Pyramid Capitalism:

Cronyism, Regulation, and Firm Productivity in Egypt

Ishac Diwan (Paris Sciences et Lettres and Harvard Kennedy School)
Philip Keefer (Inter-American Development Bank)
Marc Schiffbauer (World Bank)

This version: September 16, 2016

Abstract. Using a large, original database of 385 politically connected firms under the Mubarak regime in Egypt, we document for the first time the negative impact of cronyism on economic growth. In the early 2000s, a policy shift in Egypt led to the expansion of crony activities into new, previously unconnected sectors. 4-digit sectors that experienced crony entry between 1996 and 2006 experienced lower aggregate employment growth during the period than those that did not. A wide array of supporting evidence indicates that this effect was causal, reflecting the mechanisms described in Aghion et al. (2001), and not due to selection. Crony entry skewed the distribution of employment towards smaller, less productive firms; crony firms did not enter into sectors that would have also grown more slowly even in the absence of crony entry; and they enjoyed multiple regulatory and fiscal privileges that reduced competition and investments by non-crony firms, including trade protection, energy subsidies, access to land, and favorable regulatory enforcement. Moreover, energy subsidies and trade protection account for the higher profitability of politically connected firms.

 Author contact information: mschiffbauer@worldbank.org, pkeefer@iadb.org, ishac_diwan@hks.harvard.edu. Key words: cronyism, political connections, growth, regulation, productivity

1. Introduction

A wealth of research has documented the value of political connections, giving rise to a central question: does cronyism have only distributional consequences, or does it also influence aggregate economic growth? Using novel data from Egypt, we shed new light on this question. The increasing influence in the early 2000s of Hosni Mubarak's son, Gamal, made the political environment more conducive to the economic activities of connected firms. As a consequence, connected firms significantly expanded their economic activities, eventually operating in about half of all 4-digit sectors by 2006. This historical episode creates a quasi-natural experiment that allows us to infer the effects of crony firm entry on employment by comparing the change in employment in 4-digit sectors that experienced crony entry with the change in employment of similar 4-digit sectors that remained unconnected. Between 1996 and 2006, employment growth was significantly slower in sectors that experienced crony entry.

A wide range of evidence, not typically available to researchers in this area, supports a causal interpretation of these findings. First, connected firms did not enter into sectors that would have grown more slowly even in the absence of crony entry. In other (developing) countries, the same sectors as those that experienced crony entry in Egypt grew, if anything, *more* rapidly than other sectors. In addition, cronies entered sectors with a larger share of young firms, a signal that growth opportunities in these sectors were at least as promising as in sectors that they did not enter.

Second, the evidence is consistent with the mechanisms suggested by the theoretical framework of Aghion et al. (2001), which traces the exogenous cost advantages of some firms in a sector to lower innovation by all firms in the sector and, therefore, to slower sector growth. One implication of their argument is that in sectors where some firms have these cost advantages, the distribution of firms should be skewed towards small, unproductive firms. In fact, Egyptian sectors that experienced crony entry had more skewed distributions than those that did not.

In addition, we document that crony firms indeed benefited from policy privileges not enjoyed by other firms across a wide range of regulatory and fiscal domains: subsidies, trade protection, access to land, and biased regulatory enforcement. Crony firms were also significantly more profitable and those greater profits can be accounted for by the firm-specific policy privileges they enjoyed. Taken together, the evidence indicates that, in the case of Egypt, privileges were sufficiently large to have slowed aggregate sector growth.

Section 2 reviews our contributions to the literature on cronyism. Section 3 reviews the modalities and evolution of cronyism in Egypt. Section 4 characterizes the theoretical mechanism through which the presence of profitable cronies reduces competition and thus economic growth, following Aghion et al. (2001). Section 5 details our sample of connected firms and describes their characteristics. Section 6 provides evidence that cronyism reduces aggregate sector employment growth. Section 7 documents that crony firms enjoy multiple regulatory and fiscal privileges that reduce competition and, consistent with Aghion et al. (2001), account for slower aggregate growth in these sectors. Section 8 reveals that connected firms are larger and more profitable. Section 9 asks whether the regulatory and fiscal privileges of connected firms explain their higher profits. The final section concludes with a discussion of the broader implications of the results.

2. What do we know about cronyism?

The literature on political connections addresses three concerns: the extent to which political connections are valuable; the modalities through which politically connected firms receive policy favors; and the degree to which political connections affect firm performance. We are able to address these issues, as well, but our data also allow us to assess the aggregate economic impact of cronyism.

Beginning with Fisman's (2001) seminal contribution, scholars have documented the value of political connections by investigating movements in the stock prices of connected relative to other firms in response to exogenous changes in the probability of regime change. In Egypt, Chekir and Diwan (2012) estimate the value of political connections for 22 connected, publicly traded firms to be about 13 to 16 percent of the firms' value, close to Fisman's estimates of the value of connectedness in Suharto's Indonesia. Acemoglu et al. (2014) show that street protests in Egypt are associated with differential stock market returns for firms connected to the regime.

The greater value of connected firms could be due to the happy coincidence that talented entrepreneurs are also close to the leader, or to the possibility that friends of the ruler are less vulnerable to predation. Instead, though, a large literature has found evidence that connected firms simply enjoy policy advantages that other firms do not (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). In a different vein, Fisman (2013),

shows that safety regulations are more loosely enforced in connected firms: workplace fatalities in connected firms in China are five times higher than in non-connected firms.

Most of these studies find that connected firms have better access to finance (higher debt), despite the fact that they exhibit higher default rates and receive more frequent bailouts. Connected firms also enjoy tax advantages, greater market power and preferential access to government contracts, as in Rijkers et al. (2014). They examine 214 Tunisian 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. Our paper advances this line of research by demonstrating the breadth of regulatory advantages that connected firms receive: they disproportionately benefit from energy subsidies, trade protection, access to government land, and favorable regulatory enforcement.[1]

Researchers have also asked how politically connected firms perform relative to non-connected firms. The performance effects of cronyism are, in theory, ambiguous. On the one hand, they benefit from privileges that might boost productivity or profitability. Their political connections might also insulate them from failure and predation. On the other hand, connected firms could have worse financial results because of obligations that they take on at the behest of government, as Chekir and Diwan (2015) emphasize. For example, connected firms may be obliged to create more jobs than business conditions merit, or to finance the electoral campaigns of their political allies.

Most researchers have found that connected firms perform better (Roberts 1990 and Goldman et al. 2009, for firms in the U.S., and Ramalho 2003 for firms in Brazil). Authors taking a more historical approach (Ferguson and Voth 2008, looking at Nazi Germany, and Haber and Maurer 2007, examining connected firms under the dictatorship of Porfirio Díaz in México) have reached similar conclusions. Boubakri et al. (2009) document that firms' financial performance improves after they establish political connections. Ukrainian firms in regions most supportive of President Viktor Yuschenko exhibited significant productivity increases, and these increases were greatest among those types of firms that were most exposed to political decisions at the national level (Earle and Gehlbach, forthcoming).

However, consistent with the ambiguous effects of connectedness, a few studies show that connected firms perform worse than comparable non-connected firms. Chekir and Diwan (2015), in

---

[1] Kroszner and Stratmann (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.

their study of a smaller sample of connected firms in Egypt, present evidence connected firms were significantly less profitable, measured in terms of net income relative to the book value of the firm's capital stock.[2] Firms managed by connected CEOs in France create more jobs and pay higher wages than non-connected firms, but are also less profitable (Bertrand et al., 2007). Using a large cross-country panel of mostly European countries, Faccio (2007, 2010) also concludes that connected firms exhibit lower returns on assets, an effect that is strongest in poorer and more corrupt countries. We find that connected firms exhibit higher returns on assets compared to non-connected firms.

Our data allow us to go further and analyze the aggregate economic effects of connected firms. First, we have an unusually large sample of 385 connected firms, three or four times the size of the samples in nearly all prior research. This allows us to examine the sector effects of crony presence across numerous economic sectors. Second, as a consequence of a significant policy shift in Egypt, many of the connected firms in our sample emerged during a short period in the late 1990s and early 2000s. This shift allows us to compare the evolution of employment in sectors that experienced crony entry and those that did not.

In principle, it is ambiguous whether profitable connected firms have positive or negative aggregate economic effects. Their insulation from predation might lead to innovation and growth that might not otherwise occur. However, the arguments in Aghion et al. (2001) suggest that if connected firms enjoy substantial regulatory and other privileges that other firms do not, aggregate employment growth should slow in the sectors that they enter. We document those privileges, and in addition, for the first time, we find substantial evidence that, in fact, employment growth does slow as a consequence of crony entry.

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 Tunisia, the Ben Ali and Trabelsi families monopolized business

---

[2] Chekir and Diwan (2015) also find that connected firms, despite lower profitability, exhibit higher stock market value. This could be consistent with the market value attached to the lower risk of predation and expropriation of connected firms.

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, and Tlemcani 1999).

In Egypt, the presence of connected firms in the economy significantly increased with the rise in political influence of Hosni Mubarak's son, Gamal Mubarak, starting in the late 1990s. Under Gamal's influence, the country accelerated privatization and financial sector and trade reforms. However, even as it liberalized the economy on some dimensions, the government erected barriers to entry on others; government permission was necessary to take advantage of many of the reforms. For example, tourist resorts and housing projects were built on formerly government-owned land; investments in oil and gas required government approval; new banks and new factories in energy-intensive manufacturing sectors, such as cement or steel, required government licenses; imports of selected products required exclusive licenses; quality controls and other non-tariff barriers replaced tariffs in shielding domestic producers from foreign competition.

The connected businessmen we identify as cronies were well-placed to influence these decisions: they were not only personally well connected with the political leadership, but they themselves also occupied important posts in government, the ruling party, parliament, and various influential boards and committees (Demmelhuber and Roll, 2007; Roll, 2010; Loewe, 2013). Observers argue that cronyism thrived in the "businessmen" cabinet headed by Ahmad Nazif from 2004 to 2011 (Kienle 2004 and Sfakianakis 2004). Connected firms captured the new opportunities created by liberalization: massive real estate projects and construction, tourism in coastal areas, the oil and gas, selected manufacturing sectors, banking, and telephony, as well as the local distribution of international consumer brands (Roll, 2010; Loewe, 2013; Ahram Online, various issues).

Our data confirm these reports: the firms that we identify as politically connected are concentrated in tourism (hotel and restaurants, tour operators, transport), real estate, construction, wholesale & retail trade, mining, finance, business services, and manufacturing sectors (see Appendix Table A1). Moreover, 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 (Ahram Online, various issues). For example, a Minister of Housing identified as a crony in our sample arranged for state-owned land to be transferred to a business partner at a substantially below market price; a close friend of Hosni Mubarak, also identified as a

crony in our sample, and who was also a business partner of Gamal Mubarak, similarly acquired a state-owned retail chain at a low price, while arranging for various trade protection measures to protect the chain from competition from imported clothing. Another crony in our sample led the NDP policy committee and owned of one of the largest steel companies in Egypt (Ezz Steel). He arranged for changes to the competition law that effectively exempted his firm from liability under the law; the Egyptian Competition Authority dismissed a case against the firm in 2009.

4.   Implications of cronyism for growth

The effect of connected firms on the growth of the sectors in which they are active depends on the magnitude of the advantages they enjoy relative to other firms in their sector. The regulatory privileges of connected firms lower aggregate growth if they reduce firms' incentives to invest in new, more efficient technologies (broadly defined including more efficient management practices, etc.) in the sectors in which they operate. In the case of Egypt, the evidence below indicates that privileges were sufficiently large to have triggered this effect.

The model in Aghion, et al. (2001) describes this mechanism. They analyze innovative activity in industries populated by high and low cost firms. To the extent that cost-reducing innovations allow firms to increase profits by lowering their prices slightly and capturing a larger market share, incentives to innovate are large. These rents are larger to the extent that their products are substitutable with those of competitors, and competitors' costs are similar to their own. Innovation therefore allows firms to "escape competition," at least temporarily.[3]   However, if leading firms already enjoy a substantial cost advantage, which would be the case if political connections endow them with significant regulatory and financial advantages, their market share is already large and the payoffs to further innovation are low. More importantly, trailing (high-cost) firms – those without political connections – have little incentive to invest in innovation because even successful innovation is unlikely to allow them to underprice the market leader and recover market share. Since they do not expect to earn rents, even post-innovation, they have less incentive to innovate and instead remain small and operate *under the radar* in local market niches, often in the informal sector. Leading firms, in turn, are further discouraged from innovating, knowing that they face no competitive threat from trailing firms.[4]

---

[3] They argue that the "escape from competition" effect outweighs the traditional argument that perfect competition suppresses innovation by reducing the rents from innovative activity.

[4] The framework is closely related to Parente and Prescott (2002). Aghion, et al. (2004, 20005) report empirical tests of

This argument, that the cost wedge introduced by privileged access to state resources and regulatory forbearance weakens the incentives of both connected and unconnected firms to innovate, yields a number of testable implications. We find evidence supporting all of them. The first is that the entry of connected firms into a previously unconnected sector should reduce growth. Another is that the distribution of firms in sectors that experience crony entry should exhibit a few connected firms with large market shares, and many small unconnected firms serving local market niches. Third, connected firms received large subsidies that were not available to other firms in their sectors. Fourth, the connected firms we consider were also more profitable than other firms of similar size, and the subsidies they received account for those profits. However, despite receiving privileges that should support their own growth, connected firms undermined the overall growth of their sectors.[5]

5. Firm Data

The analyses below rely on numerous data sources to identify politically connected firms, calculate firm and sector performance, and assess the extent to which connected firms enjoy regulatory and other privileges that unconnected firms do not. This section details the data sources for each of these.

Identifying connected firms

Measuring the political influence of individual businessmen is difficult, requiring an assessment of which businessmen are "close enough" to political power to influence policies to benefit the firms they own or control. The challenge is to identify objective criteria that capture the strength of political connections. As in Fisman (2001), we first created a list of politically connected businessmen (all were men) by interviewing managers of banks and private equity funds, lawyers and NGOs (e.g., anti-corruption organizations). However, such a list could include individuals who have

---

predictions of the model with respect to the effects of product market competition and entry deregulation on growth (Aghion et al., 2005). We test additional implications of the model: whether sectors with politically-connected firms and their corresponding cost advantages exhibit lower growth and a skewed distribution of firm sizes in these sectors. Moreover, we test if connected firms' political privileges indeed lead to disproportionate profits for these firms.

[5] Another outcome would have been possible if the privileges of connected firms were, in fact, not so large as to deter competition and thus investment by other firms in their sectors. If the privileges they enjoyed were less generous, and did not reduce the expected profits from investments by other firms in their sectors, then sector growth could in fact have been *faster* in the presence of cronies. Contrary to this case, though, we find that the presence of connected firms suppresses sectoral employment growth.

only limited capacity to directly influence government decision making in their favor.[6] The theory we examine, however, concerns those businessmen who can change government policy at the national level to generate an advantage over potential competitors, causing market distortions that can suppress growth. We therefore restrict our list of "connected" businessmen to those who either had high political positions in the ruling party or in the government that would have allowed them to directly influence government policy in their favor, or who were long-term friends or close members of the Mubarak family (e.g., friendships that pre-dated their business activities).[7] Our criteria differ in an important respect from those used by, for example, Faccio (2007), in that we assume that in an autocratic setting such as Egypt's, members of parliament exercise little formal influence over policy. Personal connections with legislators are therefore insufficient to qualify businessmen as cronies for purposes of the analysis here.

We then matched these politically connected businessmen to the managing directors and major shareholders of firms that were at some point listed on the Cairo stock exchange. Most large firms were listed on stock exchanges in Egypt, since gains from selling shares of listed companies were exempted from taxation. The names of 30 of the businessmen identified in step one unambiguously matched the names of managers or major shareholders of 104 firms. Since some of these 104 firms are part of larger conglomerates or holding companies, we used internet searches to identify the names of all subsidiaries (up to two tiers). The process yielded a total of 385 firms that are unambiguously controlled by a connected businessman. Of the 385 firms, 47 have a politically connected general manager (CEO); 334 have at least one connected businessman with an ownership stake; and 51 had a politically connected board member, but were neither managed nor owned by a politically connected businessman.[8]

---

[6] Many countries have conflict of interest laws that could force individuals to sell their businesses when they take high-ranking political office. In Egypt such a law was introduced only in 2012 and has not been enforced yet. No such law was in place during the period of our study.

[7] As in Fisman (2001) and Faccio (2007), our approach identifies political connections using "ex ante" criteria. In our sample, this includes businessmen who had the direct means to tilt economic policymaking in their favor at the national level. Other research has relied on "ex post" criteria, lists of owners of confiscated assets after a regime change. The "ex post" approach may yield fewer false positives (the identification of cronies who, in fact, never exercised their proximity to the president for economic advantage). However, the approach may also yield false negatives to the extent that firms connected to the old regime also engaged in crony behavior subsequently, establishing close relationships with new leaders and avoiding asset confiscation.

[8] We do not have information on firms owned by the military since ownership data of the military beyond anecdotes is not available. The military in Egypt does not need to disclose its budget details to the Egyptian government.

About two-thirds of the 385 firms we ultimately identified as connected were owned or managed by businessmen who were either ministers in the government or led a policy committee in the National Democratic Party (NDP) after 2001. Connected businessmen in our database who owned firms in the transport and real estate sectors were also ministers of Transport and of Housing, Utilities & Urban Development. The Ministry of Trade and Industries was directed by a prominent businessman who faced charges of corruption and illicit profiteering through the accounts of a Cypress-based fund immediately after the regime change in 2011.[9] Ahmed Ezz chaired the Parliament's budget committee in 2002 and then in 2005 became the NDP's secretary-general and a leading member of the Policy Secretariat Committee of the NDP, which originated most of the government's economic policy actions (Demmelhuber and Roll, 2007; Roll, 2013). Ezz owned several companies in the steel and ceramic sectors. Apart from favorable interpretations of competition law, mentioned earlier, both sectors benefitted from generous energy subsidies and trade barriers (e.g., exclusive import licenses or quality controls for imports), some of which were introduced in 2005, when he joined the policy committee. The remaining one-third of the connected firms in our sample were controlled by either long-term friends of Hosni Mubarak from military times or co-founders of a large investment bank partly-owned by a Cyprus-registered company that in turn was owned by the Mubarak family.

Most of our analyses examine the performance and regulatory exposure of four-digit sectors, comparing those that contained politically-connected firms with those that did not, controlling for two or one-digit sector fixed effects. This comparison is feasible because of substantial dispersion in the presence of political connections across sectors by 2006. Firms in Egypt operate in 320 non-farm, non-government 4-digit ISIC Rev.4 sectors. As Table 1 illustrates, at least one politically connected firm operated in 155 of them. Tables A1 and A4 in the Appendix describe the substantial variation in the activities of connected firms. They operated in some more mature traditional 4-digit sectors, but not others, and entered in some modern sectors around the year 2000 (e.g., manufacturing of batteries or computer programming services). Within manufacturing, where 40 percent of the connected firms of any type operate, they are present in 46 percent of the 4-digit industries (69 out of 149).[10]

---

[9] The former Minister also faced accusations of subsidizing specific export industries while holding shares in companies operating in these industries and of an illegal selling of steel-manufacturing licenses while in office.

[10] Sectors vary also with respect to the number of politically connected firms. Thirty-three sectors have exactly one firm with a politically connected CEO, while one sector has six firms with politically connected CEOs; 57 sectors have

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 (out of 320) with at least one PC firm of that type
Any type of politically connected firm	385	155
Politically connected owner	334	142
Politically connected CEO	47	48

The first two analytical exercises below investigate whether previously unconnected sectors that experienced entry by connected firms also suffered from slower employment growth and exhibited firm distributions more skewed towards small firms. They require data on which sectors were unconnected prior to the late 1990s and, of these, which experienced entry by a connected firm. The entry year is obtained from the date of incorporation, which we observe for each establishment using stock market and on-line financial information.[11] This allows us to trace back the operation of each politically connected establishment over time. However, our data sources do not reveal connected establishments that might have existed during the 1990s or early 2000s, but then exited the market prior to 2006. There are likely to be few of these, if any, however.[12] Our data confirm that the range of economic activities that saw the entry of new establishments owned or managed by politically connected businessmen in the early 2000s was unprecedented (see section 3). Hence, we can plausibly assume that any sector that was not occupied by one of the connected firms in our sample was never occupied by a crony. If the assumption does not hold, and connected firms were in fact active in sectors that we assume were unconnected, the analyses are in any case biased *against* finding an effect of crony entry.

In sectors with several crony firms, it could be the case that inter-crony competition could spur productivity increases. However, inter-crony *collusion* appears to be more likely since crony firms exhibit a web of intertwined ownership structures and co-investments. For instance, the five

---

exactly one firm with a politically connected owner, while one sector has 29 firms with connected owners; 60 sectors have exactly one politically connected firm of any type, while one sector has 30.

[11] These sources give the date of incorporation both for the mother company and for subsidiaries (establishments), as well as the years in which changes in firms' ownership structures took place (crony businessmen acquiring or selling shares in companies) and mergers and acquisitions of previously unconnected firms by connected firms. All of these allow us to capture the entry of politically connected firms into new sectors.

[12] In our Internet search tracking all the firms of the connected businessmen over time, we found no cases of the exit of a crony firm between 1996 and 2006 (crony banks exited in the late 1980s, before our period of interest).

(ten) most intertwined businessmen together controlled stakes directly or indirectly in 192 (268) firms. In addition, 85 firms (22 percent) managed or owned by a connected businessman received significant investments from private equity funds controlled by *other* politically connected investors.

Measuring the aggregate impact of cronyism

A large body of research has contrasted the performance of connected and unconnected firms; these results are not intended to estimate whether connected firms slow aggregate growth. However, since the majority of firms in connected sectors are unconnected, even fast-growing connected firms could have negative growth effects on their sector to the extent that the privileges they receive suppress competition and incentives to innovate.

To analyze the sectoral effects of connected firms, we match the list of politically connected establishments to their corresponding 4-digit sectors in the establishment census from the department of statistics in Egypt (CAPMAS). The census data include all non-farm economic establishments with a fixed location, more than 2 million establishments in each year. We then compare sector-level performance across the 320 non-farm, non-government (ISIC Rev. 4) 4-digit sectors before and after the entry of crony firms.[13]

Because of data availability in the Egyptian establishment census, which reports employment but not revenues or capital, our sector performance measure is employment.[14] In addition, the effects of cronyism on market structures are unlikely to unfold immediately. However, using the 1996 and 2006 censuses we can analyze the change in employment of the 320 sectors over a long (ten year) time period. These two censuses are right before and several years after the historical episode in the late 1990s, when connected firms significantly expanded their economic activities into numerous new economic activities.

Assessing the privileges of connected firms

While our main novel result is that connected sectors exhibit slower employment growth than unconnected sectors, we also provide a wide range of evidence on the underlying mechanisms that support a causal interpretation for this finding. One mechanism that we examine is that,

---

[13] We exclude the following sectors, where 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).

[14] For the subset of manufacturing firms, Hussain and Schiffbauer (2015) find that firm productivity is the main driver of employment growth in Egypt (using establishment census data for manufacturing firms with at least 10 employees). In addition, over a sufficiently long time period, more productive sectors should exhibit greater employment in developing countries (see the reviews in Herrendorf, Rogerson and Valentinyi, 2014, World Bank, 2014, and Vivarelli, 2012).

because of their significant privileges, connected firms enjoy better performance. Since this issue requires us to identify connected and unconnected firms, and census data are anonymous, we rely on the Orbis database. It contains firm names and data for all establishments with at least 20 employees between 2003 and 2011. It has no information on smaller firms and so cannot be used to make sector comparisons. Orbis has employment data for over 20,000 establishments, operating revenues for about 700 large establishments, and profits for about 400 large establishments.[15] After matching all connected firms to firms in the Orbis database, we then compare the evolution of employment, revenues, and profits of connected firms with those unconnected firms that are in Orbis.

A second key mechanism is that connected firms enjoy privileged access to state resources and exemptions from state regulatory requirements. Unfortunately, there are no data on firm-specific exposure to government policies. However, we can measure whether *sectors* with connected firms enjoyed greater privileges than those without connected firms. World Bank data (WITS) provide detailed product-specific information on non-tariff barriers to trade (NTMs); the UN reports data on the energy intensities of manufacturing industries – the industries that would benefit most from the massive energy subsidies available in Egypt during this period; and the World Bank Enterprise Survey (WBES) allows us to characterize the regulatory environment across connected and unconnected sectors. The WITS and UN data cover all sectors and we simply match these data to the data on the sectoral intensity of cronyism to see if 4-digit sectors with more politically connected firms benefit from more NTMs and are more energy-intensive (receive more energy subsidies).

We assess the regulatory environment of sectors based on firm reports from the WBES, which asks about actual regulatory actions firms have experienced and their perceptions of the regulatory environment. The WBES survey sample is weighted towards larger firms, more comparable to connected firms. Importantly, at least 50 manufacturing firms in the WBES data are politically connected, but since the WBES responses are anonymous, we cannot identify the specific responses of connected firms. We can, however, construct sector averages of regulatory variables using all available WBES surveys for Egypt between 2004 and 2008. This allows us to identify the regulatory environment perceived by more than 4,200 firms that were active in 90 (ISIC Rev. 3.1) 4-

---

[15] All politically connected firms had at least 20 employees in 2006. Overall, there were in total only 18,640 establishments with more than 20 employees according to the 2006 establishment census; 69 percent of all establishments in the census had fewer than 5 employees.

digit sectors.[16] We then examine whether WBES respondents from sectors with more connected firms experienced softer or harsher regulations than those from other sectors.

6. Effects of connectedness on economic growth

The empirical context for our analysis is unique. Unlike previous research, we have data on a large number of politically connected firms distributed across many sectors, allowing us to identify sectoral effects of cronyism. The data span a unique historical episode in Egypt during which connected firms expanded their activity into many new sectors, creating a quasi-natural experiment to examine the effects of crony entry on sector market structures and performance. We can therefore estimate the impact of crony firm entry on sector performance by comparing the change in employment in unconnected 4-digit sectors that experienced crony entry and in 4-digit sectors engaged in related economic activities that remained unconnected. Consistent with Aghion et al. (2001), crony firm entry adversely affects the performance of other firms in the same sector, slowing overall sector employment growth and skewing the distribution of firms towards smaller firms.[17]

Identification strategy

Previous research has had to rely on databases with relatively small numbers of connected firms, concentrated in very few sectors, and therefore could not consider the question of crony effects on sector performance. A sector level comparison is essential, however, to assess the aggregate development effect of cronyism, which depends not only on the performance of the crony firms themselves, but also on their impact on the market structure of their sectors, and thus the performance of the other, non-connected firms in their sectors. Our sample of connected firms is sufficiently broad to allow us to identify differences in performance between connected and unconnected sectors.

In addition, we are able to go beyond comparisons of sectors that were always connected or unconnected during the period of analysis. Such comparisons make it more difficult to infer crony

---

[16] We exclude sectors for which we observe fewer than 4 firms leading to, on average, 38 firms per 4-digit sector.

[17] Most prior research examining the performance of connected firms has relied, as we do, on a combination of theory and empirical correlations to make causal inferences about the effects of political connections. Some prior research has exploited exogenous variations in political connectedness, such as announcements of leader illness, to make inferences about the causal effects of political connectedness on connected firms' value, but has not examined the broader impact of connected firms on the sectors in which they operate. The longer time horizons needed to estimate impacts on aggregate growth make it difficult to rely on the methodologies in this latter research, however. In particular, the power of event studies is greatest when examining the effects of exogenous shocks on outcomes reported with high frequency. Changes in aggregate growth, though, can only be meaningfully measured over longer time periods.

effects since, after a sufficiently long period, crony entry triggers not only within-sector changes in firm behavior, but also between-sector resource flows. After these flows have occurred (e.g., as in the case of "always" connected and "always" unconnected sectors), there should be fewer observable differences in performance between crony and non-crony sectors. The unique empirical context for our analysis therefore allows us to make larger strides towards causal inference than has been possible in previous research.

In 1996, 164 non-agricultural, non-government 4-digit sectors did not contain politically connected firms (recalling our earlier argument that it is unlikely that connected firms were in fact present, but exited before 2006). Between 1997 and 2005, 35 politically connected firms entered 26 of these 164 unconnected sectors (see Table A4 in the Appendix).[18] Of the 35 politically connected firms, 21 had a politically connected shareholder and, in two of the 35 firms, both the CEO and at least one shareholder were politically connected. The previously unconnected sectors they entered included services, manufacturing, utilities and mining. The remaining 138 4-digit sectors that were unconnected in 1996 remained so throughout the subsequent ten year period.

These circumstances permit us to estimate a difference-in-difference effect, comparing the change in employment in initially unconnected 4-digit sectors that crony firms entered relative to employment change in unconnected sectors that they did not enter, holding constant fixed broad sector characteristics. We then compare the size distribution of connected and unconnected sectors, finding further evidence consistent with the predictions of Aghion et al. (2016).[19]

While an improvement on what has been possible in prior research, this estimation offers only partial support for causal inference because it does not exclude the possibility that sectors that experienced crony entry would have grown more slowly, anyway. We pursue a number of strategies, however, to attenuate the possibility that our results are explained by the fact that connected and

---

[18] Most crony firm entry took place in the beginning of this period, leaving sufficient time for the impact of crony firm entry on sector market structures to materialize. In fact, 29 (24) out of the 35 crony firms entered previously unconnected sectors before 2001 (1999). Moreover, the results below are robust if we remove the five cases in which crony firms entered into unconnected sectors after 2001 from the estimation (results available from the authors).

[19] Most prior research examining the performance of connected firms has relied, as we do, upon a combination of theory and empirical correlations to make causal inferences about the effects of political connections. Some prior research has exploited exogenous variations in political connectedness, such as announcements of leader illness, to make inferences about the causal effects of political connectedness on connected firms' value, but has not examined the broader impact of connected firms on the sectors in which they operate. The longer time horizons needed to estimate impacts on aggregate growth make it difficult to rely on the methodologies in this latter research, however. In particular, the power of event studies is greatest when examining the effects of exogenous shocks on outcomes reported with high frequency. Changes in aggregate growth, though, can only be meaningfully measured over longer time periods.

unconnected sectors differed systematically both with respect to their potential employment growth and the selection of cronies into sectors.

First, we also control for other observable 4-digit sector characteristics, average firm size and age (maturity), as well as for unobserved sector differences at the one-digit level that might otherwise account for both crony entry and performance differences.[20] Our identifying assumption is then that these variables are sufficient to account for factors that might simultaneously influence cross-sector differences in employment growth and attractiveness to connected firms.

Second, we directly address whether the sectors that connected firms entered might have grown more slowly even in the absence of crony entry. One indication that this was not the case is that these sectors had a *larger* initial share of young firms, an indication that these were sectors where growth opportunities were at least as promising as sectors cronies did not enter. Another indication is that, in other countries the sectors that connected firms entered inside Egypt grew *more* rapidly than similar sectors that remained unconnected. We cannot exclude the possibility that a sector-specific shock occurred in Egypt, but not in other countries, that spuriously encouraged crony entry and suppressed sector growth. However, our argument suggests the most plausible sector-specific shock: crony firm entry coincided with policies friendly to cronies in these sectors, in Egypt but not elsewhere, causing the corresponding negative effects on sector performance.

Third, we exploit theory to test for additional empirical regularities that should be present if the entry of connected firms slows sector employment growth. Aghion, et al. (2001) predict that the presence of firms with a large competitive advantage over other firms in a sector should cause the distribution of firm sizes in the sector to be more skewed towards smaller firms. This is in fact the case. In addition, consistent with the assumptions of the theory, connected firms in Egypt enjoyed ample policy privileges, they were more profitable, and their privileges can account for their greater profitability. Each of these regularities could be the spurious product of unobserved shocks. However, the breadth of the evidence argues against this interpretation.

Estimation

The following difference-in-difference specification tests whether employment declined over the ten year period between 1996 and 2006 in sectors that were initially unconnected and

---

[20] The 26 4-digit sectors within which we observe crony entry is a large number in the context of the problem we are analyzing, but they are too few to also control for the unobserved sector characteristics of the 49 2-digit sectors to which the 26 sectors belong. In particular, at the 2-digit level, in some cases all of the 4-digit sectors are connected and therefore drop out when controlling for 2-digit sector dummies.

subsequently experienced entry by crony firms, relative to sectors that remained unconnected. In the specification, 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, and NPC are sectors without crony firms before 1997. X is a matrix of control variables (employment and age), and S a matrix of sector dummies.

$$\Delta Y_{s,2006-1996} = \beta_E PCEntry_{s,1997-2006} + \beta_N NPC_{s,1996} + \beta_{EN}\big(PCEntry_{s,1997-2006} *$$
$$NPC_{s,1996}\big) + \beta_X X_{s,1996} + S + \varepsilon_{s,2006} \tag{1}$$

The key variable of interest is the interaction of entry by the politically connected firm with the dummy variable indicating whether the sector was previously unconnected. Our central hypothesis is that cronyism reduces aggregate growth by discouraging investments of their competitors. If it is correct, the coefficient β_{EN} should be negative, indicating that the growth of the 26 previously unconnected sectors entered by politically connected firms was slower than the growth of the 138 sectors that remained unconnected after 1996, controlling for sector-specific characteristics. The interaction coefficient is biased *upwards*, towards showing *increased* employment growth in newly connected sectors, since the entry of any firm, connected or otherwise, mechanically contributes to sector growth. The aggregate effects of entry by connected firms on sector employment growth can only be negative, therefore, if their entry has a sufficiently adverse impact on the growth of the other, non-connected firms in the same sector.[21]

Consistent with the hypothesis, the estimates of the interaction term reported in Table 2 are negative. Entry into previously unconnected sectors of firms managed by a politically connected CEO, or that have politically connected owners, or that have any type of political connections, is associated with significantly slower long-term employment growth in those sectors. The interaction terms are large, negative and statistically significant. The economic impact is also large, implying a

---

[21] In contrast, the signs of the linear coefficients are ambiguous since the theory does not speak to growth differences between already-connected sectors and either already-connected sectors that experienced additional crony entry (β_E), or unconnected sectors that did not experience crony entry (β_N). For example, the effects of crony entry into already-connected sectors are ambiguous because these sectors may have already experienced the distortions associated with crony privilege.

15-25 percent reduction in sector employment growth due to the entry (and accompanied protection) of connected firms over the ten-year period 1996-2006.[22]

Table 2: Employment growth declines after politically connected firms enter initially unconnected sectors

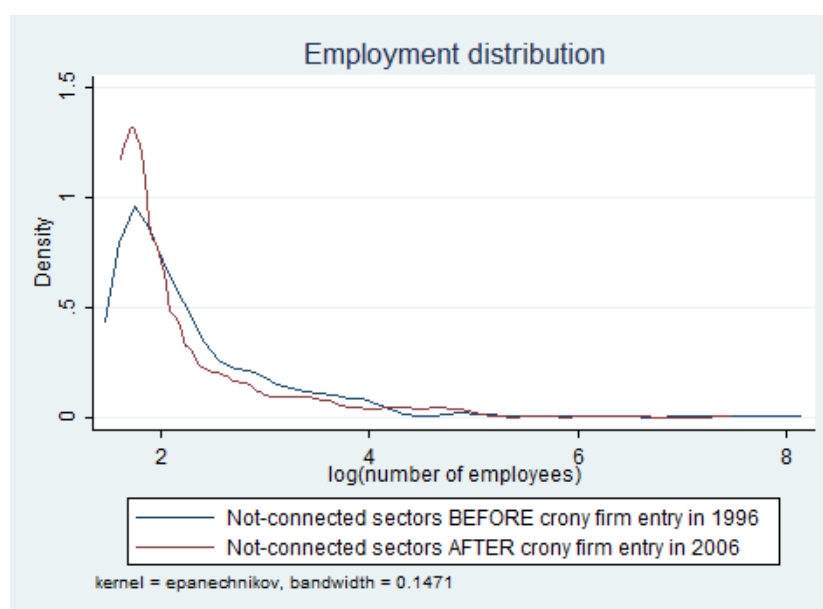| | Employment growth 1996-2006 | | | | | |
	CEO		Owner		Broad	
Entry PC	32.2*	36.1**	7.15	10.3	7.40	7.10
	(1.95)	(2.09)	(0.84)	(1.24)	(1.20)	(1.01)
Not connected before 1996		-6.32		15.1		-6.95
		(-0.58)		(0.82)		(-0.46)
(Entry PC) *		**-24.8****		**-18.7****		**-14.68***
(Not connected before 1996)		**(-2.17)**		**(-3.47)**		**(-1.77)**
ln(empl)	-.418**	-.401**	-.420**	-.382**	-.422**	-.376**
	(-2.44)	(-2.17)	(-2.37)	(-2.16)	(-2.37)	(-2.31)
Age	12.5	12.6	12.4	12.3	12.6	12.8
	(1.57)	(1.56)	(1.51)	(1.53)	(1.55)	(1.60)
No. of sectors	224	224	224	224	224	224
R-squared	0.161	0.163	0.155	0.159	0.159	0.161
1-digit sector dummies	Yes	Yes	Yes	Yes	Yes	Yes

Source: Establishment census data, including all non-agriculture, non-government sectors in 1996 and 2006 and sample of politically connected firms. Note: PC indicates the number of politically connected firms that entered each 4-digit sector. The results are robust if we use a dummy for the cases in which crony firms enter new (previously) unconnected sectors. The three different types of connections (ordered by their restrictiveness) are defined in Table 1. The average number of employees (size) and the average establishment age are computed at the 4-digit sector level. All 4-digit sector level regressions include 1-digit sector dummies. Standard errors are clustered at the 1-digit sector level. *, ** denote significance at the 10%, 5% significance level, respectively, t-statistics are reported in parentheses.

The Aghion, et al. (2001) analysis predicts not only that crony entry should suppress innovation and productivity growth in a sector, but also that it should skew downwards the distribution of firm size. In sectors dominated by firms with large and exclusive cost advantages, such as those granted to politically connected firms in Egypt, the firm size distribution should exhibit a large crony market leader and many small firms that use vintage technologies to serve local market niches and remain under the radar of the influential new competitor. While the large crony firms create some jobs, the bulk of employment in these sectors will be concentrated in less productive, but more numerous small firms.

---

[22] The coefficient on the linear variable Entry PC, reflecting employment growth in always-connected sectors that experience crony entry compared to always-connected sectors that do not, is always positive, though only significant in the case of the small group of connected firms defined as run by connected CEOs. These coefficients are consistent with the argument that cronies entered already-connected sectors which they expected to grow faster.

In fact, although the 385 politically connected firms enjoy privileges that might encourage them to grow faster, they only account for about five percent of aggregate employment in Egypt. Employment is instead concentrated in (old) micro and small firms: establishment census data show that firms with fewer than ten employees account for 72 percent of aggregate employment (Hussain and Schiffbauer, 2015; World Bank, 2014). In addition, these firms often operate in the informal sector and typically are less productive (World Bank, 2014). We therefore ask whether, consistent with the theory, the employment distribution of sectors shifts towards smaller, less productive firms after the entry of crony firms.

Figure 1: Employment distribution before and after the entry of crony firms into previously unconnected sectors

Source: Establishment census data including over 2 million firms in all non-agriculture, non-government sectors in 1996 and 2006 and sample of politically connected firms. Note: The graph uses the broad measure of any type of politically connected firm. The graph for politically connected owners yields very similar employment distributions.

To determine this, we compare the distribution of employment in initially unconnected sectors before and after the entry of crony firms (2006 versus 1996). Figure 1 displays the results of this comparison. The distribution of employment became more skewed towards micro and small firms after the entry of crony firms; the difference in the distribution is significant at the one percent level (Kolmogorov-Smirnov test).[23]

---

[23] We also find that the employment distribution in connected sectors is more right-skewed and exhibits a higher coefficient of variation (fatter tails) in employment. Likewise, the skewness and coefficient of variation in employment

Did connected individuals enter sectors that were inherently slow-growing?

The entry of connected firms into particular sectors is not random. To support the conclusion that their entry causes slower employment growth and a shift in the distribution of firm sizes, we therefore first document that connected firms *did not* enter sectors that were going to grow more slowly, anyway.

In fact, observers argue that several sectors entered by connected firms, such as tourism and specific manufacturing sectors, exhibited high growth potential (see Table A4 in the Appendix and Skafianis, 2003; Roll, 2013; Loewe, 2013). More quantitative indicators are also inconsistent with the proposition that connected firms entered sectors that would have grown more slowly independent of crony entry. Slower growing sectors are typically more mature and thus should have a significantly higher fraction of older firms than sectors with higher growth potential. However, cronies did not enter more mature sectors. The share of young establishments in the unconnected sectors that cronies entered after 1996 was actually higher than in the unconnected sectors that cronies did not enter. Fifty percent of the establishments in unconnected sectors entered by connected firms were less than 10 years old and 28 percent were less than five years old. In the unconnected sectors that remained unconnected, 44 percent of establishments were less than 10 years old and 24 percent less than five years old.

If Egyptian cronies entered sectors with intrinsically low growth potential, then these same sectors, in other countries, should also have grown more slowly. Table 3 shows that the contrary is true: employment and productivity growth were, in fact, higher among all different country groups for the treatment group sectors. Table 3 reports comparisons with all countries for which UNIDO has employment and value added data at the 4-digit sector level, high income countries, all developing countries, all countries from the Middle East and North Africa, and all Eastern European and Central Asian countries. In almost all cases, the unconnected sectors that experienced crony entry in Egypt grew more rapidly in other countries than those that did not experience crony entry. In four of the comparisons, the difference is statistically significant. Only in other MENA countries, employment grew slightly slower in these sectors but the difference is not statistically significant.

---

increased in crony sectors but declined in sectors that remained unconnected between 1996 and 2006. The results are available from the authors upon request.

Table 3: Average annual employment and productivity growth rates (in percentage points) of treatment and control group manufacturing sectors in all other countries from 1996-2006

	Employment growth 1996-2006				Labor productivity growth 1996-2006			
	All Countries	All Developing	MENA	ECA	All Countries	All Developing	MENA	ECA
Difference crony versus non-crony sectors, 1996-2006	.714**	1.41**	-.025	2.99	.728**	.961	.331	2.71**
	(2.08)	(2.81)	(-0.01)	(1.35)	(2.13)	(1.39)	(0.45)	(3.56)

Source: UNIDO (INSTAT4) and sample of politically connected firms in Egypt. Note: We use the broadest measure of political connections (see Table 1). The 4-digit new (previously unconnected) manufacturing sectors entered by crony firms after 1996 are listed in Table A4. "All Countries" includes all 104 countries with available data (excluding Egypt), "All Developing" 76 developing countries (excluding Egypt), "High Income" 28 high income countries, "MENA" all developing countries in the Middle East and North Africa (excluding Egypt), "ECA" all countries in Eastern Europe and Central Asia. All -digit sector level regressions include 1-digit sector dummies corresponding to Table 2. Standard errors are clustered at the sector level; t-statistics are reported in parentheses. *, ** denote that the difference in annual growth rates between the treat and control group sectors is significance at the 10%, 5% significance level.

In addition, in other countries, the unconnected sectors entered by cronies in Egypt grew at least as fast as the unconnected sectors that cronies in Egypt did not enter. UNIDO (*INSTAT4)* provides time series data for more than 100 developing countries on value added at the 4-digit sector level for manufacturing sectors between 1996 and 2006. This allows us to calculate the average growth rate over this period of employment and labor productivity for the "treatment" group sectors (the 4-digit manufacturing sectors that crony firms in Egypt entered after 1996 that were previously unconnected) and the "control" group sectors (4-digit manufacturing sectors that remained unconnected in Egypt).

The results in Table 3 exclude services. However, data from neighboring Jordan are available for several 4-digit manufacturing and service sectors between 1996 and 2006 for a different set of performance variables. Results displayed in Table 4 indicate, once again, that those sectors that, in Egypt, experienced entry by connected firms, exhibited *greater* employment and investment growth in Jordan. They also exhibited no significant differences with the control group sectors in Jordan with respect to value added and wages.

The evidence supports our identifying assumption in Table 2, that crony firms did not enter new sectors with a lower growth potential. On the contrary, connected firms in Egypt appear to have entered sectors with somewhat *greater* growth potential. Despite that, these sectors experienced slower growth; our estimates may therefore actually be a lower bound on the negative effects of cronyism on growth.

Table 4: Average annual growth rates (in percentage points) of treatment and control group manufacturing and service sectors in Jordan from 1996-2006

	Employment growth	Investment growth	Value added growth	Wage growth
Difference crony versus non-crony sectors, 1996-2006	0.12* (1.76)	1.94** (2.94)	-0.39 (-0.81)	-0.24 (-0.60)

Source: Department of Statistics Jordan and sample of politically connected firms in Egypt. Note: We use the broadest measure of political connections (see Table 1). We observe 13 new manufacturing and non-government service sectors entered by crony firms after 1996 and 44 sectors that remained unconnected. The 4-digit new (previously unconnected) sectors entered by crony firms after 1996 are listed in Table A4; data for Jordan in this period are not available for *Other mining & quarrying, Manufactures of whines, Manufacture of malt liquors, Manufacture of batteries, Manufacture of television & radio receivers, Recycling of metal or non-metal waste, Collection, purification & distribution of water, Wholesale of telecommunications parts, Inland water transport, Life insurance*. All 4-digit sector level regressions include 1-digit sector dummies. Standard errors are clustered at the sector level; t-statistics are reported in parentheses. *, ** denote that the difference in annual growth rates between the treat and control group sectors is significance at the 10%, 5% significance level.

It could also have been the case that connected individuals systematically purchased firms that were managed inefficiently and exhibited significant excess employment. After acquiring poorly managed firms, they shed excess workers, accounting for the decline in employment growth in their respective sectors. This explanation does not account for results of the second test, the skewed distribution of firms, nor for the fact that connected firms and their sectors disproportionately benefited from government privileges, as the discussion below demonstrates. Moreover, sectors entered by cronies were not characterized by state-ownership and subsequent privatization, one way in which this mechanism might have manifested itself.

Finally, politically connected individuals may have acquired firms that already enjoyed government-authorized cost advantages over other firms. The qualitative evidence we present earlier is inconsistent with this, pointing instead to many instances of connected businessmen creating new subsidiaries offering new products and services at the same time as regulatory privileges such as NTMs or preferential access to buy government land were created (see below).

The following sections present further evidence supporting the underlying mechanisms that drive the adverse growth effects of crony entry. In particular, using data on all 385 connected firms, they demonstrate that connected firms enjoyed state-granted privileges that gave them cost advantages over other firms; they were more profitable; and their profits can be explained by their privileges.

7. The cost advantages of crony firms

If crony entry slows employment growth because crony privileges are so great as to depress competitive pressures to innovate, as we infer from Aghion, et al. (2001), then we should observe that connected firms in fact enjoyed privileges that gave them a competitive advantage over other firms in their sectors; that they were more profitable; and that their privileges account for this profitability. We explore each of these in turn. In the case of privileges, the focus of this section, we demonstrate that crony sectors enjoyed greater import protection and energy subsidies, more favorable treatment by regulatory agencies (lower waiting times for construction permits); and greater access to land and credit, including access to industrial zones.

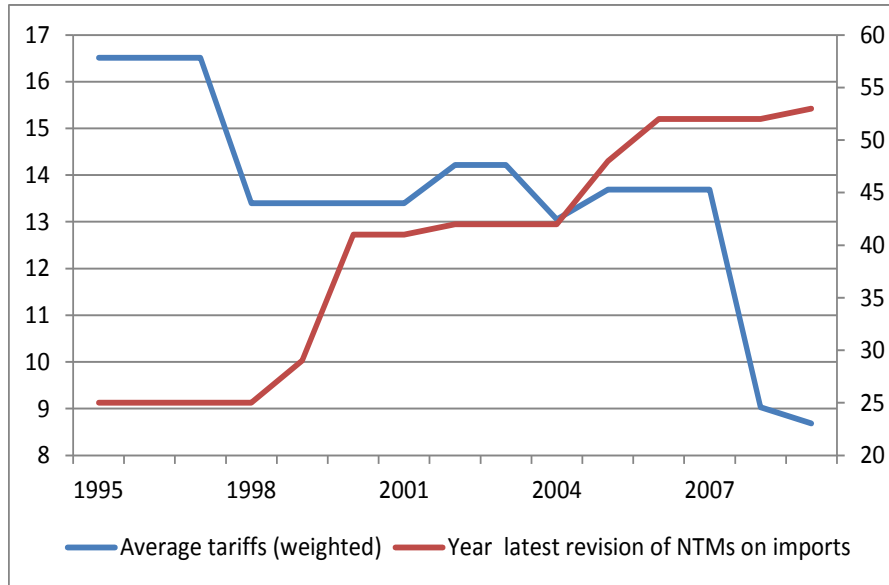*Political connections and non-tariff trade barriers*

Although tariffs fell in Egypt at the end of the 1990s, the use of non-tariff technical import barriers (NTMs) increased.[24] A key feature of NTMs is that they can be tailored to individual products: connected firms in a 4-digit sector, but not unconnected firms, can benefit from them.

Building on data from a new World Bank database (WITS) measuring NTMs (Malouche et al., 2013), Figure 2 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. NTMs primarily included barriers to imports such as exclusive license requirements, rules of origin, or quality controls. As a result, Egypt had one of the highest NTM frequencies in the world in 2010 (Malouche et al., 2013). Figure 2 perfectly illustrates the growth of cronyism: government policies that affect the prices confronting all firms (tariffs) are replaced by policies that affect more narrowly targeted enterprises.

Of the 53 different NTMs in place in Egypt in 2009, almost half (24) were introduced or significantly amended around 2000 and 21 percent between 2005 and 2009, consistent with the earlier arguments that government privileges followed the entry of connected firms. The first episode coincides with the period when several prominent businessmen headed directorates for economics and business in the policy committee of the government party (Demmelhuber and Roll, 2007; Roll, 2013). NTMs during the second episode were issued by the Ministry of Industry and Trade, directed at the time by a prominent businessman, who faced charges of corruption and illicit profiteering through the accounts of a Cypress-based fund immediately after the regime change in 2011.

---

[24] The World Bank database on NTMs provides either the year when a particular NTM was introduced or the latest year in which it was substantially revised. It does not distinguish the two.

Figure 2: The evolution of average (weighted) tariffs and the number of 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 is has been substantially revised.

To test if these NTMs disproportionally benefitted politically connected firms, we need to match products protected by NTMs with products sold by firms. To do this, we use data on NTMs (at the 6-digit product level harmonized system classification), which we map onto census data at the 4-digit product (ISIC) level, which contain information on all establishments in Egypt. The application of NTMs at the 6-digit level illustrates the extent to which they can be targeted to specific firms. The NTM measures are available for tradable goods, corresponding to 147 manufacturing and mining 4-digit products (ISIC classification). Among the politically connected firms (broadly-defined) in our larger sample, 81 percent sell products that are subject to technical import barriers.[25]

Most NTMs in Egypt are "Class B": license or registration requirements for importers, packaging requirements, regulations on production or distribution processes, traceability, and product-quality requirements.[26] These restrictions are imposed on 65 percent (96 out of 147) of the

---

[25] We convert the NTM data from the 6-digit (HS Rev. 2002) product classification to the 4-digit product group / 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 operate in more than one 4-digit product group so that in total we have 230 product-firm observations in manufacturing or mining. Three politically connected firms are in two 4-digit ISIC Rev. 4 product groups, *Casting of non-ferrous metals* and *Forging, pressing, stamping and roll-forming of metal*, which we had to drop from the NTM analysis since they had no equivalent HS (Rev. 2002) product code.

[26] Some products in Egypt are also subject to sanitary measures (NTM Class A), mostly in the food sector, or price

4-digit manufacturing products. On average, these 96 products confront 3-4 different Class B restrictions.[27]

Table 5 demonstrates in several ways that manufacturing and mining products sold by politically connected firms are more likely to be protected from import competition through NTMs. The first three columns ask whether the percentage of *firms* with political connections (CEO, owner, or "any" political connection) that sell products protected by NTMs is larger than the percentage of *firms*, in the fourth and fifth columns, that lack political connections and sell those products.[28] The fourth column looks at the share of all unconnected firms that sell products protected by NTMs. Column 5 presents a counterfactual using only large unconnected firms, since most connected firms are large (with at least 200 employees). Columns 6-8 compare the share of NTM-protected *products* sold by at least one politically connected firm with the share of NTM-protected products exclusively sold by non-connected firms. These comparisons allow us to directly assess the assumption underlying our hypothesis of crony effects on growth: cronies enjoy cost-reducing privileges that create a large group of marginal, small firms that do not enjoy them.

In all cases, the fraction of politically connected firms that sell products under the protection of import barriers (NTM Class B) is significantly larger.[29] For instance, 78 percent of firms with a politically connected owner sell products protected from foreign competition by at least two different types of NTMs as compared to only 27 percent of all firms. The difference between NTM-protected politically connected firms (66%) and all non-connected (4%) firms is even more striking for products on which at least three different technical import barriers are imposed.

---

controls (NTM Class P), typically in addition to technical import barriers (NTM Class B).

[27] Observing the distribution of non-tariff technical barriers to import across all manufacturing or mining industries does not indicate that manufacturing or mining industries with more firms exhibit more barriers. If anything, more concentrated sectors benefitted disproportionally. 65 percent of all industries had some NTM protections, compared to only 56 percent of all firms.

[28] Large firms are defined as firms with at least 200 employees; there were 563 not politically connected manufacturing and mining firms in Egypt in 2006. We computed the number of large unconnected firms by subtracting the number of large politically connected firms, broad definition, from the total number of all large firms for each product group. We include large non-connected firms as an additional control group since these firms might have more similar characteristics (other than political connectedness) relative to the connected firms which are typically large firms.

[29] The significance levels drop somewhat for the most restrictive measure of political connections, which only includes firms managed by a connected CEO, due to the smaller sample sizes.

Table 5: Politically connected firms are more likely to benefit disproportionately from NTMs the larger the number of NTMs in the product category

NTMs (class B)	Share of Politically Connected FIRMS			Share of NOT-PC Firms		Share of Politically Connected PRODUCTS			Share of NOT-PC Products
	CEO	Owner	Broad	All	Only Large	CEO	Owner	Broad	
at least 1 per product	89%	78%	81%	56%	83%	69%	74%	75%	55%
	(0.073)	(0.000)	(0.003)			(0.266)	(0.027)	(0.016)	
at least 2 per product	89%	78%	81%	27%	50%	69%	74%	75%	52%
	(0.073)	(0.000)	(0.001)			(0.208)	(0.012)	(0.007)	
at least 3 per product	67%	66%	69%	4%	16%	50%	60%	59%	38%
	(0.029)	(0.000)	(0.006)			(0.313)	(0.016)	(0.017)	
at least 4 per product	11%	21%	23%	3%	21%	19%	23%	22%	7%
	(0.490)	(0.000)	(0.394)			(0.178)	(0.009)	(0.014)	
at least 5 per product	0%	11%	14%	3%	18%	13%	14%	14%	5%
	(0.575)	(0.028)	(0.758)			(0.340)	(0.086)	(0.090)	
at least 6 per product	0%	8%	11%	2%	5%	13%	12%	13%	3%
	(0.605)	(0.234)	(0.362)			(0.340)	(0.144)	(0.139)	
at least 7 per product	0%	7%	8%	0%	5%	6%	9%	9%	3%
	(0.758)	(0.017)	(0.414)			(0.532)	(0.132)	(0.190)	

Sources: WITS; establishment census data; sample of politically connected firms. Note: "Share of politically connected firms" reports the (number of connected firms/number of all firms in the sector) in those sectors that sell products protected by the corresponding number of NTMs. "Share of NOT-PC firms" reports (number of unconnected firms/number of all firms in the sector) in those sectors that sell products protected by NTMs. Since politically connected firms are large, we also calculate "Only large", the (number of unconnected firms with more than 200 employees/number of all firms in the sector). "Share of politically connected products" is the (number of products protected by the corresponding number of NTMs and sold by 4-digit sectors occupied by politically connected firms/total number of products). "Share of NOT-PC Products" is the (number of products protected by the corresponding NTMs sold exclusively by firms that are not in the 4-digit sectors occupied by politically connected firms/total number of products). The significance level (p-values) for the statistical difference between politically connected firms or products sold by connected firms relative to all non-connected firms or products is reported in parentheses; it is based on a Pearson Chi2-test. We use the Fisher-test starting from products with at least 4 NTMs because of small samples to test for the significance.

The fifth column reports the fraction of *large* unconnected firms that sell NTM-protected products. Comparing these firms with the connected in column 3 reveals that a similar fraction of both (81 – 83 percent) sell products protected by at least one NTM. However, a much larger percentage of connected firms sell products protected by at least two or three NTMs (81 and 69

percent, respectively, versus 50 and 16 percent). This is important since Malouche et al. (2013) argue that NTMs constitute more effective protection from foreign competition if multiple different NTMs are imposed on the same product. In fact, politically connected firms are never protected by just one NTM, but always sell products with at least two different types of NTMs. Thus, the large majority of connected firms sell products protected by multiple import barriers (2 out of 3 sell products with at least 3 NTMs) which is not the case for unconnected large firms (1 out of 6 sell products with at least 3 NTMs).[30]

Columns 6-8 compare the share of *products* sold by at least one politically connected firm that has NTM protection with the share of *products* exclusively sold by non-connected firms (that is, products not sold by politically connected firms) that have such protection. Across all definitions of political connection, the share of products with NTM protection sold by connected firms is significantly greater than the share of products with NTM protection sold exclusively by unconnected firms.[31] For example, 75 percent of the products sold by connected firms, most broadly defined, were protected by at least two NTMs; only 52 percent of the products exclusively sold by unconnected firms enjoyed such protection. Nine percent of the products of connected firms, broadly-defined, were protected by seven or more NTMs, while only three percent of the products sold only by unconnected firms enjoyed this level of protection.

We also used a probit regression to test the probability that a product is protected by at least one NTM, given that a connected firm sells it, after controlling for the average size and age of firms producing these products. The probability that a product is NTM-protected increases by 53 percent when a politically connected firm (broad definition) sells this product (the difference is statistically significant at the 5 percent level).[32] Not only were connected firms more likely to benefit from NTMs than other firms, but NTMs were also more likely to be granted to products manufactured by connected firms than to products manufactured by other firms.

---

[30] We cannot exclude the possibility that some large firms that we classify as unconnected were, actually, connected. However, it could also be the case that large connected firms coincidentally benefit from privileges that all large firms, connected and unconnected, receive.

[31] Note that almost all products are sold by at least one large firm and several smaller firms so that we cannot meaningfully separate product groups sold by primarily large unconnected or small unconnected firms.

[32] The results are available from the authors upon request. Note that we can only run such a probit regression at the (more aggregate) product but not the firm level since we cannot identify the individual politically connected firms in the establishment census data.

Politically connected firms and energy subsidies

In 2010, subsidies to energy-intensive sectors accounted for 2.9 percent of Egyptian GDP (US$7.4 billion). Connected firms were more likely to be found in sectors that benefited from these subsidies. Moreover, qualitative evidence indicates that energy subsidies were targeted to individual firms. Egyptian firms required a government license to legally open a new factory in sectors that were heavy users of energy (steel, cement, etc.). Those licenses had to be renewed annually. Politically connected firms 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). By 2010, only a few, connected, firms had obtained the license guaranteeing access to the energy subsidies to firms in the cement and steel sectors.

To examine the targeting of energy subsidies more systematically, we classify whether a firm belongs to a low, moderate, or high energy-intensive sector. We then compare the distribution of politically-connected firms and unconnected firms across 4-digit manufacturing industries with different energy intensities.[33] Connected firms are disproportionately concentrated in energy- (and capital-) intensive manufacturing industries, such as base metals, cement, plastics, textiles, and ceramics. The results in Table 6 indicate that connected firms are more likely than unconnected firms to be in high, but not low or moderate energy-intensive sectors. At the same time, industries with politically connected firms are more likely to be high energy-intensive, but not moderate or low.

The first three columns of Table 6 show that politically connected firms are significantly more likely to operate in energy-intensive industries. Between 49 and 55 percent of all connected firms operate in energy-intensive industries, compared to only eight percent of *all* unconnected firms and 30 percent of *large* unconnected firms. The difference is significant at the one percent level. In contrast, politically-connected firms are no more likely, or less likely, to be in less energy-intensive sectors. Similarly, the last three columns of Table 6 demonstrate that between 36 and 44 percent of all politically connected industries, compared to only 10 percent of industries without a politically connected firm, are highly energy-intensive. The differences are significant for all types of political connections (CEO, Owner, or Broad). In contrast, once again, the share of less energy-intensive

---

[33] See Table A2 in the Appendix for the UN classification of sector energy intensity. High energy-intensive industries account for 22 percent of all mining and manufacturing 4-digit industries, moderate energy-intensive industries for 37 percent, and low energy-intensive for 42 percent.

industries does not change significantly between sectors with and without politically connected firms of any kind.[34]

We also used a probit regression to test the probability that a sector is in the "high" energy intensive category given that politically connected firms are present, after controlling for the average firm size and age in the industry. We find that the probability for a 4-digit industry to be high energy intensive increases by 100 percent when a politically connected firm (broad or owner definition) is operating in that industry (the difference is statistically significant at the 1 percent level).[35]

Table 6: Percent of firms and industries benefitting from energy subsidies

	Share of Politically Connected FIRMS			Share of All NOT-PC Firms	Share of Large NOT-PC Firms	Share of Politically Connected INDUSTRIES			Share of NOT-PC Industries
	CEO	Owner	Broad			CEO	Owner	Broad	
High Energy-Intensive Industry	55%	49%	49%	8%	30%	44%	38%	36%	10%
	(0.000)	(0.000)	(0.003)			(0.024)	(0.000)	(0.000)	
Moderate	36%	28%	28%	63%	52%	19%	24%	28%	34%
	(0.071)	(0.000)	(0.641)			(0.316)	(0.340)	(0.934)	
Low	9%	23%	23%	29%	16%	38%	38%	36%	56%
	(0.133)	(0.214)	(0.519)			(0.731)	(0.362)	(0.120)	

Source: WITS; establishment census data; sample of politically connected firms. Note: The significance level (p-values) for the statistical difference between politically connected firms or industries (columns 1-3 and 6-8) relative to all not-connected firms or industries is reported in parentheses; 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 in case of small sample sizes. Large firms have at least 200 employees.

Do connected firms have better access to land, industrial zones and credit?

Abundant anecdotal evidence indicates that politically connected firms in Egypt have superior access to land and credit.[36] For instance, a large property developer co-owned by several

---

[34] Energy-intensive sectors tend to exhibit greater capital intensity. An alternative explanation for the findings in Table 5 is therefore that connected individuals simply have better access to capital markets. However, this interpretation is consistent with the evidence provided in this paper that cronyism suppresses growth by lowering the costs (of access to capital) of connected firms compared to other firms in the sector. Indeed, the next section shows that firms in sectors with connected firms are more likely to report having access to credit.

[35] The results are available from the authors upon request. Note that we can only run the probit regression at the industry but not the firm level since we cannot identify the individual politically connected firms in the establishment census data.

[36] Court disputes initiated after the fall of the Mubarak regime indicated that the government sold the land to the politically connected and provided guarantees that it would connect the land with the necessary electricity, telecommunication, and transport infrastructure. These guarantees increased the value of land, allowing the businessmen to use it as collateral for get bank loans that far exceeded the initial purchase value of the land (Ahram Online, various issues).

connected businessmen, including the former minister of housing, had acquired 200 acres of land from the government in the east of Cairo in the 2000s, reportedly much below the land's market value, to develop a new town with commercial and residential districts. After the regime change in 2011, the firm agreed to revalue the initial land price and to repay an additional US$130 million, revealing its initial access to undervalued land deals with the previous regime. Moreover, in the manufacturing sector, connected firms also had privileged access to industrial zones that offer benefits to occupants that competitors outside of these zones do not enjoy, including exemptions from corporate taxes and customs duties, better infrastructure, and streamlined regulations. The analysis in this section demonstrates that firms in sectors with a higher intensity of political connections are more likely to have obtained land from the government or to have received it for free; to have obtained a bank loan; or to be located in an industrial zone.[37]

We do not have information for our sample of connected and unconnected firms about their firm-level experience with these variables. However, we are able to use well-known data from the World Bank Enterprise Survey (WBES) to construct, at the 4-digit industry-level, the average responses that firms give to questions about these issues. We can then ask whether WBES respondents from sectors with at least one connected firm are more likely to report that they received these benefits. We attribute differences in benefits across sectors in part to the role of political connections. Moreover, although the survey is anonymous, we know that approximately 50 connected firms were included in the WBES sample.

The WBES data contain firm level information for each of three regulatory variables. The first concerns an overtly government decision, whether the firm acquired land from the government: "Does your establishment own or lease the majority of its land? From whom have you gotten the land (people, government, for free, other)?" Industrial zones in Egypt are sponsored by the government and generally include subsidized infrastructure. Access to industrial parks is typically also a government decision. WBES asks about industrial parks, "Is the firm located in an industrial zone?" We also analyze responses to the WBES question, "Does your establishment currently have a loan from a financial institution?" Political connections affect access to credit in two ways. State-owned institutions are still important sources of private sector credit, so credit could have been a government decision that the politically connected could directly influence. In addition, the

---

[37] Politically connected individuals were able to influence which activities benefitted from tax exemptions in special economic zones. For instance, the list was expanded to include media companies after the construction of a new media complex by a politically connected businessman (Ahram Online, various issues).

politically connected are likely to have a large advantage in securing private credit if they enjoy implicit government guarantees.

As before, we classify WBES firms according to their 4-digit industrial classification and aggregate firm reports of access to land, credit or location in an industrial park at the 4-digit sector level. Then, as in the analysis of NTMs and energy subsidies, we ask whether sectors with more politically connected firms enjoy greater access.

The WBES data include data from 3,040 firms in 91 4-digit (ISIC Rev. 3.1) manufacturing sectors. Out of 3,036 manufacturing firms, 1,431 reported acquiring land: 933 obtained the land from the government, 57 obtained it for free. In addition, 1,060 manufacturing firms are located in an industrial zone and 453 (out of 3,040) manufacturing firms reported a loan. Table A3 in the Appendix summarizes the descriptive statistics of the different policy variables from the WBES, comparing manufacturing sectors with at least one politically connected firm with all other sectors (with zero connected firms). Firms in connected sectors are more likely to have acquired government land, to be located in an industrial zone, or to have a bank loan.

The NTM and energy data are only observable at the product or industry level and consequently do not allow us to estimate directly the probability that a firm reports protection from NTMs or energy subsidies depending on the intensity of political connections in the sector. In contrast, the WBES contains firm-level data on access to land, credit, or permits, allowing us to estimate probit regressions of the form:

$$Pol_{ij} = \beta_C \, connected_j + \beta_x X_{ij} + \beta_s S + \varepsilon_{ij} \tag{2}$$

These firm-level probit regressions assess whether the probability that a WBES firm reports access increases when it is operating in a 4-digit sector with a higher intensity of political connections (i.e., containing more politically connected firms). The dependent policy variable Pol_{ij} is a dummy variable for firm i in the 4-digit sector j. It equals 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; and zero otherwise. The variable *connected* measures the number of politically connected firms by type in the 4-digit sector j (we assume that the intensity of connections rises with the number of connected firms in a sector). X_{ij} is a matrix of the firm level control variables (firm size and age), and S is a matrix of 2-digit sector dummies. All estimations include standard errors clustered at the 4-digit sector level to account for shocks common to firms in 4-digit sectors.

Thus, (2) tests if, within the same 2-digit sector, WBES respondents in 4-digit industries with more political connections report greater access to government land, industrial zones and credit than those in related 4-digit industries without connections. Overall, we observe about 80 4-digit sub-sectors in 23 2-digit manufacturing sectors with available information on the policy variables.

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

	Acquired Land from Government			Located in Industrial City			Obtained Bank Loan		
	CEO	Owner	Broad	CEO	Owner	Broad	CEO	Owner	Broad
No. of PC firms	-0.007	.021*	.021**	0.068	.041**	.044**	.139*	.032**	.031**
	(-0.11)	(1.87)	(2.11)	(1.07)	(3.46)	(4.06)	(1.90)	(2.53)	(2.77)
ln(empl)	.337**	.338**	.337**	.269**	.271**	.270**	.195**	.197**	.196**
	(17.7)	(17.4)	(17.7)	(14.8)	(14.8)	(14.8)	(10.5)	(10.6)	(10.6)
Age	-.019**	-.018**	-.018**	-.034**	-.034**	-.034**	-.005**	-.005**	-.005**
	(-9.17)	(-9.16)	(-9.17)	(-11.3)	(-11.2)	(-11.2)	(-2.84)	(-2.84)	(-2.86)
No. of firms	3,015	3,015	3,015	3,009	3,009	3,009	3,003	3,003	3,003
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.193	0.194	0.194	0.187	0.190	0.192	0.070	0.071	0.071

Source: World Bank Enterprise Survey (WBES) data for Egypt 2004-2008 and sample of politically connected firms. Note: Number of politically connected firms (with connected CEO, owner, or any type) is the number, in our database, in each 4-digit sector. The number of employees (size) and firm age vary at the firm level. All regressions include 2-digit sector dummies. *, ** indicates significance at the 10%, 5% level, t-statistics are reported in parentheses.

The results parallel the NTM and subsidy findings. Table 7 shows that firms in politically-connected sectors are more likely to report that they acquired land from the government; are located in an industrial zone; and obtained a bank loan. The results are robust to controlling for 2-digit sector-specific effects, firm size, and firm age. The specification is conservative, since controlling for firm size biases the impact of political connections downwards: connected firms are significantly larger than the unconnected firms in our sample and Table 7 shows that large firms are more likely to have access to land, industrial zones, and bank loans.[38]

These effects are also economically significant. For example, the second column indicates that with each additional politically connected firm owner in the 4-digit sector, the probability of obtaining land from the government increases by 2.1 percentage points. Thus, assuming linearity, firms in sectors with 5 crony firm owners are 10.5 percentage points more likely to have obtained

_____

[38] The size and precision of the estimated coefficients increases if we drop firm size from the control variables (the coefficients are significant in five out of six cases). The results are available upon request. The estimated coefficients also increase if we drop the 2-digit sector dummies.

land from the government than firms in sectors without crony firm owners. Similarly, firms in sectors with 5 crony firm owners are 20.5 percentage points more likely to be located in an industrial zone and firms in sectors with five crony CEOs are 60 percentage points more likely to have obtained a bank loan than firms in sectors without crony CEOs.

Do connected firms disproportionately benefit from the enforcement of rules?

Politically connected firms also used their connections to reduce their regulatory burden and the threat of predatory behavior by government officials relative to the burden and threats faced by their competitors. Abundant anecdotal evidence indicates that politically connected firms in Egypt have exclusive access to licenses or fast-track regulatory services. For instance, after the regime change in 2011, the former Minister of Tourism was sentenced to prison for handing out tourism licenses illegally to connected businessmen. More systematic evidence from WBES data further supports this conclusion.

The WBES data report how long firms needed to obtain construction permits. Following Hallward-Driemeier et al. (2010), our focus is on within-industry variations in firm reports of the regulatory environment. If connected firms experience a lower regulatory burden than all other firms, including other firms in their sector, then the distribution of waiting times in connected sectors should be greater than in unconnected sectors. For instance, crony firms are expected to report lower waiting times to obtain permits than firms in other sectors, while non-crony firms that compete with cronies in the same sector should have the same or longer waiting times than firms in other sectors; that is, their waiting time can even be longer if connected businessmen use their influence to discriminate against their direct competitors. The (coefficient of) variation in regulatory responses within sector should therefore be greater in those sectors with more connected firms.[39]

We use two policy implementation indicators from the WBES as dependent variables. The first is firm responses to the question, *"What was the actual wait duration (from the day you applied to the day you received the service or approval)?"* The second is the coefficient of variation, within the 4-digit sector, of responses to this variable.[40] Table A3 in the Appendix summarizes the descriptive statistics

---

[39] 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.

[40] The WBES contains additional variables on government service delivery such as waiting time for an operating license or customs clearance. The number of firms (and 4-digit industries) that report these services is, however, significantly smaller in our sample. For example, fewer firms export (and thus use customs services) or applied for a new operating license in the years of the survey. We find for all of these variables that the (coefficient of) variation of government services within 4-digit industries increases when politically connected firms operate in these industries. The

among manufacturing sectors with at least one politically connected firm and all other sectors (with zero connected firms). It shows that firms in connected sectors wait, on average, 86 days less for their construction permit (broadest definition of connections). At the same time, the (coefficient of) variation is significantly larger in connected sectors, pointing to the fact that some firms in connected sectors have access to fast-track regulatory services while the other firms in the same sector have not.

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**
No. of PC firms	-40.9**	-6.00**	-6.13**	.193**	.037**	.038**
	(-2.80)	(-2.81)	(-3.07)	(2.65)	(2.36)	(2.34)
ln(empl)	3.11	2.77	2.94	0.001	0.001	0.001
	(0.83)	(0.74)	(0.79)	(1.03)	(1.31)	(1.10)
Age	1.52**	1.56**	1.70**	-0.013	-0.014	-0.014
	(3.03)	(3.12)	(3.13)	(-0.97)	(-1.06)	(-1.04)
No. of obs	986	986	986	63	63	63
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.081	0.076	0.077	0.466	0.468	0.487

Source: WBES data for Egypt 2004-2008 and sample of politically connected firms. Note: PC indicates the number of politically connected firms (with connected CEO, owner, or any type) varying at the 4-digit sector level. The number of employees (size) and firm age vary at the firm level. All firm level regressions include 2-digit sector dummies. *, ** indicates significance at the 10%, 5% level, t-statistics are reported in parentheses.

We also estimate the probit specification given by equation (2) to test for this pattern more systematically. The results are summarized in Table 8. Firms in connected sectors report lower waiting times for construction permits (columns 2-4) consistent with the argument that connected firms are able to access fast-track regulatory services; the results are significant in all specifications. For instance, for the most conservative measure of political connections, each additional firm with a politically connected CEO in a sector reduces waiting time by 41 days (column two). In addition, columns 5-7 show that sectors with more politically connected firms exhibit a significantly higher coefficient of variation in the waiting days for construction permits. The findings are consistent with

---

corresponding coefficients are typically significant when we do not include 2-digit sector dummies. The significance levels typically drop when we additionally include 2-digit sector dummies, simply because, with fewer firms exposed to these regulations, the estimates are necessarily noisier. The results are available from the authors upon request.

the argument that connected firms are able to access fast-track regulatory services while other firms in the same sector have to wait significantly longer for permits.

In sum, substantial evidence indicates that sectors with connected firms enjoyed significant privileges compared to other sectors. Moreover, these privileges could be selectively granted, benefiting connected firms, but not other firms in their sectors. This is key, since we argue that privileges account for the cost advantages of connected firms relative to other firms in their sectors. For example, the state limited entry, including the construction of additional factories, into several industries benefiting from policy privileges. The investment law in Egypt, implemented by the General Authority for Investment (GAFI), regulates entry into the cement and steel sectors, which benefit heavily from energy subsidies and other policy privileges. It requires specific government authorizations that have only been granted to a few (connected) firms. Connected businessmen had a significant presence in the authorizing ministries. Some NTMs also require explicit licenses to import specific intermediate goods from foreign manufacturers (e.g., in the automobile industry). Entry into tourism required acquisition of land or permits to build from government authorities. Altogether, the regulatory and licensing environment in Egypt presents a compelling picture of barriers to entry for unconnected firms seeking to share the cost advantages of connected firms.

8. Connected firms are larger and more profitable

If, consistent with the Aghion, et al. (2003) framework, political connections slow aggregate growth by driving a cost wedge between leading and trailing firms, politically connected firms should earn higher profits than unconnected firms. Connected firms should be able to accumulate larger market shares and therefore exhibit greater employment and revenues. In addition, protected from entry by competitors, the profits of connected firms should be larger. The evidence is consistent with each of these.

This comparison requires that we observe the political connections of individual firms and firms' accounting data including profits, etc. in the same firm level database. Only the Orbis database permits these comparisons. The database has employment data for about 20,000 establishments in Egypt. On average, the 385 connected firms have 1,034 employees (broadest definition) compared to 254 employees among the remaining establishments. Orbis consolidated revenue data, available for 678 firms, reveals that 65 connected firms with revenue data had revenues of $177 million, on average, four times higher than the 613 unconnected firms between 2003 and 2010. Consolidated profits data are available only for 288 firms. Of these, the 48

connected firms had average net profits that were *6 times* higher than the profits of the other 240 firms.

Table 9 presents the results of a more rigorous comparison of the size and profitability of connected and unconnected firms. The cells report the coefficients and *t*-statistics from an OLS regression of the performance variables (e.g., ln(revenues)) on a dummy variable that is equal to 1 for the different types of political connections and 0 otherwise. We demean the performance differences for the 1- and 2-digit sector level, respectively.
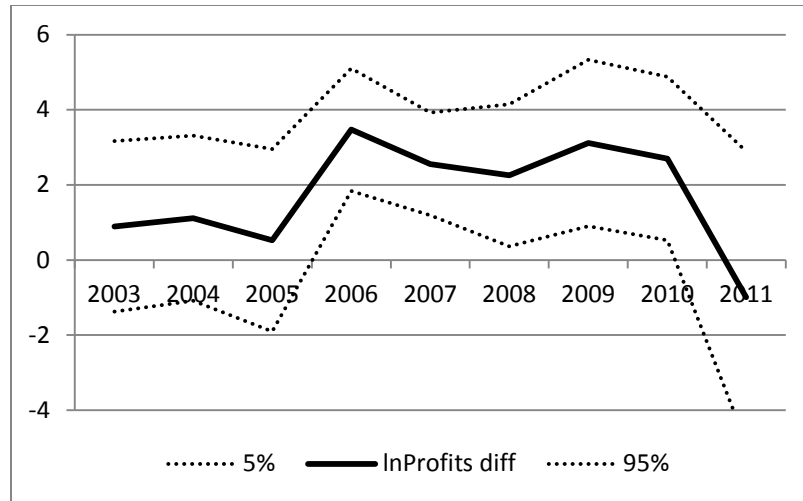
Table 9: Simple within-sector differences, politically connected and other firms

	ln(Revenues) PC vs. other establishments		ln(Assets) PC vs. other establishments		ln(Profits / Rev) PC vs. other establishments		ln(Profits / Assets) PC vs. other establishments	
	Within 1-digit sector	2-digit	1-digit	2-digit	1-digit	2-digit	1-digit	2-digit
PC Broad	1.56**	1.64*	1.68**	1.37**	2.10**	2.12**	1.42*	1.60**
	(5.92)	(6.32)	(7.61)	(6.38)	(3.03)	(3.15)	(1.80)	(2.00)
PC Owner	1.60**	1.63**	2.03**	1.57**	1.74*	1.51	1.17	.900
	(3.94)	(4.23)	(7.22)	(5.66)	(1.86)	(1.62)	(1.16)	(0.86)
PC CEO	1.22	1.45*	2.66**	2.44**	3.27**	3.71**	.432	.269
	(1.40)	(1.66)	(6.91)	(6.18)	(4.56)	(3.71)	(0.33)	(0.21)
No. establish-ments	678	678	733	733	283	283	253	253

Source: Orbis establishment database. Note: The establishment data are pooled across years (2003-2011). The cells report the coefficients and *t*-statistics on the different types of political connection dummy variables from an OLS regression of the performance variable (e.g., ln(revenues)) on the dummy variable, which is equal to 1 for politically connected establishments and 0 otherwise. We demean the performance differences with the 1- and 2-digit sector averages, respectively. *, ** indicates that the coefficients are significant at the 5%, 10% level.

Along each performance dimension, the differences between politically connected and unconnected firms are typically large in magnitude and statistically significant. Connected firms are significantly larger in terms of revenue or assets. Connected firms earn higher profits on the revenues that they book. Moreover, for the most comprehensive category of connected firms, connected firms are more profitable (*ln*(profits/assets)), even restricting the comparison to connected and unconnected firms operating within the same 2-digit sectors, and despite the fact that one of the advantages of connected firms is likely to be lower cost access to capital and, therefore, assets.

Figure 3: The evolution of net profit differentials between connected and other firms

The data show that the profit advantage of connected firms varied with the strength of the Mubarak regime, consistent with the argument that connected firms were more profitable because of their connections, rather than some unobserved features of their entrepreneurial skill or products. Figure 3 illustrates this variation. It compares the profits of firms with political connections (broadest definition) relative to other (large) firms in the Orbis data and shows that the difference between the two was systematically related to the survival of the regime. The profits differential between connected and unconnected firms was large and significant between 2005 and 2010, but disappeared after the fall of the Mubarak regime on February 11, 2011 (the picture looks almost exactly the same if we look instead at profits/assets instead of profits).

9. Privileges account for the profits of connected firms

The entry of connected firms into unconnected sectors slows employment growth and skews the distribution of firm size. The analysis in Aghion, et al. (2003) points to one explanation for these findings: connected firms enjoy government privileges that drive a cost wedge between them and trailing firms in their sectors, reducing incentives to innovate. Consistent with this framework, connected firms are more likely to be in sectors that enjoy government privileges. They are also more profitable. In this section, we provide evidence for the final link in the causal chain:

the privileges that connected firms enjoy account for their higher profits. That is, connected firms are more profitable to the extent that they benefit from government policy privileges.

Specifically, two of the privileges enjoyed by connected firms, protection from import competition and energy subsidies, account for their higher profitability, just as they should if these firms exhibit large and exogenous cost advantages. To see this, we use the following specification to 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.

$$Y_{ist} = \beta_B \, connected_{ist} + \beta_R \, Regulation_{st} + \beta_{BR} \, connected_{ist} * Regulation_{st} + \beta_X \, lnX_{ist} + \beta_t \, T + \varepsilon_{ist} \tag{3}$$

Y_{ist} is the profitability (log of profits per assets) 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 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, and T is a matrix of year dummies. A key control variable is the log of assets, allowing us to exclude the possibility that differences in the profitability of connected firms are related to the fact that regulatory privileges influence both the size (in assets) and profits of these firms.

The analysis is based on Orbis firm survey data; this is the only database that allows us to identify individual connected firms and firms' accounting data. Profit and assets data are available for 253 larger manufacturing firms of which 48 are politically connected by any type; our analysis is therefore focused on these 253 firms.[41]

Table 10 shows that politically connected firms are significantly more profitable than unconnected firms after controlling for firm age and firm size, when we use the most comprehensive definition of political connections (column 1);[42] the profit differential is not

---

[41] We use ln(assets) instead of ln(employment to measure firm size since many of the firms that report profit data do not report their (consolidated) number of employees in Orbis. Thus, we only observe employment and profits jointly for eleven politically connected manufacturing firms and 40 firms overall.

[42] Note that, in contrast to table 9, we also control for firm size and age so that the coefficient differ.

significant once we control for firm size and age in case of the more narrow ownership definition (column 6).[43] If all connected firms were more profitable and their higher profits were attributable to the fact that they primarily operate in industries protected by NTMs, we would expect the addition of the NTM variable to reduce the magnitude and significance of the political connection dummy in the profitability regressions. The second and seventh columns indicate that this is not the case. Instead, politically connected firms are more profitable because they disproportionally benefit from NTM-protection relative to other firms operating in the same industry: column three indicates that the interaction of NTMs and politically connected firms across 4-digit industries accounts for the entire profitability differential. That is, politically connected firms (broad and owner) are significantly more profitable than unconnected firms if their products are protected from import competition, but not otherwise.[44] The results also suggest that the room for discretion to enforce non-technical import barriers, such as import licenses, quality controls, or traceability requirements, to protect individual products from foreign competition disproportionally benefitted politically connected firms while unconnected firms operating in the same industry did not necessarily benefit (to the same extent); this is consistent with the fact that connected businessmen had a significant presence in the authorizing ministries. Trade protection in Egypt was thus firm- and not sector-specific.

Results are similar when we account for the joint distribution of political connections and energy subsidies in high energy intensive industries. Connected manufacturing firms in high energy-intensive industries are 3.2 or 2.4 times more profitable than unconnected firms in the same industries, using the broad and owner definitions of connectedness, respectively. This result again suggests that politically connected firms benefitted disproportionally from energy subsidies, and reflects the success with which requirements for government authorization to enter or expand in these sectors (e.g., cement and steel) ensured that access to the subsidies went only to a few (connected) firms. The results reflect that many politically connected manufacturing firms are in

---

[43] Note that all of the 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.

[44] As in the literature more generally, not all politically connected firms in Egypt exhibit a higher return on assets (higher ln(profits/assets). Those that are not could be those where the government has extracted more costly favors in exchange for political privilege. This is an especially plausible interpretation in light of the fact that the same connected businessman often own multiple firms. They can more than offset the costs of favors in one of their enterprises with the privileges in others.

high energy intensive sectors and also sell products protected by non-technical import barriers (NTMs) – they benefit from both privileges, subsidies and trade protection.

Table 10: NTMs and energy subsidies account for the higher profitability of connected firms

Dependent Variable:	ln(Profits/Assets)									
PC broad firms	1.55**	1.57**	-1.72	1.53**	.581					
	(2.71)	(2.74)	(-0.92)	(2.54)	(0.76)					
PC owner firms						.845	.856	-3.65	.764	-.186
						(0.99)	(1.01)	(-1.58)	(0.87)	(-0.15)
NTMs		.090	.024				.076	.007		
		(0.37)	(0.10)				(0.32)	(0.03)		
PC broad * NTMs			.922**							
			(2.02)							
PC own * NTMs								1.25***		
								(2.40)		
High energy				.095	-1.31				.395	-.331
				(0.21)	(-1.52)				(0.85)	(-0.44)
PC broad * High energy					3.21***					
					(2.66)					
PC own * High energy										2.43*
										(1.82)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Size: ln(assets)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of firms	253	253	253	253	253	253	253	253	253	253
R2	0.080	0.080	0.085	0.080	0.093	0.069	0.069	0.076	0.070	0.076

Source: Orbis database, yearly panel 2003-2011 and list of politically connected firms. Note: All regressions control for firm age, firm size, and time dummies. PC broad refers to firms that meet any definition of connectedness. PC owner refers to firms whose owners are politically connected. 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.

We thus find that policy privileges in Egypt are firm- and not sector-specific. Overall, this form of crony capitalism has reduced competition and, consequently, investments by the majority of firms in Egypt (which are unconnected), leading to lower aggregate growth in sectors with otherwise good growth opportunities.

10. Conclusions

The evidence presented here, showing that cronyism has not only distributional consequences, but also suppresses employment growth, contributes to a deeper understanding of the economic consequences of cronyism. It also sheds light on why cronyism has had significant political consequences in countries ranging from Indonesia to Tunisia. In 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 provide support for this hypothesis with data from Egypt.

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. For instance, we would like to better evaluate the impact of political connections on unconnected sectors: did connected sectors weaken forward and backward linkages with unconnected firms, thereby exacerbating negative effects on aggregate growth (Jones, 2011)?

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 nor in Tunisia (Rijkers et al, 2014). Industrial policies, often viewed as an essential element of a strategy to diversify Middle East economies in the face of the over-valuation of exchange rates caused by oil and remittances revenues, may have perverse effects 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 one 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.

References

Acemoglu, Daron, Tarek Hassan and Ahmed Tahoun (2014). "The Power of the Street Evidence from Egypt's Arab Spring." NBER Working Paper No. 20665.

Aghion, P., Blundell, R., Griffith, R., Howitt, P., & Prantl, S. (2009). "The effects of entry on incumbent innovation and productivity." *The Review of Economics and Statistics* 91(1): 20-32.

Aghion, Philippe, et al. (2001) "Competition, imitation and growth with step-by-step innovation." *The Review of Economic Studies* 68(3): 467-492.

Ahram Online. Various issues. http://english.ahram.org.eg.

Alley, April Longley (2010). "The Rules of the Game: Unpacking Patronage Politics in Yemen." *Middle East Journal* 64(3):385-409.

Boubakri, N., Cosset, J.C., Saffar, W. (2008). "Politically connected firms: an international event study." Unpublished working paper. HEC Montreal.

Bertrand, M., Kramaraz, F., Schoar, A., Thesmar, D. (2007). "Politicians, firms and the political business cycle: evidence from France." Unpublished working paper, University of Chicago.

Chekir, Hamouda, and Ishac Diwan (2015). "Crony Capitalism in Egypt." *Journal of Globalization and Development*. ISSN (Online) 1948-1837.

Chekir, Hamouda and Claude Menard (2012). "Barriers to Private Firm Dynamism in Tunisia: a Qualitative Approach." World Bank mimeo, 2012.

Cull, Robert, and Lixin Colin Xu (2005). "Institutions, ownership, and finance: the determinants of profit reinvestment among Chinese firms." *Journal of Financial Economics* 77(1): 117-146.

Demmelhuber, T. and S. Roll (2007). "Maintenance of Domination in Egypt: The Role of Reforms and Economic Oligarchs." Stiftung Wissenschaft und Politik (SWP), Deutsches Institut für Internationale Politik und Sicherheit.

Earle, John S. and Scott Gehlbach (forthcoming). "The Productivity Consequences of Political Turnover: Firm-Level Evidence from Ukraine's Orange Revolution." *American Journal of Political Science*.

Faccio, M. (2010). "Differences between Politically Connected and Nonconnected Firms: A Cross-

Country Analysis." *Financial Management* 39, 905-928.

Faccio, M. (2007). "Politically connected firms." *American Economic Review* 96:369-386.

Faccio, M., R. Masulis and J.J. McConnell (2006). "Political connections and corporate bailouts." *Journal of Finance* 61: 2597-2635.

Ferguson, T. and H.-J. Voth (2008). "Betting on Hitler – The Value of Political Connections in Nazi Germany." *Quarterly Journal of Economics* 123: 101-137.

Fisman, Raymond (2001). "Estimating the Value of Political Connections." *American Economic Review* 91: 1095-1102.

Fisman, Raymond and Yongxiang Wang (2013). "The mortality cost of political connections." Working Paper, Columbia University.

Goldman, E., J. Rocholl, and J. So (2008). "Political Connections and the Allocation of Procurement Contracts." Indiana University Working Paper.

Haber, Stephen and Noel Maurer (2007). "Related Lending and Economic Performance: Evidence from Mexico." *The Journal of Economic History* 67: 551-581.

Haddad, Bassam (2012). *Business Networks in Syria: The Political Economy of Authoritarian Resilience.* Stanford, CA: Stanford University Press.

Hallward-Driemeier, Mary, Gita Khun-Jush, and Lant Pritchett (2010). "Deals versus Rules: Policy Implementation Uncertainty and Why Firms Hate It." National Bureau of Economic Research,. w16001.

Henry, Clement Moore, and Robert Springborg (2010). *Globalization and the Politics of Development in the Middle East.* Vol. 1. Cambridge: Cambridge University Press.

Herrendorf, Rogerson and Valentinyi (2014): "Growth and Structural Transformation", Handbook of Economic Growth, volume 2, Chapter 6, 855-941.

Heydemann, S., ed. (2014). *Networks of Privilege: Rethinking the Politics of Economic Reform in the Middle East.* New York: Palgrave Macmillan.

Hussain, Sahar and Marc Schiffbauer (2015). "Firm dynamics and job creation in Egypt." World Bank, mimeo.

Imam, Patrick A., and Davina F. Jacobs (2007). "Effect of Corruption on Tax Revenues in the

Middle East." IMF Working Paper 07/270. Washington, D.C.: International Monetary Fund.

Johnson, S., Mitton, T. (2003). "Cronyism and capital controls: evidence from Malaysia." *Journal of Financial Economics* 67: 351-382.

Jones, Charles I. (2011). "Intermediate goods and weak links in the theory of economic development." *American Economic Journal: Macroeconomics*, 3:1-28.

Kienle, Eberhard (2004). "Reconciling Privilege and Reform." In *Networks of Privilege: Rethinking the Politics of Economic Reform in the Middle East*, edited by S. Heydemann. New York: Palgrave Macmillan. 281-96.

Khwaja, A.I., Mian, A. (2005). "Do lenders favor politically connected firms? Rent provision in an emerging financial market." *Quarterly Journal of Economics* 120, 1371-1411.

King, Stephen Juan (2009). *The new authoritarianism in the Middle East and North Africa*. Bloomington: Indiana University Press.

Kroszner, R.S. and T. Stratmann, 1998. "Interest Group Competition and the Organization of Congress: Theory and Evidence from Financial Services' Political Action Committees." *American Economic Review* 88: 1163-1188.

Leuz, C., Oberholzer-Gee, F. (2006). "Political relationships, global financing, and corporate transparency: evidence from Indonesia." *Journal of Financial Economics* 81: 411-439.

Loewe, Markus (2013). "Industrial Policy in Egypt 2004-2011." DIE Discussion Paper 13/2013, Deutsches Institut fuer Entwicklungspolitik, Bonn.

Malouche, Mariem, José-Daniel Reyes, and Amir Fouad (2013). "New Database of Nontariff Measures Makes Trade Policy More Transparent." World Bank, mimeo.

Owen, Roger (2004). *State, power and politics in the making of the modern Middle East*. Routledge.

Ramalho, Rita. (2003). "The Effects of Anti-Corruption Campaign: Evidence from the 1992 Presidential Impeachment in Brazil." M.I.T. Working Paper.

Rijkers, Bob, Caroline Freund, and Antonio Nucifora (2014). "The Perils of Industrial Policy: Evidence from Tunisia." mimeo, the World Bank.

Roberts, B.E. (1990). "A Dead Senator Tells No Lies: Seniority and the Distribution of Federal Benefits." *American Journal of Political Science* 34: 31-58.

Roll, Steven (2010). "Finance Matters!" The Influence of Financial Sector Reforms on the Development of the Entrepreneurial Elite in Egypt." *Mediterranean Politics* 15:349-370.

Sfakianakis, John (2004). "The Whales of the Nile: Networks, Businessmen and Bureaucrats during the Era of Privatization in Egypt." In *Networks of Privilege: Rethinking the Politics of Economic Reform in the Middle East*, edited by S. Heydemann. New York: Palgrave Macmillan.

Tlemcani, Rachid (1999). *Etat, Bazar, et Globalisation: L'Aventure de l'Infitah en Algerie.* Algiers: Les Editions El Hikma.

UNIDO (2010). "Compilation of Energy Statistics for Economic Analysis." Development Policy and Strategic Research Branch Working Paper 01/2010, UNIDO, Vienna.

Vivarelli, M. (2012). "Innovation, Employment and Skills in Advanced and Developing Countries: A Survey of the Literature." IZA Discussion Paper Series 6291, Institute for the Study of Labour (IZA), Bonn.

World Bank (2009). *From Privilege to Competition: Unlocking Private-Led Growth in the Middle East and North Africa.* Washington, D.C.: World Bank.

World Bank (2014). *Jobs or Privileges: Unleashing the employment potential of the Middle East and North Africa.* Washington, DC: World Bank.

Appendix

Table A1: Number of politically connected firms by economic sectors

	Politically connected CEO	Politically connected Owner	Politically connected Broad
Mining	0	2	8
Manufacturing	18	125	159
Food & beverages	1	16	22
Textiles & clothing	3	14	22
Chemicals	0	10	13
Pharmaceuticals	0	2	6
Base metals	5	16	17
Machinery & transport	4	18	22
Other manufacturing	5	49	57
Utilities	0	10	10
Construction	8	29	32
Services	38	265	304
Wholesale trade	8	65	75
Retail trade	0	18	19
Transport	0	9	10
Hotels & restaurants	7	35	37
Finance	11	38	49
Real estate	4	18	23
Business services	7	75	81
Travel & tour operators	1	7	10

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

Table A2: UN classification of energy-intensive manufacturing sectors

Intensity of Energy Consumption	Industry
High	Manufacture of textiles, Paper and paper products, Coke and refined petroleum products, Chemical products, Non-metallic mineral products, Manufacture of basic metals
Moderate	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	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.

Source: UNIDO (2010).

Table A3: Descriptive statistics WBES 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
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%
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

Source: WBES.

Table A4: Entry of politically connected firms into initially unconnected sectors, 1997-2006

ISIC Rev. 3.1 4-digit	Sector name 4-digit	No. owner-connected entrants (27 total)	No. broad-connected entrants (35 total)
1410	Quarrying of stone, sand & clay	1	1
1429	Other mining & quarrying n.e.c.	1	1
1551	Distilling, rectifying, blending of spirits	1	1
1553	Manufacture of malt liquors & malt	0	1
1554	Manufacture of soft drinks & mineral water	0	1
2412	Manufacture of fertilizers	4	4
2720	Manufacture of basic precious metals	1	1
3140	Manufacture of primary cells & batteries	1	1
3230	Manufacture of television & radio receivers	2	2
3691	Manufacture of jewellery & related articles	1	1
3710	Recycling of metal waste and scrap	1	1
3720	Recycling of non-metal waste and scrap	1	1
4010	Electricity production, transmission & distribution	1	3
4100	Collection, purification & distribution of water	0	1
5131	Wholesale of textiles, clothing & footwear	1	1
5141	Wholesale of solid, liquid & gaseous fuels	2	2
5152	Wholesale of electronic & telecommunications parts	1	2
5211	Retail sale in non-specialized stores with food	2	2
6601	Life insurance	1	1
7111	Renting of land transport equipment	1	1
7411	Legal activities	1	1
7430	Advertising	1	1
7512	Regulation of agencies providing health, education	1	1
9000	Sewage & refuse disposal, sanitation	1	1
9211	Motion picture and video production & distribution	0	1
9231	Library & archives activities	0	1