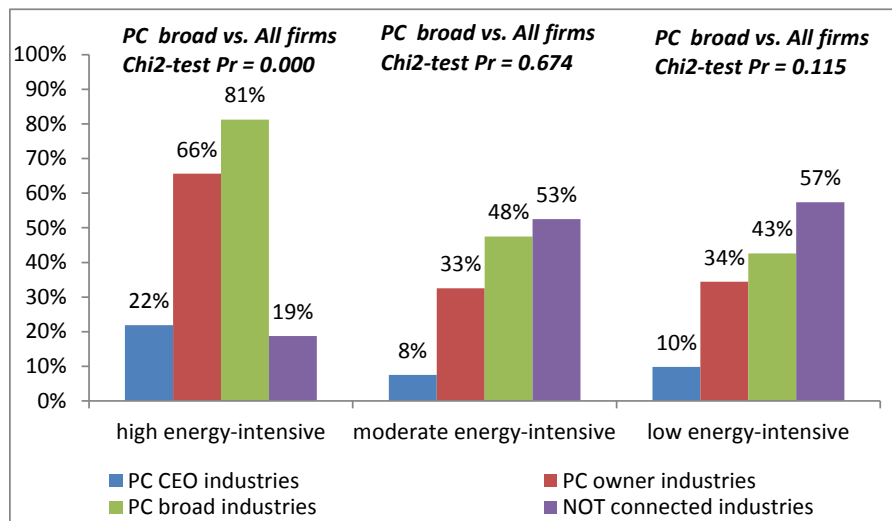
Did politically connected firms disproportionately benefit from energy subsidies?

Energy subsidies targeted to heavy industry in Egypt are a significant policy distortion, and one that redounds to the benefit of connected firms. In 2010, subsidies to energy intensive sectors accounted for 2.9 percent of GDP or USD 7.4 billion (equal to nearly half of total public investments in 2010). Based on the UN classification of the average energy intensity of different sectors, politically connected firms appear to be concentrated in energy- (and capital-) intensive manufacturing industries, such as base metals, cement, plastics, textiles, and ceramics (see Table 18 in the Appendix for the UN classification of sector energy intensity, and refer to Table 15 in the Appendix for the sector distribution of politically connected firms). To analyze more systematically whether politically connected firms disproportionately benefitted from energy subsidies, we classify

each firm as belonging to low, medium, or high energy intensive sectors.²⁰ We then compare the distribution of politically connected firms and all firms across 4-digit manufacturing industries with different energy intensities.

As with NTMs, we first show that sectors that benefit from government policy interventions (in this case, energy-intensive sectors) are more likely to include politically connected firms. We then show that connected firms are more likely than unconnected firms to be in these sectors. Figure 4 demonstrates that at least one politically connected firm of any type operates in 81 percent of all high energy-intensive industries and in only 19 percent they do not (the difference is significant at the 1% level). Applying the more narrow definitions of political connections, we find that at least one firm with a politically connected owner (CEO) operates in 66 (22) percent of all high energy industries; the difference relative to the percentage of high energy intensive industries without any connected firm is also significant at the 1 (5) percent level. In contrast, connected firms of any type are present in only 43 percent of low energy-intensive industries, and entirely absent in 57 percent; this difference is, however, not significant at conventional levels.

Figure 4: Energy-intensive industries: share of connected vs. unconnected industries

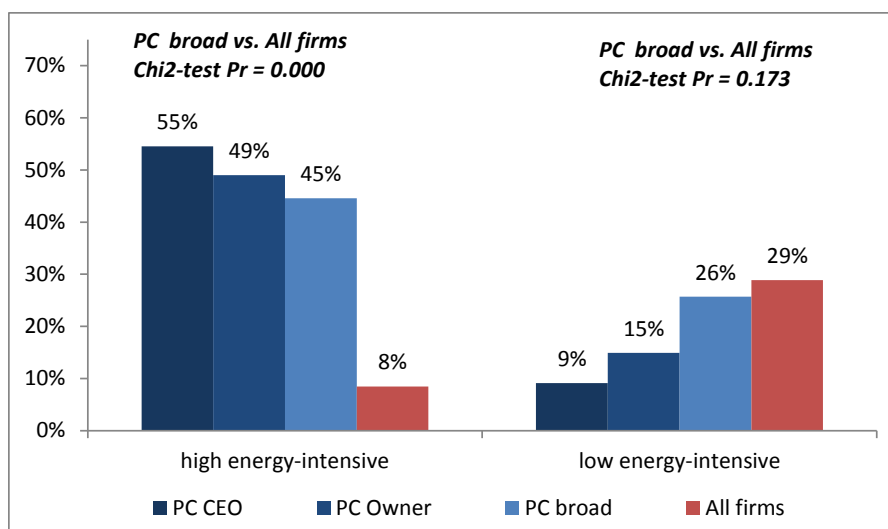


Note: Medium energy intensive industries are excluded. The three different types of connections (ordered here by their restrictiveness) are defined in Table 6.

Figure 5 **Error! Not a valid bookmark self-reference.** shows that politically connected firms are more likely to operate in energy-intensive industries. Of all connected firms, 45 percent operate in energy intensive industries compared to only eight percent of all firms (the difference is significant at the 1 percent level). Moreover, the stronger the type of connection, the higher is the probability that the connected firm operates in energy-intensive industries: 49 (55) percent of firms with a politically connected owner (CEO) operate in high energy intensive industries. In contrast, there is no statistical difference between the number of connected and all firms operating in in low (or moderate) energy-intensive industries.

²⁰ High energy-intensive industries account for 22 percent of all mining and manufacturing 4-digit industries, medium energy intensive industries for 37 percent, and low energy-intensive for 42 percent.

Figure 5: Energy-intensive industries: share of politically connected vs. all firms



Note: The percentage of firms in medium energy-intensive sectors has been excluded. The three different types of connections (ordered here by their restrictiveness) are defined in Table 6.

Do connected firms have better access to land and credit?

There is plenty of anecdotal evidence that politically connected firms in Egypt have superior access to land or credit.²¹ In the manufacturing sector, access to land includes access to industrial zones which guarantee several benefits relative to competitors outside of these zones including tax exemptions (from corporate taxes and customs duties), better infrastructure, and more streamlined regulations.²² In the following, we test if firms in sectors with a higher intensity of political connections are more likely to obtain land from the government or received it for free, to obtain a bank loan, or to be located in an industrial zone.²³ To see this, we employ the WBES data which contains firm level information for all of these variables. Firm responses to the WBES are

²¹ Reportedly, the government not only sold the land but also guaranteed at the same time to connect the land with the necessary electricity, telecommunication, and transport infrastructure; this practice immediately increased the value of land which the businessmen used as collateral to get bank loans far exceeding the initial purchase value of the land. The past practice of selling prime land below market value in closed deals became apparent in the emergence of numerous court disputes filed against the major real estate developers after the regime change in 2011. These trials aimed to force the real estate developers to revalue past land deals with the state and pay the difference. Several of these disputes have been settled outside courts in recent month (Ahram Online, various issues).

²² Industrial zones in Egypt include QIZs which guarantee firms duty and quota free exports to the U.S. Abdel-Latif and Nugent (2010) review the impact of QIZs in Egypt and find that large firms disproportionately benefit from the QIZ agreement: in the 17 industrial zones hosting QIZ factories 88 percent of exports are concentrated in firms with more than 500 workers. Textiles and garments account for 89 percent of QIZ exports, followed by plastics and chemicals.

²³ Reportedly, the type of activities benefitting from tax exemptions in special economic zones was also demand driven; for instance, the list of sectors eligible for tax exemptions was expanded to include media companies after the construction of a new media complex (including the media company, hotels, theatres, etc.) of a politically connected businessman. The complex was declared a special economic zone shortly after allowing him to benefit from tax exemptions (Ahram Online, various issues).

anonymous, so we cannot distinguish connected and unconnected firms directly. However, as with NTMs and energy subsidies, we can identify the detailed 4-digit industries in which politically connected firms are active by supplementing the WBES data with our information on the number of political connected per 4-digit sector. Overall, the WBES data include firm-level data for 95 4-digit (ISIC Rev. 3.1) sectors including 84 manufacturing and 11 services sectors. All of the 11 4-digit services sectors include multiple connected firms (in hotels & restaurants, retail & wholesale trade) so that we restrict the analysis to the 4-digit manufacturing sectors including 3,040 firms.

We use the following policy indicators coded as dummy variables from the WBES (as dependent variables):

- Land acquisition from government: “Does your establishment own or lease the majority of its land? From whom you have got the land (people, government, for free, other)?”
- Industrial zone: “Is the firm located in an industrial zone?”
- Bank loan: “Does your establishment currently have a loan from a financial institution?”

The information on land acquisition is available for 1,431 firms, 933 obtained the land from the government, 57 obtained it for free; 1,060 out of 3,036 manufacturing firms are located in an industrial zone; 453 out of 3,040 manufacturing firms reported to have received a loan.

We estimate probit regressions to assess if the probability that a firm has access to land or credit increases when it is operating in a 4-digit sector with a higher intensity of political connections (i.e., containing more politically connected firms). We use the following estimation specification:

$$Pol_{is} = \beta_C connected_s + \beta_S Size_{is} + \beta_{CS} connected_s * Size_{is} + \beta_X X_{is} + \beta_{st} S + \varepsilon_{is}(1)$$

The dependent policy variable Pol_{is} is a dummy variable for firm i in the 4-digit sector s . It is 1 if the firm bought land from the government or received it for free, it is located in an industrial zone, or it has a bank loan, respectively, and zero otherwise; $connected$ measures the number of politically connected firms by type in the 4-digit sector s . $Size$ is the dummy variable $Small$, which is equal to 1 if the firm has less than 100 employees and zero otherwise, or $Large$ which is the inverse (equal to 1 if more than 100 employees). X_{is} is a matrix of the following firm level control variables from the WBES: age, export share, S is a matrix of 2-digit sector dummies.²⁴

It is important to note that the inclusion of 2-digit sector dummies implies that the estimation coefficients, β_C and β_{CS} , only capture differences in the impact of the intensity of political connections among firms located in the same 2-digit manufacturing sector (e.g., textiles) but in different 4-digit sub-sectors (which vary in the number of political connected firms).²⁵ Thus, we only compare the impact of political connections among firms in closely related 4-digit sub-sectors

²⁴ The WBES data contain several additional firm level characteristics allowing us to additionally control for differences in export shares among firms relative to the regressions below based on the Orbis or establishment census data where we do not observe exports.

²⁵ We cluster the standard errors at the 4-digit sector level in all estimation specifications to account for 4-digit sector specific shocks which lead to a correlation in the error terms among all firms in these sectors. This specification avoids the a bias in the estimated standard errors due to the inclusion of explanatory variables that only vary at the sector level in the firm-level regressions (see Moulton, 1990).

of the same industry in order to identify the coefficients β_C , β_S , and β_{CS} empirically. Note that this excludes comparisons, for instance, between a 4-digit textile and a 4-digit garment sector. Overall, we observe about 80 4-digit sub-sectors in 23 2-digit manufacturing sectors.²⁶

The estimation framework allows testing the hypothesis that firms in sectors with more connected firms are more likely to have access to government land and bank loans. If we cannot reject the hypothesis that the political intensity of sectors matters, it is indeed likely that it is the connected firms in these sectors that have better access to land and credit since otherwise it is hard to see why the intensity of connections in sectors matters at all. Still, we cannot know for sure if primarily the connected firms in these sectors have better access. The estimation framework above, however, allows us to go one step further since we do know certain characteristics of politically connected firms: they are much larger than unconnected firms. For instance, 85 percent of manufacturing firms with available employment data have at least 100 employees. In contrast, among all manufacturing firm in the WBES, only 33 percent have at least 100 employees (on average, we observe about twelve large firms in a 4-digit manufacturing sector in the WBES data). Thus, large firms in the WBES data are much more likely to be politically connected.²⁷

The estimation framework also allows testing if the access to government land, zones, and credit is different for large firms in sectors with more connected firms relative to large firms in less connected sectors. In particular, if we include the dummy variable “*Small*” for the “Size” variable above, β_C measures if large firms’ access to land and credit is different in sectors with more connected firms while β_{CS} measures if large firms’ access differs from small firms’ access in sectors with more politically connected firms relative to sectors without (or fewer) political connections.

We distinguish in the estimations between the different types of firm connections which are ranked according to their restrictiveness; i.e. the incentive of the connected individual to leverage connections on behalf of the firm is strongest if he is the CEO (who are also owners), less strong if he is the owner but not a manager, and weakest for any type of connected firm which includes participations of politically connected private equity firms (see above). We expect the impact of political connections to be stronger for the more restrictive measures. The distribution of politically connected firms by types of connection among manufacturing sectors is reported in Table 6. Note that the variation between unconnected (zero cronies) and connected sectors (at least 1 crony firm) 4-digit manufacturing sectors also larger for the more restrictive political connection measures implying a better empirical identification of the coefficients in particular when including 2-digit sector dummies.

Table 20 in the Appendix summarizes the descriptive statistics of the different perceived policy variables from the WBES among manufacturing sectors with at least one politically connected

²⁶ Our findings are generally stronger when we allow for comparisons of political connections across 4-digit sectors in different manufacturing industries (not including 2-digit sectors dummies). We do not present these findings when we also including interaction terms to reduce the size of the tables. In all other cases, both results are reported.

²⁷ We also tested for differences in firm age between connected and unconnected sectors. However, the age distribution of politically connected firms and all firms in the WBES data are very similar; the median age among the former is 18 and among all WBES firms it is 19.

firm and all other sectors (with zero connected firms). It shows that firms in connected sectors are more likely to have acquired government land, be located in an industrial zone, or have a bank loan.

Table 6: Distribution of politically connected manufacturing firms by type in WBES

No. of politically connected firms	No. of 4-digit sectors with politically connected CEOs	No. of 4-digit sectors with politically connected owners	No. of 4-digit sectors with any type of connected firms
0	55	22	15
1	22	18	16
2	8	12	5
3	2	7	9
[4,5]	0	11	16
[6,10]	0	11	14
[11,20]	0	5	10
[21,35]	0	1	2
Total	87	87	87

The estimation results are summarized in Table 7. The fourth column shows that the probability to obtain land from the government is significantly higher when firms operate in sectors with more politically connected firm owners; the corresponding coefficient is significant at the 5 percent level. The estimated effect is not only statistically but also economically significant. The coefficient indicates that with each additional politically connected firm in the 4-digit sector, the probability to obtain land from the government increases by 1.8 percentage points. Thus, assuming linearity, sectors with 20 crony firm owners are 36 percentage points more likely to have obtained land from the government than sectors without crony firm owners which is a large effect (compare Table 20 in the Appendix). The impact is comparably large for the two other types of connections but only significant at the 5 percent level in the case of the broader measure including all types of ownership connections (sixth column).

Accounting for the interaction between political connections and firm size, reveals that large firms are much more likely to obtain government land across all sectors. That is, column five indicates that the probability for a large firm to obtain government land is 9.13 percentage point higher than the probability for a small firm in non- (or less) connected sectors. The interaction term shows that the difference in access to land between large and small firms is the same (statistically) in sectors with more connected firms. However, smaller firms with less than 100 employees (i.e., “Large=0”), are much more likely to obtain land from the government if they operate in sectors with more politically connected firm owners: the probability increases by 2.7 percentage point with each additional connected owner in the sector (first row in column three). Given that only few small firms have reported to have obtained land from the government at all, this result might suggest that political connections help to buy land from the government primarily for smaller manufacturing firms (with less than 100 employees) while large manufacturing firms are less constrained to acquire government land (independent of political connections).

The probability that firms operate in industrial zones increases with the intensity of political connections in an industry (columns 8-13 of Table 6); the corresponding coefficient are statistically

significant for two out the three different ownership definitions (types of connections). Columns 9, 11, and 13 indicate that large firms are more likely to be located in an industrial zone; this finding is consistent with Latif and Nugent (2010). Among large firms, however, they are still more likely to operate in industrial zones if they also operate in industries with more crony firms (relative to comparable 4-digit industries with less connected firms within the same 2-digit manufacturing sector); the corresponding coefficients are statistically significant at the 5 percent level for all three different definitions of connections. For instance, each additional connected firm owner in a 4-digit sector increases the probability that large firms in these sectors are located in industrial zones by 5.2 percentage points. Similarly, we find that the access to bank loans increases with the intensity of political connections in a sector. Again, while all large firms are more likely to get credit, large firms additionally operating in sectors with more connected firms are even more likely to obtain bank loans: each additional connected large firm owner in a sector increases the probability access to credit by 4.1 percentage points. Furthermore, for the most restrictive ownership definition of politically connected CEOs, large firms are more likely to have access to credit than small firms in more connected 4-digit sectors.

Overall, the findings suggest that the presence of political connections, increases firms' probability to have access to government land, industrial zones, and bank loans.

Table 7: Political connections and firms' access to land, industrial zones, and credit by firm size

	Acquired Land from Government						Located in Industrial City						Obtained Bank Loan					
	CEO	Owner	Broad	CEO	Owner	Broad	CEO	Owner	Broad	CEO	Owner	Broad	CEO	Owner	Broad			
PC	.041 (0.72)	.023 (0.34)	.018** (2.08)	.027** (2.35)	.018** (2.45)	.021** (2.41)	.104 (1.17)	.215** (2.08)	.038** (2.72)	.052** (2.38)	.037** (2.62)	.045** (2.34)	.166** (2.27)	.248** (2.78)	.067** (3.05)	.041** (2.26)	.031** (2.40)	.023** (2.33)
Small																		
Small * PC																		
Large																		
Large * PC																		
Age																		
export-share																		
No. of firms	3014	3014	3014	3014	3014	3014	3008	3008	3008	3008	3008	3008	3002	3002	3002	3002	3002	3002
R-squared	0.103	0.161	0.104	0.163	0.103	0.163	0.157	0.183	0.159	0.185	0.162	0.191	0.038	0.060	0.040	0.060	0.038	0.060
Sector dummies	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit

Source: World Bank Enterprise Survey (WBES) data for Egypt 2004-2008 and number of politically connected firms. Note: PC indicates the number of politically connected firms varying at the 4-digit sector level. The three different types of connections (ordered here by their restrictiveness) are defined in Table 6. Size, age, and export shares vary at the firm level. Small refers to firms with less than 100 employees, large with at least 100 employees. All regressions include 2-digit sector dummies. We do not include the log of employment a control variable in the firm level regressions since “size” (which is based on employment) is already included. Standard errors are clustered at the 4-digit sector level. *, ** indicates significance at the 10%, 5% level, t-statistics are reported in parentheses.

Do connected firms disproportionately benefit from the enforcement of rules?

Politically connected firms also used their connections to reduce their own regulatory burden and the threat of predatory behavior by government officials relative to the burden and threats faced by their competitors. To see this, we again employ the WBES data which contains firms' assessments of the implementation of various government policies and regulations. The WBES asks firms also for objective information such as the time it takes to get a construction permit. Again, we supplement the WBES data with our information on the number of political connected per 4-digit manufacturing industries.

Following Hallward-Driemeier et al. (2010), we also examine within-industry variations of firm reports of the regulatory environment. If cronies influence regulator behavior, crony firms in a sector should report a lower regulatory burden; for instance, crony firms should report lower waiting times to obtain permits and more predictable regulatory behavior than other firms in the sector. The (coefficient of) variation in regulatory responses within sector should therefore be greater in those sectors with more connected firms. Against this background, we use the following policy implementation indicators from the WBES (as dependent variables in (1)):

- Waiting time for construction permits: *"What was the actual wait duration (from the day you applied to the day you received the service or approval)?"*
- The Coefficient of variation in the waiting time for construction permits.²⁸

The results are summarized in Table 8. We find that firms in connected sectors report much lower waiting times for construction permits (columns 2-7); the results are significant in all specifications. For instance, for the most conservative measure of political connections, we find that each additional firm with a politically connected CEO reduces the waiting time by 50.5 day (column two). What is more, we find that large firms' waiting time is significantly shorter in sectors with more connected firms. Thus, large firms in industries that are not (or less) connected have to wait substantially longer (between 11 and 48 days depending on the type of connection) than large firms in sectors with (more) politically connected firms. Given that politically connected firms are much more likely to be large relative to the average firm in the WBES, the finding suggests that the shorter waiting time in connected sectors indeed captures the access of the connected firms to fast-track enforcements of relative to other large firms in the same 2-digit (but different 4-digit) manufacturing sector. Finally, columns 8-13 show that sectors with more politically connected firms exhibit a significantly higher coefficient of variation in the waiting days for construction permits, consistent with the argument that connected firms are able to access fast-track regulatory services while unconnected firms have not.²⁹

²⁸ The coefficient of variation per 4-digit industry is the standard deviation divided by the mean; hence, this measure is independent of differences in the order of magnitudes in the mean (and standard deviation) across industries.

²⁹ We also test for differences in the average number of inspections and the coefficient of variation of inspections across connected and unconnected 4-digit manufacturing industries. In particular, we use the number of tax inspections, the number of inspections by the municipality, and the probability to get government contracts, respectively. However, the corresponding coefficients are only significant when we do not include 2-digit sector dummies, hence, allowing instead also for comparisons between 4-digit sub-sectors in different 2-digit manufacturing industries (e.g., comparing 4-digit textile with 4-digit garment sectors). The fact that the significance level drops when including 2-digit sector dummies indicates that the variation in political connections and inspections is simply not strong enough across 4-digit

Table 8: Political connections and variations in regulatory enforcement across firms

	Waiting days for Construction Permit						CoV (Construction Permit)					
	CEO		Owner		Broad		CEO		Owner		Broad	
PC	-50.5**	-48.1**	-12.5**	-11.4**	-7.93**	-11.1**	.087	.192**	.023**	.039**	.016*	.023
	(-3.31)	(-2.59)	(-3.65)	(-3.10)	(-2.32)	(-3.12)	(1.08)	(2.70)	(2.10)	(2.21)	(1.88)	(1.46)
Small		-22.7		-17.3		9.08						
		(-0.70)		(-0.58)		(0.30)						
Small * PC		-4.91		-1.86		-2.93						
		(-0.23)		(-0.64)		(-1.15)						
ln(empl)							.001	.001	0.001	.001	.001	.001
							(0.99)	(0.97)	(1.12)	(1.16)	(0.93)	(1.04)
Age	2.87**	2.80**	2.87**	2.81**	2.90**	2.89**	.008	-.012	.007	-.013	.007	-.012
	(5.29)	(5.16)	(5.29)	(5.10)	(5.34)	(5.30)	(0.59)	(-0.84)	(0.52)	(-0.87)	(0.54)	(-0.87)
export-share	-101**	-122**	-100**	-119**	-100**	-103**	-.207	-.122	-.148	-.261	-.138	-.202
	(-3.72)	(-4.51)	(-3.71)	(-4.24)	(-3.71)	(-3.36)	(-0.93)	(-0.37)	(-0.72)	(-0.84)	(-0.66)	(-0.69)
No. of firms (left) or sectors (right)	1066	1066	1066	1066	1066	1066	63	63	63	63	63	63
R-squared	0.068	0.070	0.072	0.073	0.070	0.072	0.087	0.468	0.117	0.478	0.108	0.459
Sector dummies	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	1-digit	2-digit	1-digit	2-digit	1-digit	2-digit

Source: WBES data for Egypt 2004-2008 and number of politically connected firms. Note: PC indicates the number of politically connected firms varying at the 4-digit sector level. The three different types of connections (ordered here by their restrictiveness) are defined in Table 6. Size, age, and export shares vary at the firm level. Small refers to firms with less than 100 employees, large with at least 100 employees. All firm level regressions include 2-digit sector dummies. We do not include the log of employment as a control variable in the firm level regressions since “size” (which is based on employment) is already included. Standard errors are clustered at the 4-digit sector level. *, ** indicates significance at the 10%, 5% level, t-statistics are reported in parentheses.

6. Implications of cronyism and reduced competition for growth: indirect evidence

The evidence above shows that politically connected firms have higher revenues, more employees and higher net profits than unconnected firms in their sectors; connected firms systematically benefit from key elements of industrial policy (in particular, import protection and energy subsidies, but also treatment by regulatory agencies or access to land) so that they are exposed to less competitive pressure. In this section, we offer indirect evidence for the hypothesis that cronyism in Egypt is likely to have adverse effects on growth.

Aghion et al. (2001) show that the growth of sectors that exhibit monopolistic competition is slower when leading firms in the sector have exogenous cost advantages that cannot be overcome by trailing firms.³⁰ Monopolistic competition can yield growth when competitors in the same sector

industries in the same 2-digit sector to allow for a sound empirical identification (there are about 70 4-digit and 23 2-digit manufacturing sectors).

³⁰ The framework is closely related to Parente and Prescott (2002). Its validity has been tested empirically by estimating the impact of increased product market competition on growth (Aghion et al., 2004) as well as entry deregulation in India (Aghion et al., 2005). To the best of our knowledge, however, the framework has not been adopted before to test directly for the impact of political connections on firm dynamics and competition.

have comparable cost structures. This leads to *neck-on-neck competition*: each firm invests in the adoption of new technologies to reduce its costs and escape the competition (at least temporarily).³¹ Aggregate growth increases in the number of sectors that are characterized by *neck-on-neck competition* market structures. However, if few (colluding) market leaders have sizeable exogenous cost advantages, which are unbridgeable by competitors operating in the same sector, then all firms in the sector have reduced incentives to adopt new technologies and sector growth is lower. The market leaders have little incentive to invest in innovation since they do not face competitive pressures to reduce their costs; the laggard firms are too far away from the frontier to bridge the cost gap and instead use vintage production technologies, focusing on local market niches to survive. In this framework, political connections slow down growth to the extent that (i) connected firms receive large privileges (i.e., exogenous cost advantages) that do not benefit unconnected firms; and (ii) connected firms dominate a large number of sectors.

The theory developed in Aghion et al. (2001) points to an indirect empirical strategy for assessing whether the advantages of political connections constitute a drag on growth in Egypt. First, if political connections are a drag on growth, it must be the case that the policy privileges of the politically connected firms drive a wedge between the prices of inputs and outputs that they confront compared to those faced by unconnected firms. If this is the case, the policy privileges that connected firms receive should account for their better performance relative to unconnected firms. The evidence below shows that this is the case.

Second, Aghion et al. (2001) also predict that sectors in which leading firms enjoy large, exogenous cost advantages should exhibit a number of traits that distinguish them from sectors in which leading firms do not enjoy such cost advantages. Evidence from Egypt, presented below, is consistent with all of these predictions: sectors with connected firms are less competitive, and tend to exhibit lower entry and a more skewed size distribution of firms.

Policy privileges and the profitability of connected firms in Egypt

A necessary condition for monopolistic competition to slow growth in the model of Aghion et al. (2001) is the presence of firm-specific exogenous cost advantages for leading firms. The previous section provides ample evidence for such firm-specific policy privileges are sizable for politically connected firms in Egypt. Our data also permit testing the hypothesis that these privileges also account for their better performance. In particular, we estimate whether connected firms are more profitable, i.e. have higher rents for a given pattern of input use, because their products are more frequently protected from import competition or because they absorb more energy subsidies. We use the following estimation specification:

$$Y_{ist} = \beta_B \text{connected}_{ist} + \beta_R \text{Regulation}_{st} + \beta_{BR} \text{connected}_{ist} * \text{Regulation}_{st} + \beta_X \ln X_{ist} + \beta_t T + \varepsilon_{ist} \quad (2)$$

Y_{ist} is the profitability (log of profits per revenues) of firm i in the 4-digit sector s at time t . Connected is equal to one if firm i enjoys political connections of any type in the 4-digit sector s . The

³¹ The authors also show how perfect competition market structures can reduce the incentives for any innovation by reducing the discounted present value of rents from innovations (*rent dissipation effect*). Thus, they find an inverted U-shaped relation between competition and growth. They argue, however, that the negative part in the competition-growth nexus, whereby the *rent-dissipation effect* outweighs the *escape competition effect*, is less empirically relevant (which is backed up by follow up empirical work – see below).

variable *regulation* measures either the number of NTMs (Class B) protecting the firm's products in sector s from import competition or a dummy variable equal to one if sector s is high energy-intensive (according to UN classification) enabling access to energy subsidies in Egypt, and zero otherwise. X_{is} is a matrix of firm level control variables (firm age), and T is a matrix of year dummies. Profit and revenue data are available for 250 manufacturing and mining firms of which approximately 50 are politically connected by any type; our analysis is therefore focused on these 250 firms.

Table 9: NTMs and energy subsidies account for the higher profitability of connected firms

<i>Dependent Variable:</i>	<i>ln(Profits/Assets)</i>									
PC broad firms	1.38***	1.36**	-2.32	1.56**	.267					
	(2.30)	(2.30)	(-1.19)	(2.37)	(0.33)					
PC owner firms						.428	.423	-4.96**	.491	-.677
						(0.58)	(0.57)	(-2.04)	(0.62)	(-0.65)
NTMs										
PC broad * NTMs										
PC own * NTMs										
High energy										
PC broad * High energy										
PC own * High energy										
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of firms	253	253	253	253	253	253	253	253	253	253
R2	0.061	0.061	0.063	0.063	0.094	0.044	0.049	0.062	0.050	0.066

Source: Orbis database, yearly panel 2003-2011 and list of politically connected firms. Note: All regressions control for firm age and time dummies. The sample includes all firms from the Orbis data with available information for the corresponding variables. The standard errors are clustered at the year level accounting for the fact that the standard errors might be correlated for all firms in a given year due to year-specific shocks. *,** denote significance at the 10%, 5% significance level, respectively, t-statistics are reported in parentheses.

Table 9 shows that politically connected firms of any type are much more profitable than unconnected firms even after accounting for differences in firm age. The second column reveals that the profitability differential remains after we control for the distribution of NTMs across sectors. However, column three indicates that the joint distribution of NTMs and politically connected firms across 4-digit industries (interaction term) accounts for the entire profitability differential. That is, politically connected firms of any type are significantly more profitable than unconnected firms if their products are protected from import competition but not otherwise. When using the more restrictive sub-sample of connected firms, we again find that firms directly owned by politically connected businessmen are significantly more profitable than unconnected firms if their products are protected from import competition; however, the few firms directly owned by connected

businessmen that do not benefit to the same extent from NTM protection are even less profitable than unconnected firms in these sectors.³²

We find similar results once we account for the joint distribution between political connections and energy subsidies in high energy intensive industries. That is, connected manufacturing firms of any type in high energy-intensive industries are 4.5 percentage points more profitable than unconnected firms in the same industries. In fact, unconnected firms even have a lower profitability in high energy intensive relative to the average profitability in all other manufacturing sectors. When using the more restrictive sub-sample of firms directly owned by connected businessmen, the profit margin differential relative to unconnected firms in high energy-intensive industries is 3.6 percentage points higher. Finally, the profitability of connected firms is the same (statistically) as the profitability of unconnected firms in lower energy intensive sectors.

These results strongly suggest that NTM protection from foreign competition and energy subsidies are targeted and (at least in parts) exclude unconnected firms. In fact, they are barriers to entry limiting the ability of unconnected domestic firms to benefit from the privileges granted to connected firms. In the case of energy subsidies, firms require a government license to legally operate in sectors that were heavy users of energy (steel, cement, etc.). This license was issued by the Ministry of Industry and Trade or the Ministry of Investment and had to be renewed annually. The licensing procedure favored politically connected firms, which were both more likely to get the license and less likely to be exposed to predatory behavior (i.e., the non-renewal of a license after they had undertaken large sunk investments). In the very profitable high energy as well as trade protected cement and steel sectors, only few connected firms had obtained the license guaranteeing access to the energy subsidies to heavy industry by 2010. In the case of NTMs, some of these measures also required explicit licenses to import specific intermediates from foreign manufacturers (e.g., in the automobile industry). In fact, Table 4 shows that connected firms are significantly more likely to benefit from authorization requirements to import. Moreover, enforcement of NTMs requires government action which has been shown to be uneven across firms operating in the same sector when crony firms are present.³³

Political connections and the suppression of competition

Aghion, et al. (2001) predict that sectors dominated by firms with large and exclusive cost advantages, such as those granted to politically connected firms in Egypt, should face less competition and exhibit less entry. Likewise, sectors dominated by these firms should have a more skewed firm distribution characterized by a large crony market leader and a potentially large number of small or (informal) micro firms using vintage technologies to serve local market niches. Given our findings that political connections in Egypt translate into large policy privileges, we also expect to

³² Note that all firms managed by a politically connected CEO with available profitability data operate in high energy intensive sectors and sell products that are protected by NTMs. Thus, we cannot repeat the exercise for this most restrictive sub-sample of connected firms.

³³ In some sectors we observe several crony firms which could, in principle, lead to competition among them. Instead, however, we observe a web of intertwined ownership structures and co-investments among crony firms. For instance, the six (ten) most intertwined businessmen together control stakes directly or indirectly in 240 (322) firms. In addition, 85 firms (18 percent) managed or owned by a connected businessman received significant investments from private equity funds controlled by *other* politically connected investors. Thus, collusion among crony firms is much more likely.

find that the presence of crony firms affects competition and firm dynamics as predicted by the model. In the following, we use our newly constructed dataset to present evidence that is consistent with these predictions.

We start by providing direct evidence of the impact of cronyism on competition based on the WBES data using the following competition indicators (as dependent variables in (1)):

- Dummy variable which is equal to one if a firm reports less than 10 (5) competitors in domestic markets and zero otherwise.

Table 20 in the Appendix summarizes the descriptive statistics among manufacturing sectors with at least one politically connected firm and all other sectors (with zero connected firms). Table 20 shows that firms in connected sectors report fewer competitors. The difference is the largest for the most restrictive measure of connections exclusively accounting for firms with a politically connected CEO. Moreover, 36 percent of firms in these connected sectors report less than 10 competitors relative to only 29 percent in sectors without any firm with a connected CEO.

We follow the estimation specification (1) to test if firm operating in sectors with more politically connected firms report less competition. We always include 2-digit sector dummies so that we exclusively compare 4-digit sub-sectors of the same 2-digit manufacturing industry to identify the coefficients empirically. In addition we control for the age of firms and their export status. We test (i) if a higher intensity of political connections reduces the reported competition (β_C) and (ii) if large firms' perceived competition differs from small firms' perceptions in industries with more politically connected firms relative to industries without (or fewer) connections (β_{CS}).

Table 10: Connected firms face less competitive pressures

	Less than 10 Competitors in Domestic Market						Less than 5 Competitors in Domestic Market					
	CEO		Owner		Broad		CEO		Owner		Broad	
PC	.182**	.115	.020	.015	.009	.001	.135*	.047	.012	.005	.005	-.002
	(2.45)	(1.33)	(1.36)	(0.77)	(0.83)	(0.10)	(1.70)	(0.51)	(0.68)	(0.26)	(0.40)	(-0.19)
Large		.243**		.232**		.245**		.234**		.277**		.281**
		(3.01)		(2.66)		(2.82)		(2.48)		(2.70)		(2.62)
Large * PC		.167**		.031*		.018*		.205**		.023		.015
		(1.99)		(1.88)		(1.73)		(2.46)		(1.10)		(1.00)
Age	-.002	-.003	-.003	-.004*	-.003	-.004*	-.001	-.002	-.002	-.003	-.002	-.003
	(-1.22)	(-1.61)	(-1.28)	(-1.71)	(-1.31)	(-1.77)	(-0.75)	(-1.17)	(-0.83)	(-1.31)	(-0.86)	(-1.37)
export-share	.786**	.528**	.781**	.552**	.781**	.548**	.801**	.539**	.796**	.569**	.796**	.565**
	(5.34)	(2.78)	(5.32)	(3.21)	(5.34)	(3.20)	(5.64)	(2.91)	(5.62)	(3.42)	(5.64)	(3.39)
No. of firms	2,614	2,611	2,614	2,611	2,614	2,611	2,610	2,607	2,610	2,607	2,610	2,607
R-squared	0.063	0.076	0.061	0.075	0.061	0.073	0.061	0.076	0.060	0.074	0.060	0.073
Sector dummies	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit	2-digit

Source: WBES data for Egypt 2004-2008 and list of politically connected firms. Note: PC indicates the number of politically connected firms varying at the 4-digit sector level. The three different types of connections (ordered by their restrictiveness) are defined in Table 6. Size, age, and export shares vary at the firm level. Small refers to firms with less than 100 employees, large with at least 100 employees. All firm level regressions include 2-digit sector dummies. We do not include the log of employment as a control variable in the firm level regressions since “size” (which is based on employment) is already included. Standard errors are clustered at the 4-digit sector level. *, ** denote significance at the 10%, 5% significance level, respectively, t-statistics are reported in parentheses.

Table 10 summarizes our findings. We measure competition as the share of firms that report to have less than ten (five) competitors in the domestic market. Table 20 in the Appendix shows that the share of firms that report to have less than ten competitors is higher when politically connected firms operate in the corresponding industries. Thus, the presence of connected firms appears to increase the market power of some firms in the industry. Table 10 shows that firms report fewer competitors in industries with (more) politically connected firms that are directly managed by a connected CEO – our most restrictive indicator of political connections. The result is robust to the inclusion of the control variables and 2-digit industry dummies; thus, we only compare firms across similar 4-digit industries within the same 2-digit sector. Moreover, column three reveals that only large firms in industries with a connected CEO report lower competition. Given that almost all politically connected firms in our sample are large, the results suggests that the lower reported competition in connected industries is driven by the market power of the few (large) connected firms in these industries.

The results are robust to the other two broader definitions of politically connected firms; that is, large firms in industries with firms directly or indirectly owned by connected businessmen report lower competition. Moreover, the findings are robust for the most direct definition of connections (firms managed by connected CEOs) when using the alternative measure of competition (columns 8-13 of Table 10); the differences between firms in connected and unconnected industries are, however, not significant at conventional levels for the two broader definitions.

Political connections and the suppression of firm dynamics

Another important source of competition is the threat of entry. Furthermore, entry has been identified as an important determinant of job growth and creative destruction and thus aggregate growth (see Haltiwanger 2011). In principle, the sizeable rents that policy distortions such as NTMs, energy subsidies, or land deals granted to firms in some sectors should attract substantial entry into these sectors. However, the findings above suggest that these privileges are in fact firm- rather than sector specific. Moreover, the stark presence of politically connected firms in these profitable sectors can discourage the entry of unconnected firms as they cannot compete with the (privileges) of the connected firms and thus anticipate that they would have to specialize in unproductive local market niches for these activities. Low rates of entry in sectors dominated by connected firms – despite these rents – are therefore further evidence that connected firms benefit from barriers to entry, and that cronyism in Egypt is likely to have suppressed competition and growth. Moreover, the theory of Aghion et al. (2001) predicts that sectors dominated by firms with large and exclusive cost advantages (e.g., those granted to politically connected firms in Egypt) should have a more skewed firm distribution characterized by a large crony market leader and a potentially large number of small or (informal) micro establishments using vintage technologies to serve local market niches.

Table 12 reports the descriptive statistics for several indicators characterizing the firm dynamics across sectors with at least one politically connected firm and unconnected sectors. It is based on the available information of over two million economic establishments from the establishment census in 1996 and 2006. The census includes all economic establishments from all sectors apart from agriculture. The information is aggregated to the 4-digit sectors level to match them with the number of politically connected firms across sectors. The distribution of the different types of politically connected firms across these 4-digit sectors in Egypt is shown in Table 11.

Table 12 shows that sectors with politically connected firms have lower entry rates. For instance, for our most narrow definition of connected, we find that the (employment weighted) entry rate into sectors dominated by at least one firm with a politically connected CEO is 22 percent lower than in all other sectors (entry rate of 3.6% versus 4.6%). The results are similar for the unweighted entry rates. The differences are somewhat smaller for the two broader measures of connectedness.³⁴ In addition, the share of old establishment is higher in connected sectors, which is consistent with either lower entry or lower exit rates in these sectors. Table 12 also reveals that the coefficient of variation and skewness in the establishment size distribution is almost twice as high and 50% higher, respectively, in sectors with at least one politically connected firm (independent of the type of connection) relative to and all other sectors (with zero connected firms). Note that a higher coefficient of variation (standard deviation divided by the mean) implies fewer medium-size establishments since either the share of micro or of large establishments increased (or both); given that the distribution of employment across establishments is right-skewed, i.e. characterized by many micro and few large establishments, a higher skewness in the establishment size distribution implies that the employment share of micro establishment increased or the employment share of large establishment declines. Taken together, the simultaneous increase in the coefficient of variation and the skewness in a 4-digit sector thus indicate that the employment share of micro establishments increased while the employment shares of medium and large establishments declined. This is consistent with the finding in Table 12 that the share of employment in micro establishments is about 1-2 percent higher in connected sectors.

Given the discussion in Section 3, there is ample evidence that the number and activities of politically connected businessmen increased over time between 1996 and 2006, a period that witnessed a more widespread cronyism (across sectors) as well as an intensification of state-business relations.³⁵ Consistent with this hypothesis, Table 12 shows that sectors without crony firms experienced higher entry growth as well as an increase in the share of young firms from 1996-2006

³⁴ The differences in entry rates across connected and unconnected sectors are statistically significant at conventional levels after controlling for one-digit sector dummies as well as the average age and size of firms connected and unconnected sectors. Similarly, the higher coefficient of variation and skewness in connected relative to unconnected sectors is also statistically significant at conventional levels after controlling for these variables.

³⁵ In particular, there is evidence that cronyism increased between 2000 and 2006 in the sense that several well connected businessmen took high political posts (e.g., becoming ministers) allowing them to steer economic policies directly in that period (Roll, 2010). For instance, Demmelhuber and Roll (2007) show that the number of businessmen in the Egyptian parliament increased from eight percent of total parliamentary seats between 1990 and 1995 to 50 percent between 2005 and 2010. Moreover, the presence of first-tier connected businessmen expanded to various new (previously not connected) sectors in that period (see Table 17 in the Appendix), in part also due to the first wave of privatizations (Skafianis, 2003).

relative to sectors with at least one crony firm. Moreover, the coefficient of variation and skewness in the establishment size distribution increased substantially between 1996 and 2006.

While the counterfactual of firm dynamics (e.g., firm entry) in the absence of crony firms in the same sectors is not observable, we use a quasi-natural experiment based on variations in the entry of connected firms into previously unconnected sectors over time to directly estimate the impact of the presence of politically connected firms on aggregate sector growth in the following section. That is, the foregoing tables provide indirect evidence that the proliferation of connected firms in Egypt had adverse effects on growth. In the following section, we test directly for an adverse impact of cronyism on aggregate job growth.

Table 11: Distribution of politically connected firms by type (all sector)

No. of politically connected firms	No. of 4-digit ISIC Rev.4 sectors with politically connected CEOs	No. of 4-digit ISIC Rev.4 sectors with politically connected owners	No. of 4-digit ISIC Rev.4 sectors with any type of connected firms
0	272	178	155
1	33	57	57
2	9	26	23
3	2	15	26
[4,5]	3	21	21
[6,10]	1	14	20
[11,20]	0	8	14
[21,35]	0	1	4
Total	320	320	320

Table 12: Descriptive statistics Establishment Census data among sectors with at least one politically connected firm versus sectors with zero connected firms by types of connection

	Sectors with PC CEOs	All other sectors	Sectors with PC owners	All other sectors	Sectors with any PC firm	All other sectors
Level effects in 2006:						
Employment total	25,778	18,195	26,615	13,523	25,524	12,742
Entry rate	6.5%	7.3%	7.0%	7.4%	6.9%	7.6%
Entry rate employment weighted	3.6%	4.6%	4.4%	4.5%	4.2%	4.8%
Share old establishments (age 11-30)	26.1%	24.0%	24.5%	24.1%	25.3%	23.2%
Share mirco establishments (5-10 empl)	18.8%	18.8%	19.8%	18.0%	19.8%	17.7%
Coefficient of variation (empl)	2.6	1.5	2.0	1.4	2.0	1.3
Skewness (empl)	8.9	5.8	7.3	5.4	7.4	5.0
Dynamic effects from 1996-2006:						
Growth employment (decade)	54.6%	26.9%	37.6%	29.9%	41.4%	3.7%
Growth entry rate (decade)	0.1%	1.2%	0.2%	2.3%	0.2%	2.9%
Growth entry rate eml-weighted (deacde)	0.4%	3.6%	2.0%	4.1%	2.0%	5.0%
Change share young estishments (age<=10)	5.7%	9.1%	7.5%	9.2%	7.4%	13.5%
Change Coefficient of Varition (empl)	2.7	0.5	1.8	-0.3	1.7	-0.4
Change Skewness (empl)	7.5	3.3	6.2	0.9	6.1	0.5

Source: Establishment census and number of politically connected firms. Note: Connected sectors have at least one politically connected firm while all other sectors include zero connected firms depending on the type of political connection. Old establishments are defined as being older than 10 but not than 30 years (i.e., in the 2006 census they have been created before 1996 – we exclude the few mostly state-owned establishments created in the era of state led development before 1976 as they appear to follow different dynamics). The observations reflect averages across establishments for 4-digit ISIC Rev. 4 sectors (ISIC Rev. 3.1 for change 1996-2006). Data on establishments are obtained from the Egypt Establishment census in 1996 and 2006, both of which include over 2 million economic non-farm establishments. Public administration, education, health, arts, activities are excluded (ISIC codes Rev. 4 >8400). The three different types of connections (ordered by their restrictiveness) are defined in Table 6.

7. Implications of cronyism and reduced competition for growth: direct evidence

The findings so far provide ample indirect evidence that cronyism leads to firm dynamics associated with lower aggregate job growth. All of these findings – the higher profitability of crony firms due to granted policy privileges as well as the adverse impact of their presence on competition, entry, and employment in medium or large firms – are consistent with the prediction of the model of Aghion et al. (2001). Thus, our findings so far suggest that aggregate employment growth would have been higher if the intensity of cronyism declined; this would necessitate a decline in the intensive margin measured by the number of crony firms within sectors as well as the extensive margin measured by the expansion of crony firms into new, initially unconnected sectors.

Table 13: Political connections and sector level employment growth

	Employment growth 1996-2006					
	CEO	Owner	Broad			
PC	8.50*	6.37	1.77	2.40	1.47	1.71
	(1.87)	(1.09)	(0.87)	(1.41)	(0.92)	(1.30)
ln(empl)	-0.394**	-0.252**	-0.405**	-0.251**	-0.409**	-0.252**
	(-2.37)	(-2.26)	(-2.39)	(-2.29)	(-2.38)	(-2.30)
Age	12.3	9.34	12.4	9.54	12.4	9.54
	(1.51)	(1.08)	(1.51)	(1.09)	(1.51)	(1.09)
No. of sectors	225	225	225	225	225	225
R-squared	0.156	0.467	0.154	0.472	0.156	0.472
Sector dummies	1-dig	2-dig	1-dig	2-dig	1-dig	2-dig

Source: Establishment census and number of politically connected firms. Note: The three different types of connections are defined in Table 6. Standard errors are clustered at the 4-digit sector level. *, ** denote significance at the 10%, 5% significance level, respectively, t-statistics are reported in parentheses.

In Table 13, we assess the relation between employment growth and the intensity of political connections at the 4-digit sector level. Given the higher rents of connected firms stemming from their policy privileges, we would expect that at least some of these rents are re-invested into the firm leading to employment growth. Moreover, Table 15 and Table 16 in the Appendix suggest that connected firms operate in several sectors with high growth potential in Egypt. At the sector level, however, we do not observe higher employment growth in politically connected sectors between 1996 and 2006; the corresponding coefficients are not statistically significant at the 10 percent level in five out of six estimation specifications (and never at the 5 percent level). Thus, if crony firms

indeed have positive employment growth, i.e. create jobs, the effect is offset by the negative employment growth of unconnected firms in crony sectors.

Of course, we would like to measure directly if sector employment growth would have been higher if the intensity of cronyism declined, as suggested by our previous findings. However, the relevant counterfactual, to which extent growth in crony sectors would have been higher in the absence of cronyism, is not observable. Still, the nature of our data provides a quasi-experimental setting since we do observe the year in which crony firms entered. Therefore, we can observe when crony firms enter into new sectors which were previously unconnected. These sectors are listed in Table 17 in the Appendix. In particular, Table 17 reports 4-digit sectors entered by politically firms between 1997 and 2006 which did not have connected firms initially (i.e., before 1997). In total, there are 41 such sectors: 18 service sectors, 16 manufacturing, eight utilities, and 4 mining sectors. These include several sectors with high growth potential in Egypt such as *manufacture of primary cells & batteries, television & radio receivers, manufacture & distribution of gas, wholesale of solid, liquid & gaseous fuels, wholesale of electronic & telecommunications parts, inland water transport, legal activities, or advertising.*

We use this macroeconomic quasi-experimental setting, to test if aggregate employment growth over a ten year period between 1996 and 2006 declined after the entry of crony firms into initially unconnected (*open*) sectors. Therefore, we use the following difference-in-difference estimation specification, whereby ΔY_{st} measures employment growth of the 4-digit sector s between 1996 and 2006, $PCEntry$ indicates the entry of politically connected firms between 1997 and 2007, NPC are sectors without crony firms before 1997, X is a matrix of control variable (employment and age), and S a matrix of sector dummies:

$$\Delta Y_{s,2006-1996} = \beta_E PCEntry_{s,1997-2006} + \beta_N NPC_{s,1996} + \beta_{EN} (PCEntry_{s,1997-2006} * NPC_{s,1996}) + \beta_X X_{s,1996} + S + \varepsilon_{s,2006} \quad (5)$$

Holding all else constant, entry always increases employment in the sector regardless of the fact that the entrant is crony or not. Thus, we expect that the entry of crony firms leads to sector employment growth, unless the adverse impact of connected firms on the growth opportunities of their unconnected peers leads to their exit or shrinkage. In contrast, we do not expect to observe the latter adverse effect (or at least expect it to be less pronounced) when crony firms enter into sectors which were already dominated by privileged connected firms in previous years. Therefore, negative aggregate employment growth after the entry of crony firms into previously unconnected sectors implies that the decline in employment in unconnected firms (which cannot compete) outweighs any positive job creation of the crony firm(s).³⁶

Table 14 summarizes the findings of the difference-in-difference estimation. Columns two and three show the results for our most conservative measure, firms managed by a political connected CEO. We find that entry of crony firms into sectors that were already connected in 1996 increased employment growth, potentially due to the direct positive employment impact of the new

³⁶ We do typically not observe if other first-tier politically connected firms operated in these “unconnected” sectors but exited before 2006. Thus, we have to assume in this macroeconomic quasi-experiment that, if unobserved first-tier crony firms which were forced to exit before 2006 existed, they did not operate in these “unconnected” sectors. All available evidence, however, suggests that cronyism as well as policy privileges granted to the private sector expanded rather than declined between 1996 and 2006 (see Demmelhuber and Roll, 2007; Roll, 2010).

crony entrant. Most importantly, however, we find that sector employment growth declines once connected firms enter new, previously unconnected sectors; the corresponding coefficient is significant at the 5 percent level. The economic impact is large. The magnitude of the corresponding coefficient suggests that aggregate employment in these sectors shrinks by 25 percent over the ten-year period 1996-2006. Note that the connected firms did not necessarily enter directly in 1997 so that employment growth might have been positive in earlier years but then declined substantially due to the sudden presence of the connected firm with access to policy privileges guaranteeing a large cost advantage over the existing competitors or potential new (unconnected) entrants. The negative aggregate employment growth effect after the entry of connected firms into new unconnected sectors is comparably large and significant at the 5 percent level when we restrict our definition of cronyism to firms owned by politically connected businessmen (column 5). For the broadest measure of cronyism, which additionally includes firms that received investments from connected private equity funds, the relevant coefficient of the interaction term is still negative and of comparable magnitudes but not significant at conventional levels.³⁷

Overall, these findings provide strong direct evidence that the growth impact of entry of connected firms is more than offset by their adverse impact on the growth opportunities of the majority of unconnected firms that stop growing or exit. As a consequence, cronyism reduces aggregate employment growth in this sector. This findings is consistent with the various indirect evidence that cronyism leads to firm dynamics associated with lower aggregate job growth, it is also consistent with the prediction of the model of Aghion et al. (2001) who show that less *neck-on-neck* competition due to large exogenous cost advantages of market leaders reduced aggregate long-term growth. In the case of Egypt, such large exogenous cost advantages are granted by policy privileges such as energy subsidies, trade protection, access to prime land, or biased regulatory enforcement. Even though these policy privileges might help the few benefitting firms to grow and create jobs, we show that the aggregate employment impact is negative due to the adverse effects of such policies on competition and thus the growth opportunities of the large majority of unconnected firms.

Table 14: Employment growth declines after politically connected firms enter initially unconnected sectors

	Employment growth 1996-2006					
	CEO		Owner		Broad	
Entry PC	32.2*	36.1**	7.15	10.3	4.83	4.40
	(1.95)	(2.09)	(0.84)	(1.24)	(0.99)	(0.77)
Not connected before 1996		-6.32		15.1		-10.5

³⁷ The results of this quasi experiment using the firm dynamics indicators as dependent variables are presented in **Error! Reference source not found.** and **Error! Reference source not found.** in the Appendix. The results show that entry growth between 1996 and 2006 was significantly higher in initially unconnected sectors that remained unconnected until 2006; i.e., unconnected sectors which were not entered by crony firms. In contrast entry growth tended to decline when crony firms entered into new, previously unconnected sectors. Moreover, we find that the share of young firms declined when connected firms entered connected sectors but tended to increases when they entered initially unconnected sectors (potentially signaling higher exit of young firms in after the entry of the crony firm). Finally, we find that the coefficient of variation and the skewness in the firm size distribution of the corresponding 4-digit sectors increased significantly when connected firms entered connected sectors and declined significantly when initially unconnected sectors remained unconnected until 2006.

		(-0.58)	(0.82)	(-0.67)		
(Entry PC) *		-24.8**	-18.7**	-14.96		
(Not connected before 1996)		(-2.17)	(-3.47)	(-0.97)		
ln(empl)	-418**	-401**	-420**	-382**	-420**	-376**
	(-2.44)	(-2.17)	(-2.37)	(-2.16)	(-2.34)	(-2.62)
Age	12.5	12.6	12.4	12.3	12.4	12.9
	(1.57)	(1.56)	(1.51)	(1.53)	(1.51)	(1.55)
No. of sectors	224	224	224	224	224	224
R-squared	0.161	0.163	0.155	0.159	0.048	0.160
Sector dummies	1-dig	1-dig	1-dig	1-dig	1-dig	1-dig

8. Conclusions

The findings contribute to a deeper understanding of the political turmoil associated with cronyism, from Indonesia to Tunisia. In many countries of the Middle East, for example, the rate of job creation in the private sector has failed to keep up with the rate at which new (young) workers have entered the job market, a fact that many have linked to the Arab Spring uprisings. Tepid job creation has also shown the limits of apparently significant market reforms that countries in the region adopted over the past ten years. One hypothesis that explains slow job creation, despite the relaxation of many formal, de jure regulatory and legal obstacles to private sector activity, is that “crony capitalism” has circumvented market reforms and continued to stifle competition, innovation, and job creation. We investigate this hypothesis with data from Egypt.

In this paper, we have advanced the analysis of private sector growth in economies dominated by cronyism in several ways. First, we have identified a large set of connected firms and have described how a few connected businessmen have been able, in the span of a decade, to take control a large part of Egypt’s formal private sector, by developing a comparative advantage at capturing protection and subsidies. This allowed them to increase their market shares relative to competitors, and to leverage their equity with dominant access to the (liberalized) capital market. Second, while these firms are on average more profitable than unconnected firms, this average is driven to a great degree by connected firms in sectors where privileges are significant (energy subsidies and NTMs). Third, sectors that are more affected by cronyism are less dynamic; they tend to have lower firm entry (in spite of the privileges they receive) and fewer medium or large firms. Finally, we provide direct evidence for a negative macroeconomic impact of cronyism on growth in a quasi-experiment. The effect originates from the adverse impact of cronyism on the growth opportunities of the majority of non-connected firms.

Additional work is needed to fully evaluate the macro-economic impact of cronyism, and to predict how the Egyptian economy would have performed in the absence of cronyism. In particular, and in light of the fact that the sector dominated by connected firms grew faster, we would like to understand whether their sector grew because of investments by connected firms, or whether instead, they grew in spite of their involvement – i.e., that connected firms disproportionately entered the growing sectors to benefit (unfairly) from existing growth potential. We would also like to better evaluate the impact of this growth on unconnected sectors, and whether forward and backward

linkages were at work, raising growth in these sectors relative to a situation of low growth in the connected sectors.

One implication of our results is to cast doubt on the feasibility of industrial policy under a closed political system. While this was successful in other parts of the world, it has not worked in Egypt and in Tunisia (Rijkers et al, 2014). Industrial policies which are seen by many analysts as an essential part of a successful development drive in the Middle East, in parts to offset the over-valuation of the exchange rates introduced by oil and remittances revenues, cannot work effectively in environments dominated by rent-seeking.

We have not focused in this paper on the broader political-economy of cronyism – in particular, on the services that connected firms supplied to the regime in exchange for regulatory and fiscal privileges. This is also an important subject for future research. Similarly, we have not discussed the implications of cronyism for income inequality, another important driver of the Arab Spring Uprisings – the regime of cronyism must have led to the emergence of a very rich 1 percent. Moreover, the slow growth of the formal private sector must have exacerbated the prevalent labor market dualism in Egypt, increasing the inequality of opportunities in the labor markets (Assaad 2013, World Bank 2013).

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Appendix

Table 15: Number of politically connected firms by economic sectors

	Politically connected CEO	Politically connected owner	Any type of politically connected firm
Mining	0	2	12
Manufacturing	26	164	193
Food & beverages	1	16	33
Textiles & clothing	3	14	22
Chemicals	0	10	15
Pharmaceuticals	0	2	13
Base metals	5	16	19
Machinery & transport	4	18	27
Other manufacturing	5	49	64
Utilities	0	10	18
Construction	8	29	36
Services	45	288	388
Wholesale trade	8	65	91
Retail trade	0	18	25
Transport	0	9	13
Hotels & restaurants	7	35	43
Finance	11	38	53
Real estate	4	18	25
Business services	7	75	103
Travel & tour operators	1	7	10

Note: The total number of any politically connected firms amounts to 647 since several connected firms operate in more than one 4-digit sector.

Table 16: Selected 4-digit industries with and without connected firms

ISIC Rev4	Description	Politically connected CEO	Politically connected owner	Any type of politically connected firm
5510	Short term accommodation activities	5	29	35
4100	Construction of buildings	4	16	21
6201	Computer programming activities	1	14	18
4773	Other retail sale in specialized stores	0	11	16
6612	Security and commodity contracts brokerage	1	10	15
6820	Real estate activities on a fee or contract basis	3	10	15
2100	Manufacture of pharmaceuticals	0	2	13
4663	Wholesale of construction materials, hardware	0	12	13
2220	Manufacture of plastics products	0	8	12
2930	Manufacture of parts for motor vehicles	2	8	11
3510	Electric power generation, transmission & distr.	0	7	10
6810	Real estate activities own or leased property	1	8	10
910	Support activities for petroleum & natural gas	0	1	9
2394	Manufacture of cement, lime and plaster	1	7	8
1410	Manufacture of wearing apparel	2	5	7
2410	Manufacture of basic iron and steel	2	7	7
4530	Sale of motor vehicle parts and accessories	1	7	7
1020	Processing and preserving of fish	0	0	0
1622	Manufacture of builders' carpentry	0	0	0
1629	Manufacture of other products of wood	0	0	0
1701	Manufacture of pulp, paper and paperboard	0	0	0
2211	Manufacture of rubber tyres and tubes	0	0	0
2593	Manufacture of cutlery, hand tools & hardware	0	0	0
2670	Manufacture of optical instruments	0	0	0
2750	Manufacture of domestic appliances	0	0	0
2821	Manufacture of agricultural machinery	0	0	0
3100	Manufacture of furniture	0	0	0
4741	Retail sale of computers, software in stores	0	0	0
4772	Retail sale of pharmaceuticals	0	0	0
5210	Warehousing and storage	0	0	0
6110	Wired telecommunications activities	0	0	0
6920	Accounting, bookkeeping and auditing activities	0	0	0
7410	Specialized design activities	0	0	0
8110	Combined facilities support services	0	0	0

Table 17: Entry of connected firms from 1997-2006 into initially unconnected sectors

Sector name 2-digit	ISIC Rev. 3.1 4-digit	Sector name 4-digit
Other mining and quarrying	1410	Quarrying of stone, sand & clay
	1429	Other mining & quarrying n.e.c.
Manufacture of food products & beverages	1551	Distilling, rectifying, blending of spirits
	1552	Manufacture of wines
	1553	Manufacture of malt liquors & malt
	1554	Manufacture of soft drinks & mineral water
	2412	Manufacture of fertilizers
Manufacture of chemicals & chemical products	2720	Manufacture of basic precious metals
Manufacture of basic metals	3140	Manufacture of primary cells & batteries
Manufacture of electrical machinery	3230	Manufacture of television & radio receivers
Manufacture of radio, TV & communication equ.	3691	Manufacture of jewellery & related articles
Manufacture of furniture	3710	Recycling of metal waste and scrap
Recycling	3720	Recycling of non-metal waste and scrap
Electricity, gas, steam and hot water supply	4010	Electricity production, transmission & distribution
	4020	Manufacture & distribution of gas
Collection, purification and distribution of water	4100	Collection, purification & distribution of water
Wholesale trade and commission trade	5131	Wholesale of textiles, clothing & footwear
	5141	Wholesale of solid, liquid & gaseous fuels
	5152	Wholesale of electronic & telecommunications parts
Retail trade	5211	Retail sale in non-specialized stores with food
Water transport	6120	Inland water transport
Insurance and pension funding	6601	Life insurance
Renting of machinery and equipment	7111	Renting of land transport equipment
Other business activities	7411	Legal activities
	7430	Advertising

Table 18: UN classification of energy intensive manufacturing sectors

Intensity of energy consumption	Industry
High Energy Intensity	Manufacture of textiles, Paper and paper products, Coke and refined petroleum products, Chemical products, Non-metallic mineral products, Manufacture of basic metals.
Moderate Energy Intensity	Food products and beverages, Wearing apparel, dressing and dyeing, Manufacture of leather products, Wood and wood products, Printing and publishing, Rubber and plastic products, Fabricated metal products
Low Energy Intensity	Tobacco products, Machinery and equipment n.e.c., Office, accounting and computing machinery, Electrical machinery and apparatus n.e.c., Radio, TV and communication equipment, Medical, precision and optical instruments, Motor vehicles, trailers and semi-trailers, Other transport equipment, Furniture and other manufacturing n.e.c., Recycling

Table 19: Large firms in Orbis are well distributed among connected and unconnected

# of employees	Politically connected			all other establishments		
	# of est.	% of est.	% of jobs	# of est.	% of est.	% of jobs
<20	8	2%	0%	1,375	19%	0%
[20,99]	73	16%	0%	2,571	35%	2%
[100,199]	44	9%	1%	853	12%	2%
[200,999]	186	40%	12%	1,642	22%	12%
>=1,000	158	34%	87%	914	12%	84%

Table 20: Descriptive statistics WBES among sectors with at least one politically connected firm versus sectors with zero connected firms by to types of connection

	Sectors with PC CEOs	All other sectors	Sectors with PC owners	All other sectors	Sectors with any PC firm	All other sectors
Share of firms <2 competitors in domestic market	11%	8%	9%	9%	9%	9%
Share of firms <5 competitors in domestic market	24%	22%	22%	23%	22%	23%
Share of firms <10 competitors in domestic market	36%	29%	32%	30%	32%	29%
Share of firms <20 competitors in domestic market	40%	32%	36%	33%	35%	32%
Share of firms' total Sales to Government	21%	16%	19%	14%	19%	12%
Waiting days for construction permit	595	642	608	681	610	696
CoV (waiting days construction permit)	0.56	0.45	0.54	0.33	0.53	0.30
Number of Tax Inspections per year	4.6	5.7	5.1	5.7	5.3	5.2
Coefficient of Variation (tax inspections)	1.34	1.32	1.35	1.25	1.34	1.27
Number of Inspection by Municipal Authorities	1.6	1.9	1.7	2.0	1.6	2.5
Coefficient of Variation (municipal inspections)	2.23	2.19	2.31	1.92	2.23	2.03
Share of firms acquired Land from Government	48%	37%	44%	33%	44%	30%
Share of firms in Industrial City	47%	36%	42%	33%	41%	34%
Share of firms with Bank Loan	21%	17%	19%	17%	19%	13%
Coefficient of Variation (Prob. get Gov Contract)	2.0	2.5	2.4	2.1	2.4	2.1

Source: WBES and number of politically connected firms. Note: Connected sector have at least one politically connected firm while all other sectors include zero connected firms depending on the type of political connection.