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ARE POLITICALLY CONNECTED FIRMS
TURTLES OR GAZELLES? EVIDENCE FROM
THE EGYPTIAN UPRISING

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ARE POLITICALLY CONNECTED FIRMS TURTLES OR GAZELLES? EVIDENCE FROM THE EGYPTIAN UPRISING[1]

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Abstract

Using an original firm-level database and utilizing the incidence of the Egyptian uprising of 2011, this paper provides an empirical investigation of the effects of firms political connections on employment growth in Egypt. Our unique dataset covers 4008 firms between 2004-2016, of which we were able to identify 735 politically connected firms. We set-up a quasi-natural experiment environment to explore how job creation responds to negative shocks to political connections. We use the differences in differences (DiD) framework to compare employment growth in both politically connected firms (PCFs) and their unconnected counterparts before and after the Egyptian uprising. To minimize possible bias in the DiD estimation due to dealing with a heterogeneous group of firms, we apply the propensity score matching (PSM). In addition, we estimate the quantile DiD at different points in the distribution. We find that connected firms before the shock decreased their job creation after the uprising. This implies that employment growth in PCFs has declined after receiving a negative political shock.

Keywords: Political Connections, Job Creation, Egypt, Arab Spring

JEL Classifications: D72, E24, J21

1. Introduction

Unemployment, especially among youths, has been and continues to be a critical structural problem for most of the Arab countries even before recent uprisings and political turmoil. This was evident during the period of economic reforms and recovery (the 2000s). Through 2002-2008, many MENA countries such as Egypt, Tunisia, Iran, Lebanon, Jordan, Libya and Yemen; achieved very respectable GDP growth rates (more than 5% on average). However, the overall unemployment rates were still over 10% and much higher among the young educated population (over 25%). It is important to mention that employment growth depends not only on output growth but also on the elasticity of employment with respect to output, that is, the employment intensity of such growth. What happened in the Arab countries during the 2000s is a production increase or *growth of output* but without generating *sustained growth of employment*. As a result, the high unemployment rates have persisted and have excluded large segments of the population from sharing the fruits of growth, and this major dilemma remains one of the chief factors in the political instability of the region until now.

Egypt being the most populated Arab country, and the most diversified economy, has a special position and a distinct status in the region. The common saying there "As Egypt goes, so the rest of the Arab countries". Thus, studying the Egyptian case will have many implications on most of the region.

Promoting the private sector as the major employment creator was and still is the premier policy implication by all international organizations and multi-lateral financial institutions. However, the Egyptian government attempt to rely on the private sector to create enough jobs does not seem to be productive or fruitful to date. The usual explanation for this failure is the nature of the private sector and the type of crony capitalism that exists in the country. Thus, this paper attempts to highlight job growth within 'politically connected' firms (PCFs) in Egypt.

Recent research on demand for labour has identified the employment creation role of a handful of fast-growing and young firms. In this literature, 'gazelles' are identified as

firms with high growth rates and increasing contribution to employment creation, while 'turtle' firms are those of sluggish growth and little or no contribution to job creation [1].

Also, a recent but growing strand of literature on political connections of the private sector has identified many benefits that accrue to politically connected firms. Moreover, one of the unanswered claim identifies politically connected firms as 'gazelles'. Thus, building on this new body of research, a different set of questions are asked in this study: Do politically connected firms create more jobs compared to their unconnected counterparts? Are politically connected firms turtles or gazelles? Sahnoun et al. (2014) report that gazelle firms mainly create jobs in MENA region. In this study, we focus on politically connected firms and whether or not they contribute to employment growth in Egypt.

This study addresses the knowledge gap by focusing on how job creation in politically connected firms responds to shocks to political connections. To do so, we measure the impact of political connections on employment growth using the differences-in-differences (DiD) framework. To minimise possible bias in the DiD estimation due to dealing with a heterogeneous group of firms, we apply the propensity score matching (PSM). In addition, we estimate the quantile DiD at different points in the distribution seeking more insights into the effects of the Arab Spring on employment growth through the political connections channel.

Our main findings show that political connections seem to contribute to employment growth in Egypt. PCFs tend to contribute more to job creation when compared with unconnected firms. Moreover, employment growth has fallen in PCFs because of the Egyptian uprising of 2011. Politically connected firms responded to the negative political shock to their connections (i.e., the Arab Spring and fall of Mubarak's regime) by reducing job creation. Finally, our quantile DiD estimations show that these results are driven mainly by larger firms (in terms of the size of their full-time workers).

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[1]See Henrekson and Johansson (2010), and the World Bank (2011*a,b*, 2014*a,b*)

The remainder of this paper is organized as follows. Section 2 provides a brief overview of relevant literature on both the PCFs and the gazelles concept. Section 3 presents the dataset and methodology. The empirical results are summarised in section 4. Section 5 provides a number of robustness checks. Section 6 provides a summary and conclusions while the last section 7 proposes an agenda for future research.

2. Literature Review

The desire of some firms to seek rents through receiving preferential treatment by governments (pay no or lower tax rates, receive special treatment in competition for government contracts, face relaxed regulatory oversight or have their rivals suffer from stiffer regulatory oversight) has pushed many firms world-wide to seek political connections. In the MENA region, the situation is worse due to the absence of "conflict of interests laws" in most countries. Parliamentarians, Ministers, and sometime Presidents, their families and close friends are controlling a big chunk of the country's private sector. Monopolizing specific sector by a politically connected firm and blurring the line between public and private ownerships is rather a common phenomenon in these countries and Egypt is no exception.

There is a wide range of literature on corruption, politically connected firms, and corporate unethical behaviour. Here we summarize a couple of the recent leading work to give examples. First and more of a leading survey is Graf and Schulze (2015) where they indicated that "Corruption research has been centered on three fundamental questions: What determines corruption? What effects does corruption have? And finally, what can we do to reduce corruption effectively and efficiently?" For, recent surveys of the massive works of corruption, the study referred to Aidt (2003), Svensson (2005), Lambsdorff (2007), Pande (2007), Olken and Pande (2012), and Kis-Katos and Schulze (2013).

Second, and on the applied side, Faccio et al. (2006) examined 47 countries worldwide and showed a widespread overlap of controlling shareholders and top officers who are connected with national parliaments or governments in 35 countries in the sample. They concluded that connections are diminished when regulations set more limits on official

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behaviour. Additionally, they also, indicated that an announcement of a new political connection results in a significant increase in value.

With respect to the concept of job growth, we will review here the concept of a fast-growing firm that is characterized by impressive job creation and positive impact on employment (Gazelles). The use of the term 'gazelles' to describe fast growing young firms that drive job growth in the private sector was coined by Birch (1979) who suggested that a major share of new jobs is created in highly inventive small and medium enterprises (SMEs). By empirically testing this hypothesis for the US, Birch et al. (1997) concluded that, on average, two thirds of all jobs are created by SMEs. Their results were also confirmed in many studies for Europe, see for example Kirchhoff (1994); Siebert et al. (1999); OECD (1998); Schreyer (2000). These studies indicate that the percentage of gazelle firms in Europe varies between 2% and 15%, depending on the study.

However, these studies have received little attention (and even critique[2]) until it was revived by several studies in organizational literature over the past decade. One of the earliest examples of such revival is the study by Janczak and Bares (2010) which starts off by criticizing the lack of attention in business organization literature to high growth firms (as opposed for example to large firms). Their study examines the growth dynamics of 12 gazelle companies in France. They identify the variables that determine the emergence and growth of gazelles. Most notably, they found that gazelles are characterized by a high degree of responsiveness to their customers' needs, clear operating procedures, flexibility, a structured human resource management, and can efficiently utilize resources available in their locales.

A similar study by the U.S. Small Business Administration's Office of Advocacy was published in 2008, was entitled "High-Impact Firms: Gazelles", confirmed the phenomenon that a small class of firms was responsible for generating the majority of net new jobs in the USA from 1994 to 2006 (Acs et al., 2008). Henrekson and Johansson (2010) reconfirm

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[2]See for example Brown et al. (1990); Davis et al. (1996, 1998); Haltiwanger and Krizan (1999) for some of the earlier critiques of Birch's 'gazelles' idea.

earlier findings that a few rapidly growing gazelles are indeed responsible for the largest share of job creation. Moreover, using a meta-analysis of twenty studies that focus on high performing firms, they conclude that gazelles seem to be overrepresented in the services sector rather than in high-tech industries.

A recent study by Aly et al. (2017) confirm these results for the MENA region except when it comes to the firm size. The gazelles in the MENA are not necessarily small, in fact the bigger the firm in the MENA region, the more likely it is to be a gazelle. This difference could be related to the type of business environment that prevails in developing countries which tends to favour bigger firms with better resources and political connections.

We contribute to the large body of literature on employment growth, especially in the MENA region by connecting these studies to another strand of literature on business-state relationships. This growing work follows from a seminal paper by Fisman (2001) to link political connections to firms' performance as well as other economic outcomes. Faccio (2010) is an example of this literature, which shows that PCFs benefit from low taxes, strong market influence and preferable financial conditions.

Interestingly, the study of business-state relationship in the MENA region has flourished recently, especially after the eruption of the Arab Spring, see for example Barnett et al. (2013); Imam and Jacobs (2014); Lassoued and Attia (2014); Rijkers et al. (2017). Only a few studies have focused on political connections in Egypt, see Diwan and Chekir (2012); Diwan et al. (2015); Eibl and Malik (2015). None of these studies explained the effect of political connections on employment growth with Diwan et al. (2015) and Diwan et al. (2016) as the only exceptions. Diwan et al. (2015) investigate the impact of political connections under Mubarak's regime in Egypt and find that PCFs benefit from energy subsidies and trade protection. Their findings also show a negative impact of political connections on employment growth. Diwan et al. (2016) for Lebanon report that while PCFs are large firms that have positive impacts on job creation, they also have negative impacts on job creation in the unconnected firms. However, none of these studies exploit

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the incidence of the Arab uprising to quantify the impact of political connections on employment growth as we do in this study. In fact, the Egyptian uprising in 2011 and what transpired after offers a unique opportunity to contribute to the currently growing number of studies on the state-business relationship in a quasi-natural experiment as described in section 3 below.

Moreover, we also contribute to the literature defining political connections. The majority of current research follows the most widely cited paper of Faccio et al. (2006) which defines political connections based on whether a firm has at least one of its major shareholders or top management who is also a member of parliament, minister or closely related to a top politician or party. We add to Faccio et al. (2006)'s definition of political connections those private companies which were previously owned by the Egyptian government. The privatisation program in Egypt, which started in mid-1990s, never had a 'good' reputation and had been and continues to be mired in controversy until today[3]. In addition to the common belief that public assets have been sold too cheaply and under-priced, it is believed that political connections and links of buyers were key determinants of securing a 'good' deal and hence acquiring those previously owned public assets. This should not be, in fact, a surprise especially in countries that suffer high levels of corruption and weak institutions.

According to the Transparency International agency, political corruption in Egypt represents a major challenge to the country's political and economic systems. A recent report, by Wickberg (2015), shows that '*clientelistic networks*' are a key source of corruption in Egypt. In addition, the same report states that corruption can also be seen inside law enforcement agencies. Sadly enough, such high levels of political and 'institutional' corruption can, and in fact do, severely undermine the rule of law. The report even goes further and points to some recent cases of abusive trials, which places legitimate doubts on the judiciary system and how it may have become politicised.

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[3]In 1991, the government decided to privatise 314 state-owned companies. These companies had about one million employees and annual revenues equivalent to about 15% of GDP. By early 2000s, half of these companies where sold with many rumors about and signs of corrupt back-room deals. Thus, instead of signaling a serious intention from the government for economic reforms, privatisation program in Egypt had become synonymous with corruption and job losses.

Two main most notorious cases of state-owned companies which were subject to privatisation can help make our point clear and explain the severity of corruption and the importance of political connections in this context. The first case includes a public steel company which was sold to a non-famous businessman called Ahmed Ezz. Mr. Ezz, who latter became a very influential member of the Egyptian parliament and a senior leader in the ruling part then, cornered the market and had been accused of using his political power and influence to maintain monopolistic position in the Egyptian steel industry. The Egyptian government had dismissed two cases of monopolistic behaviour against Mr. Ezz. The second case, which is relatively more recent in 2006, is connected with the privatisation of a widely distributed and large chain called Omar Effendi. Although this chain of stores was crumbling due to mismanagement and other related issues, it sat on valuable real estate which was valued at more than one billion pounds. However, Omar Effendi stores were sold under-priced at nearly half of the of its real estate.

Thus, our contribution the existing literature is twofold. First, using an original dataset, we exploit the incidence of the Egyptian uprising of 2011 to build on a quasi-experimental environment to measure the short-term effects of a negative shock to firm political connections on employment. Second, we contribute to the literature defining political connection such as Faccio et al. (2006) by proposing the possibility of using a broader definition which takes into account the level of corruption usually associated with privatisation programs in developing countries such as Egypt.

3. Data and Methodology

To examine the effects of political connections on employment growth, we need a dataset that provides information on political connections as well as firm characteristics before and after the Egyptian uprising of 2011. Therefore, we compiled a detailed firm-level dataset on firms' ownership, employment and other characteristics. We also collected data on firm's top management, members of the 2010 Egyptian parliament, minsters of the Egyptian government prior the uprising and top politicians as well as members

in the ruling party under Mubarak's regime prior to the outbreak of the Egyptian uprising. To do so, we combined data retrieved from Orbis and Thomson Reuters Eikon databases with the rich World Enterprise Survey (WES) conducted and published by the World Bank. These sources contain a very rich and detailed set of information on firms' ownership, the number of full-time permanent workers for each firm along with other characteristics [4].

We use our dataset to identify whether or not a firm is politically connected, and how job creation responds to a negative shock to political connections. We follow Faccio et al. (2006) in that a firm becomes politically connected if at least one of its major shareholders or top management is a member of parliament, minister, or closely related to a top politician or party. We add to this, private firms that were publicly owned in the past as explained in section 2. Both Orbis and Thomson Reuters Eikon databases provide the information we need to identify political connection as defined by Faccio et al. (2006). More specifically, using both databases we were able to identify the firm names, top shareholders, number of full-time workers, sales, in which year a firm was established, in which sector it operates and in which geographical region it is based in Egypt. In addition, we use all available surveys for Egypt in the WES between 2004-2016, and define all private firms that were publicly owned as politically connected. By combining data from all of these sources, we build the largest unified panel data on Egyptian firms that we could have. Our dataset covers the period of 2004-2016 for 4008 firms in total, of which there are 544 firms found to be politically connected. Table 1 shows a summary statistics of our dataset [5].

To capture the possible effect of the Arab Spring on employment growth through private firms' political connections, this study employs the Difference-in-Difference (DiD) estimation. The DiD strategy compares firms that were politically connected before the

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[4]Since there is no way to identify the firm name in the WES, we appended the data from the other sources. We then dropped any possible duplicates based on firm characteristics such as number of employees, size, sector and age.

[5]By using the WES data and taking into consideration the context in which we apply this study when defining political connections, we contribute to the studies that defines political connections. As discussed earlier, we have a good reason to believe that private firms which were previously owned by the government are likely to be politically connected.

Table 1: Descriptive Statistics

Var.	Obs.	Mean	Std. Dev.	Min.	Max.
No. Full-time (log)	6350	3.7868	1.5198	0.6931	9.6803
PCF	7594	0.0968	0.2957	0.0000	1.0000
Age	5520	21.5611	16.8470	0.0000	211.0000
Revenue (log)	7594	12.1185	4.8683	0.9163	23.9421
Cairo	7594	0.2730	0.4455	0.0000	1.0000
Delta	7594	0.1323	0.3389	0.0000	1.0000
Upp. Egypt	7594	0.0498	0.2175	0.0000	1.0000
Other regions	7594	0.5449	0.4980	0.0000	1.0000

Table presents the summary statistics of the dataset. It shows descriptive statistics for the number of full time workers. PCF is a dummy variable that takes the value of one if the firm is politically connected and zero otherwise. Age is the firm's age which is the difference between the year in which data was reported and the year its was first established. Revenue (in log form) is used as the value annual total sales as a measure of the firm's size. Cairo, Delta, Upper Egypt, and Other regions are dummies of in which region a firm is based.

Egyptian uprising with those who have never been politically connected. With this purpose, it is necessary to define a treatment group composed of firms that were politically connected in 2004-2010, and a control group formed by firms that are neither politically connected in the period 2004-2010 nor in 2012-2016. The DiD estimator will capture the differential effect of the Arab Spring on employment growth in politically connected firms relative to firms in the politically unconnected group. To apply the DiD estimator all that is necessary is to calculate employment growth in both PCFs (treatment group) and non-PFCs (control group) both before and after the Egyptian uprising [6].

The simple DiD estimator compares the mean value of employment growth in PCFs and non-PCFs assuming no systematic differences in any other pre-treatment variable. Let μ_{it} is the mean of employment growth in group i in time t, where $i = 0$ if the firm

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[6]It is worth noting that strong and successful firms may attract cronies which could put our identification strategy under question. However, given the context of Egypt as explained in the paper where high levels of corruption prevail we believe that firms seek political connection to seize policy privileges which allow them to grow relatively faster. In the meantime, politically unconnected firms in Egypt have less chances of growing as fast as those that are politically connected. Our identification strategy assumes that after the fall of Mubarak and his ruling party following the 2011 uprising politically connected firms under Mubarak regime have received an exogenous and negative shock to their political connections. We understand that some of the pre-2011 connected firms may have been trying to rebuild their political connection once more, but this might take a little bit longer. Therefore, our treatment group consists of firms that were politically connected before 2011 regardless of their status after 2011. Our control group consists of firms that are not politically connected before or after 2011.

has never been politically connected (control group) and $i = 1$ if the firm was politically connected under Mubarak's regime (treatment group). Define $t = 0$ as the period before the Egyptian uprising 2004-2010 (pre-treatment period) and $t = 1$ as the period after the uprising 2012-2016 (post-treatment period). A simple DiD estimator can then be expressed as $(\mu_{11} - \mu_{10}) - (\mu_{01} - \mu_{00})$. Where the first bracket is the change in employment for PCFs before and after the uprising. While the second bracket presents the change in employment for the non-PFCs between the two periods. The DiD estimator can be obtained by estimating the following equation:

$$y_{it} = \beta_0 + \beta_1 PCF_i + \beta_2 Shock_t + \beta_3 PCF_i.Shock_t + \phi X_i + \epsilon_{it} \tag{1}$$

Where y_{it} is the number of full-time workers; PFC_i is a dummy variable that takes the value of one if the firm was politically connected in the pre-treatment period (2004-2010) and zero if the firm is not politically connected (control group); $Shock_t$ is a dummy that takes the value of one for the post-treatment period (2012-2016) and zero for the pre-treatment period (2004-2010) and $PFC_i.Shock_t$ is the interaction term of the previous dummies which is just a dummy variable that takes the value of one only for the treatment group in the post-treatment period. The DiD estimator is the OLS estimator of β_3, the coefficient of the interaction term between PFC_i and $Shock_t$. Eq. **??** can also include additional firm characteristics in order to control for observable variables that could affect employment growth. Thus, Eq. 1 includes X_{it} which can be a series of control variables related to the determinants of firms' employment growth. These determinants include the firm's size, age, sector and region.

The DiD estimator is expected to be an unbiased estimate of the change in employment due to a negative shock on politically connected firms. However, such statement is crucially conditioned on the assumption that both PCFs and non PCFs (treatment and control groups) reacted to the political shock of 2011 in the same way, except for the behaviour associated to the change in their demand for labour. This assumption may, however, fail if politically connected firms are different from politically unconnected ones on some unobservable variables (not included in X_{it}). In fact, given the substantial heterogeneity among the large number of firms included in our dataset, one should ex-

pect that both politically connected and politically unconnected firms to be systematically different. Such fact would violate the main assumption behind the DiD estimator and would thus result in a biased estimation of the effects of the Arab Spring on employment through the channel of private firms' political connections.

To tackle this issue, the current study employs the propensity score matching (PSM) technique to estimate the average treatment effect of the treated (ATT). The PSM methodology identifies the average treatment effect by comparing employment growth in politically connected firms and non politically connected firms which, a priori, have similar probabilities of being politically connected. It is worth mentioning though that by doing so, the PSM technique would help in reducing the bias generated by unobservable confounding factors, rather than eliminating it completely (Becker et al., 2002).

According to Rosenbaum and Rubin (1983), the propensity score in our context can be defined as the conditional probability of receiving a political shock (treatment) given a set of pretreatment firm characteristics (e.g., firm's size, age, sector and region), which can be presented formally as follows:

$$p(X) \equiv Pr(D = 1|X) = E(D|X) \tag{2}$$

where $D = \{0, 1\}$ is an indicator of a firm being politically connected and X is a vector of pre-shock firm characteristics. For a given propensity score $p(X_i)$ for firm i, the ATT can be estimated as follows:

$$\tau \equiv E\{Y_{1i} - Y_{0i}|D_i = 1\}$$
$$= E[E\{Y_{1i} - Y_{0i}|D_i = 1, p(X_i)\}] \tag{3}$$
$$= E[E\{Y_{1i}|D_i = 1, p(X_i)\} - E\{Y_{0i}|D_i = 0, p(X_i)\}|D_i = 1]$$

where the outer expectation is over the distribution of $(p(X_i)|D_i = 1)$ and Y_{1i} and Y_{0i} are potential employment growth in both counter-factual groups (PCFs and non-PCFs). Two conditions are important, namely the balancing of the pretreatment variables given the propensity score and the unconfoundedness condition for a given propensity score.

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Defining $p(X)$ as the propensity score, then the first condition can be written formally as follows.

$$D \perp X | p(X) \qquad (4)$$

Assuming that being a politically connected firm (treatment group) is unconfounded i.e., $Y_1, Y_0 \perp D|X$, it follows that being subject to the a shock to firms' political connections (treatment) is unconfounded given the propensity score, i.e., $Y_1, Y_0 \perp D|p(X)$.

If the first condition is met, observed firms with the same score must have the same distribution of both observable and unobservable characteristics regardless of their political connection status. That is, for a given propensity score, being politically connected is random and therefore treated and control firms should be on average observationally identical. To estimate the propensity scores, our study employs a probit model that includes the firm's size, age, sector and location. Then, firms that are subject to a shock (treated firms) are matched.

In addition to the matching-based DiD estimation, we also estimate a quantile DiD at different points in the distribution. This is aimed at gaining more insights into the effects of the Arab Spring on employment growth through the political connections channel. It is, in fact, reasonable and sensible to assume that such effects could be substantially heterogeneous across firms. Therefore, it is interesting to understand such heterogeneity by going beyond merely studying the average effect of political connections on employment growth to also estimate distributional (i.e., quantile) treatment effects of this relationship.

4. Empirical Results

The current study employs the difference-in-difference (DiD) approach to examine the effect of a negative shock to firms' political connections on employment in Egypt. With this aim, the treatment group is composed of firms identified with political connections before the Egyptian uprising in 2011 and the control group is formed by firms which are

not politically connected before or after the uprising. The DiD estimator will capture the differential effect of the shock on employment through the political connection channel relative to politically unconnected firms. The 2011 uprising led Mubarak to step down and the fall of his regime. We consider this as a negative shock to political connections of firms that were politically connected before 2011 (treated group). Such shock is expected to have negative effects on job creation by PCFs. However, political instability and uncertainty arose right after the shock would affect both groups (PCFs and non-PCFs). Political instability can cause disruptions to the economy especially job creation as the associated uncertainty makes it difficult for businesses to plan ahead. More generally, political instability and uncertainty creates a pessimistic atmosphere in which investment expansion is less likely. Our DiD estimation accounts for a quasi-experimental environment that is expected to capture the impact of this negative shock on employment growth through the channel of firms' political connections. Table 2 presents the mean values of the outcome variable for both control and treatment groups before and after the Egyptian uprising of 2011.

Table 2: Simple difference in difference (DiD) estimations - No controls

Outcome var.	No. Full-Time	S. Err.	t	P>t
Baseline				
Control	3.724			
Treated	5.378			
Diff (T-C)	1.654	0.088	18.75	0.000***
Follow-up				
Control	3.576			
Treated	4.495			
Diff (T-C)	0.918	0.089	10.34	0.000***
Diff-in-Diff	-0.736	0.125	-5.88	0.000***

Table shows the difference-in-difference estimator presented in Eq. 1 but with no additional control variables. The outcome variable is the number of full-time workers. The treatment group consists of firms that were politically connected before 2011 while the control group includes firms there are not politically connected before or after the Egyptian uprising. Baseline represents the period before the Egyptian uprising (2004-2011) while the follow up represents the post-uprising period (2011-2016). *** denotes statistical significance at 1% level.

The DiD estimator is equal to the difference across the two periods (before and after

the uprising) of the difference between treatment and control groups. Differencing the mean values of the outcome variable between the two periods for the treatment group gives the effect of political connections on employment plus the effect of any common shock such as the global financial crisis (or a time trend) that affects both groups (PCFs and non-PFCs). The difference between both periods for the control group provides an estimate of such additional factors. Therefore, differencing the estimate across periods for PCFs (treatment group) with that of non-PCFs (control group) should offer an estimate of the effects of political connections on employment growth (i.e., job creation).

Defining period one (2004-2011) as a baseline, employment grew by about 3.7% in non-PCFs (control group) while in the PCFs (treatment group) this figure was about 5.4 %. Moving to the post uprising period, it is noted that employment growth has fallen in both groups. More specifically, employment growth has dropped slightly to 3.6 and 4.5 percentage points in PCFs and non-PCFs (control and treatment groups), respectively. The simple DiD estimator is equal to - 0.736 percentage points which is statistically significant at 1% significance level. This implies that, on average, firms have responded to the negative shock to political connections caused by the Egyptian uprising of 2011 by decreasing their demand for labour. This finding suggests that the additional reduction in employment growth in PCFs (treatment group) was due to the change in their political connections (i.e., the 2011 shock).

In addition to the above simple DiD estimation, it may be useful to include other firms characteristics in order to control for observable variables that could affect the outcome of interest (i.e., employment growth). Therefore, equation 1 takes account of a number of control variables as discussed earlier. Table 3 shows the DiD estimation of equation 1 for different specifications (models 1-5). Note that model (1) shows the same DiD estimation of table 2 alongside the estimated coefficients for political connections and the Arab Spring dummy. The DiD estimation with additional control variables shows similar results as those reported in table 2. More specifically, when controlling for the firm's size (as measured by the value of its annual sales), the DiD estimator shows that employment in politically connected firms dropped by about 0.227% (model 2) in response to the

shock to their political connection (the Arab Spring). Our DiD estimation does not change remarkably when controlling for the firm's age (models 3 and 4) and in which region it is based (model 5). The DiD estimation is found to be statistically significant in different specifications (models 1,2, 4 and 5).

The results in table 3 also show that political connections contribute to employment growth in Egypt. More specifically, employment growth in politically connected firms is 1.65% (model 1) or 0.84 (model 4) higher than their unconnected counterparts. The estimated coefficients for political connections are found to be statistically significant at 1% level in all specifications (models 1-5).

In addition, the results reported in table 3 show that the Arab Spring has caused employment growth to stumble by around 0.736% (model 1) or 0.352% (model 5) compared to the period before the Egyptian uprising in 2011. This is not surprising and, in fact, is expected as political instability and its associated uncertainty are likely to damage job creation. Moreover, our findings reported in table 3 show that as the firm size measured by the total value of annual sales (i.e., revenues in log form) increases by 1%, employment is expected to increase by about 0.17% (model 2) or 0.211% (models 4 and 5), all else equal. The impact of the firm's size on its employment growth is found to be statistically significant at 1% significance level.

Moreover, older firms are expected to have higher demand for labour. According to model (2) estimation in table 3, for example, as a firm's age increases by one year, its employment level is expected to grow by 0.204%. We have also grouped firms according to their age into three groups (less than 10 years old, between 10-50 years old, and older than 50 years). Yet, we observe a similar pattern regarding the relationship between a firm's age and its demand for labour. More specifically, firms that are between 10 and 50 years old are expected to have 0.29% higher demand for labour than that of firms younger than 10 years old (our reference group). Similarly, employment growth in firms that are more than 50 years old is likely to be 1.65% higher (model 5) than that of firms less than 10 years old, *ceteris paribus*. The impact of a firm's age on its employment

growth is found to be statistically significant at 1% significance level. [7]

Furthermore, model (5) estimation reported in table 3 introduces a number of dummy variables to control for regional effects. Based on which region a firm is located, firms are grouped into four regions: Cairo, Delta Egypt, Upper Egypt and other regions. Taking Cairo as a reference group, we find that employment growth is lower in firms that are based either on Delta Egypt or Upper Egypt when compared to other firms which are based on Cairo. However, such difference is found to be statistically significance only in the case of Upper Egypt.

Given the substantial heterogeneities existing among firms in both groups (control and treatment), the DiD estimation is likely to be biased. To account for such possible bias, we employ the propensity score matching (PSM), thereby maximising the observable similarity between PCFs and non-PCFs (treatment and control groups). As an alternative to linear regression, the PSM analysis allows us to create the two groups that have similar characteristics so that a comparison can be made within these matched groups. Implementation of the PSM methodology follows the two step procedure whereby in the first step each firm's probability (propensity score) of receiving a political shock is assessed conditional to a set of explanatory variables. We include the firm's size as measured by revenues, age, and in which region and sector it operates as controls within the first stage of the model to ensure that the two groups are matched on similar characteristics [8].

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[7]Though, it is worth noting that interpreting the estimated coefficient of age should come with a caution. The firm's age could itself be an indicator of political connections. More specifically, age which could be correlated with barriers to entry and first mover advantages, could turn into political connections. Moreover, it could also raise concerns about endogenity bias. This is why we estimated the model with and without firms' age. Our results in either case seem to be similar where there is no significant changes in the sign or the magnitude of estimated coefficients. Yet, caution needs to considered when drawing on our interpretation of the estimated coefficient of the firm's age and its effect on employment growth.

[8]Ideally, we would like to implement the matching exercise (and calculate the propensity score) based on as many firm characteristics as possible in order to further reduce the bias arising from comparing two groups with systematic differences. This matching outcome would be of even better quality when including more continuous variables in the probit model. Unfortunately, the number of firm characteristics in our dataset is limited and the majority of these variables are dummies. Therefore, we believe the inclusion of firm size (log of revenue) would relatively improve our matching outcome. Moreover, firms of similar size (perhaps relatively bigger size) would be more likely to receive the treatment (i.e., political connection). Thus, we believe it is a sensible choice to include firm size as one of the firm characteristics based on which we implement the matching procedure. However, for the sake of argument, we dropped firm size from our probit model and re-estimated the model based on the new propensity scores, and our results did not change significantly. We omit these results from the paper for brevity and not to distract the reader in too much detail.

Table 3: Difference-in-difference estimations - Additional controls

	(1)	(2)	(3)	(4)	(5)
Political Conn.	1.654***	0.860***	1.065***	0.834***	0.839***
	(0.0882)	(0.0804)	(0.110)	(0.0773)	(0.0773)
Arab Spring	-0.148***	-1.194***	-0.190***	-0.918***	-0.879***
	(0.0395)	(0.0431)	(0.0493)	(0.0430)	(0.0441)
DiD	-0.736***	-0.227*	-0.224	-0.370***	-0.352**
	(0.125)	(0.112)	(0.142)	(0.107)	(0.107)
Revenue (log)		0.170***		0.211***	0.211***
		(0.00407)		(0.00437)	(0.00438)
Age			0.204***		
			(0.0258)		
10-50 years				0.287***	0.290***
				(0.0441)	(0.0443)
>50 years				1.163***	1.165***
				(0.0534)	(0.0534)
Delta Egypt					-0.0528
					(0.0540)
Upper Egypt					-0.295***
					(0.0804)
Other Regions					0.00794
					(0.0387)
Cons.	3.724***	2.230***	3.224***	1.083***	1.081***
	(0.0249)	(0.0421)	(0.0824)	(0.0661)	(0.0713)
N	6350	6350	6350	6350	6350

 The outcome variable is number of full-time workers. Political Connection is a dummy that takes the value of one if a firm is politically connected and zero otherwise. Arab Spring is a dummy variable that takes the value of one for the period 2011-2016 and zero for the period 2004-2010. DiD is the difference-in-difference estimator as shown in Eq. 1, including control variables. Revenue (in log form) is used as the value annual total sales as a measure of the firm's size. Age is the firm's age which is the difference between the year in which data was reported and the year its was first established. 10-50 years is a dummy variable that takes the value of one if the firm's age falls between 10 and 50 years. > 50 years is a dummy variables that takes the value of one if a firm is older than 50 years. The reference group is firms of 10 years or less. Delta, Upper Egypt, and Other regions are dummies of in which region a firm is based. Cairo is the reference group for other regions. *, **, *** denotes a statistically significant coefficient at 10%, 5% and 1% level, respectively.

Consequently, the treatment and control group firms are matched on the basis of their propensity scores.

We first demonstrate the validity of the parallel trend assumption and the quality of our matching exercise before proceeding to present our PSM-based DiD estimates. In this context, the parallel trend assumption is essential to ensure internal validity of the DiD estimation. If this assumptions is violated, it would lead to a biased estimation of the causal effect. Yet, the parallel trend assumption probably remains the hardest to fulfill. In short, this assumption requires that in the absence of treatment, the difference between politically connected firms (our treatment group) and politically unconnected group (control) to be constant over time prior to the intervention/treatment (the 2011 uprising in our case). However, since there is no formal statistical test to examine the validity of this assumption, most studies tend to rely on a simple visual inspection of the outcome variable (mean value) over a few points prior to the intervention. Therefore, we plot observed outcome trends of both groups (control and treatment) during two points in time both before (2004&2008) and after (2013&2016) the incidence of the 2011 uprising (intervention/treatment) (see Fig. 1). The figure shows that the parallel trend assumption may seem to hold before 2011 [9].

Moreover, in order to demonstrate the quality of our matching exercise we compare means between treated and non-treated groups before and after matching. Fig. 2 shows standardized percentage of bias across covariates before and after matching. We also report, in table 4, a set of t-tests for the difference in mean of our covariates before and after matching along with the percentage of bias reduction due to our matching procedure. Fig. 2 and table 4 show that our matching procedure has been successful at reducing the bias arising from comparing two groups with systematic differences. Finally, we plot our propensity scores before and after matching (see Fig. 3
Turning to our PSM-DiD estimation, we present the results in table 5 based on the kernel matching method based on bootstrapping the model 1000 replications. As explained

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[9]It may be worth noting that this assumption is more likely to hold when tested over a shorter time period anyway
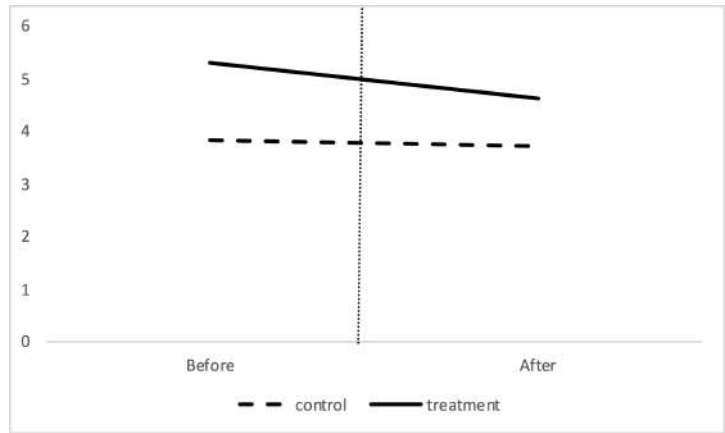
Figure 1: Pre-treatment parallel trends - employment (mean values)
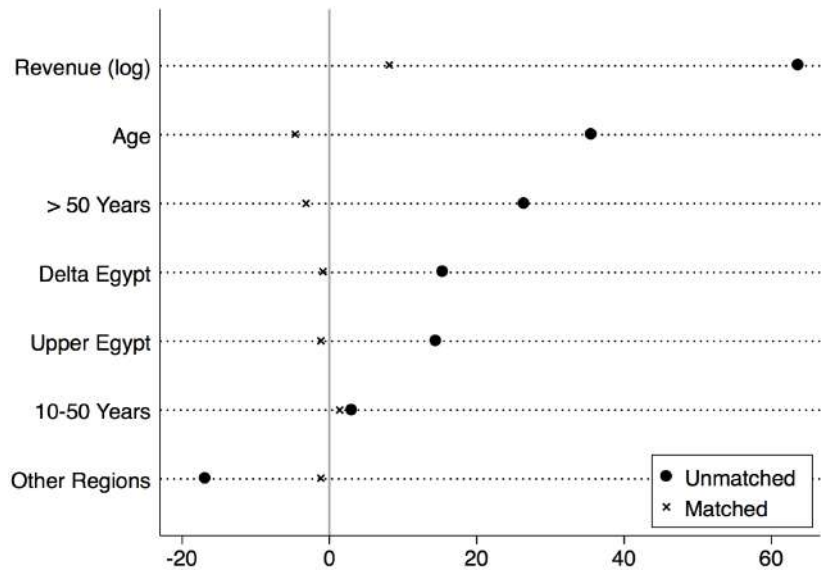
Figure 2: Standardized % bias across covariates (before and after matching)

earlier, this procedure involves taking each politically connected firm (treated) and identi-fying politically unconnected firms (non-treated) with the most similar propensity scores.

As the linear regression estimates in table 5, the matching results in table 5 suggest that a negative shock to firms' political connections in Egypt has dropped employment growth, on average, by 1.34% as a response to the shock after the Arab Spring. The estimated

Table 4: Bias reduction after matching

Variable	Unmatched Matched	Mean Treated	Control	%bias	% Reduct	t-test t	p>t
Revenue (log)	U	16.246	13.851	67.200		12.430	0.000
	M	16.236	15.913	9.100	86.500	1.400	0.161
Age	U	33.062	27.457	31.600		6.430	0.000
	M	32.923	33.054	-0.700	97.700	-0.090	0.930
10-50 years	U	0.835	0.922	-27.000		-5.780	0.000
	M	0.837	0.842	-1.600	94.100	-0.200	0.841
> 50 years	U	0.165	0.078	27.000		5.780	0.000
	M	0.163	0.158	1.600	94.100	0.200	0.841
Delta Egypt	U	0.212	0.158	14.000		2.740	0.006
	M	0.213	0.202	2.800	80.300	0.380	0.707
Upper Egypt	U	0.116	0.066	17.400		3.610	0.000
	M	0.116	0.127	-3.600	79.400	-0.450	0.655
Other Regions	U	0.410	0.499	-18.000		-3.360	0.001
	M	0.411	0.422	-2.300	87.400	-0.330	0.745

Standard errors are based on bootstrapping the model 1000 replications; PSM is based on a probit model that includes firm's size, age, sector, and region. *** denotes statistically significant coefficient at 1% level.

(a) Propensity Score BEFORE Matching   (b) Propensity Score AFTER Matching
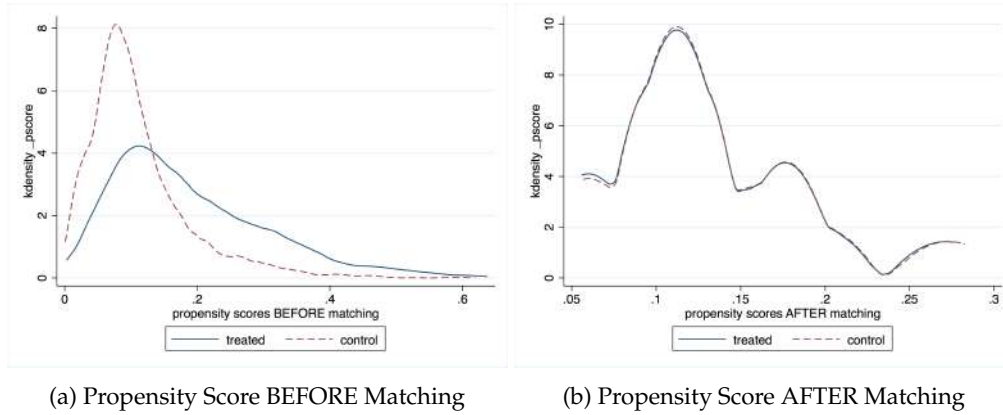
Figure 3: Propensity score for treated and control group

DiD coefficient is statistically significant at the one percent level. It is interesting though to see the magnitude of the estimated DiD coefficient increasing as we account for (or reduce) possible bias.

Finally, we also report the quantile DiD estimations in table 6, which helps us to gain more understanding of the effects of the Arab Spring on employment growth through the political connections channel. We are interested in exploring whether such effects

Table 5: DiD estimation after matching (PSM)

Outcome var.	No. Full-Time	S. Err.	t	P>t
Baseline				
Control	3.856			
Treated	5.566			
Diff (T-C)	1.71	0.166	10.3	0.000***
Follow-up				
Control	4.545			
Treated	4.914			
Diff (T-C)	0.369	0.322	1.15	0.251
Diff-in-Diff	-1.34	0.354	3.79	0.000***

Standard errors are based on bootstrapping the model 1000 replications; PSM is based on a probit model that includes firm's size, age, sector, and region. *** denotes statistically significant coefficient at 1% level.

are substantially heterogeneous across politically connected firms. Thus, we go beyond the average effects of firms' political connection on employment growth (see tables 2-5 to also estimate distributional (i.e., quantile) treatment effects at different points in the distribution, see table 6.

Table 6: Quantile DiD estimations after matching (PSM)

Outcome var.	No. Full-Time	S. Err.	t	P>t
DiD 0.10	0.981	0.355	2.77	0.006***
DiD 0.20	-0.264	0.543	0.49	0.627
DiD 0.30	-0.458	0.435	1.05	0.292
DiD 0.40	-0.928	0.374	2.48	0.013**
DiD 0.50	-1.349	0.424	3.18	0.001***
DiD 0.60	-1.521	0.547	2.78	0.005***
DiD 0.70	-1.081	0.54	2	0.045**
DiD 0.80	-1.284	0.355	3.62	0.000***
DiD 0.90	-1.792	0.422	4.25	0.000***

Standard errors are based on bootstrapping the model 1000 replications; PSM is based on a probit model that includes firm's size, age, sector, and region. *** denotes statistically significant coefficient at 1% level.

Table 6 shows the quantile DiD estimation after matching. It shows the treatment effects at 0.10 to 0.90 points in the distribution. While the quantile based DiD estimations confirm our previous findings (i.e., negative impact of the Egyptian uprising on employment in

PCFs), they also show an interesting pattern. Except for the lowest 10%, the estimated treatment effect is negative at all points in the distribution. These impacts are statistically significant almost at all points. More interestingly, the magnitude of the estimated becomes larger as we move up on the distribution. This implies that our results are driven mainly by larger firms.

5. Robustness Checks

As we have shown earlier, the DiD estimation is simply the difference in mean of employment growth across the pre- and post-shock periods. We have also discussed how the DiD estimator accounts for the effect of other shocks such as the global financial crisis (GFC) (as well as any other time specific effects) when estimating the effect of political connections on employment growth. It should be now clear that this is done in the context the DiD estimator by differencing mean values of the outcome variable between the treatment and control groups. Then, these 'additional' common effects (or shocks) are removed when taking the difference between before and after the Egyptian uprising. In addition, our matching based DiD is expected to take care of any bias based on dealing with a quite heterogeneous group of a large number of firms.

However, despite all efforts to account for possible bias through performing the PSM-based DiD estimation based on a bunch of firm level characteristics, there could be still concerns about accounting for the pre-treatment trends. One way to address this concern could be through implementing the matching on lagged values of firm characteristics (2,3 or 4 years prior the intervention) rather than contemporaneous values. To show that our results are not sensitive to pre-treatment trends, we report here, see table 7, the DiD estimation after computing propensity scores based on lagged value of sales (not current values as the previous case). Our results, presented in table 7, did not change significantly. The estimated DiD coefficient has the same sign and slightly larger in magnitude.

Furthermore, other concerns could be related to the possibility that out estimation capture the effect of other shocks along with the effect of political shocks on employment

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Table 7: DiD estimation after matching (PSM- on lag revenue)

Outcome var.	No.Full-Time	S.Err	t	P>t
	Baseline			
Control	4.165			
Treated	5.543			
Diff(T-C)	1.379	0.140	9.820	0.000***
	Follow-up			
Control	0.140			
Treated	4.914			
Diff(T-C)	-0.189	0.330	0.330	0.567
Diff-in-Diff	-1.568	0.378	4.150	0.000***

Standard errors are based on bootstrapping the model 1000 replications; PSM is based on a probit model that includes lagged value of firm's revenue, age, sector, and region. *** denotes statistically significant coefficient at 1% level.

growth. More specifically, the effects of the global financial crisis is a main concern here since that our data includes the financial shocks years (2007 & 2008). In this instance, if PCFs and non-PCFs respond differently to the financial shock this could be piked up to some extent in our previous estimation. For example, since that the effect of the global financial crisis on domestic (and foreign firms operating in Egypt) will be mainly through exports, and assuming that PCFs were large exporters, then ignoring this could in fact pick more than just the effect of political shocks on employment growth. Thus, not taking firm exporting activities into account, may have forced the PCF to respond to the global financial crisis in the same way as the non-PCFs do. In this case, equating the effect of the common shock of the financial crisis between both groups (treated and control) is underestimating the loss in employment that is not due to political connections rather to the mere fact of being an exporter. Accordingly, and if this is true, our previous estimates might have overestimated the effects of political connections on employment growth in Egypt, especially if a large number of firms which produce to the domestic markets are protected (non-exporters).

In order to address this issue, we undertake a number of robustness checks. First, we add the percentage of sales which are directly exported and reestimate models (1-5) along with considering the new export variable among the characteristics based on which we

match firms. . Second, rather than considering the percentage of sales for exports, we create a dummy variable which equals one if the firm is involved in exporting activities and zero otherwise. We then reproduce our previous estimates. Third, we reproduce our DiD results using a sub-sample which does not include the years of the global financial crisis (2007 & 2008).

While tables A1 - A5 in the appendix show the detailed results for our replication exercise of Tables 3 and 5, Table 8 below presents the DiD estimated coefficients across these additional specifications. The first and second rows in Table 8 show the DiD coefficients when we replicate our results presented earlier in Tables 3 and 5 after controlling for firm exporting activities. While exports are measured as a percentage of the firm sales across different specifications in the row, they take the form of a dummy variable (equals one if a firm exports part of its sales and zero otherwise) across model specifications in the second row. The third row in Table 8 shows the DiD coefficients when we reproduce the full sample results (in Tables 3 and 5) on a sub-sample only. Our sub-sample excludes the years of the global financial crisis (2007-2008). The PSM-DiD column in Table 3 presents our DiD coefficient after matching. Standard errors for the PSM-DiD estimation are based on bootstrapping the model 1000 replications, and the PSM is based on a probit model which in addition to our usual controls (firm's size, age, sector, and region) it controls for exports (first and second rows).

6. Summary and Conclusion

This paper contributes to the literature studying the economic effects of firms' political connections. Our main research objectives include: i) measuring the short-term effects of a shock to political connections on employment growth in Egypt; ii) investigating whether politically connected firms (PCFs) create more jobs compared to their unconnected counterparts (non-PCFs); and iii) by defining gazelles as fast-growing and young firms with increasing contribution to employment creation as opposed to turtles which are old firms with sluggish growth and little or no contribution to job creation, we aim to identify whether PFCs in Egypt are turtles or gazelles? In the sense whether PCFs

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Table 8: DiD estimations with exports (% sales & dummy) and for a subsample

	Model 6	Model 7	Model 8	Model 9	Model 10	PSM-DiD
Additional Control DiD controlling for Exports (% sales)	**Model 6** -0.690*** (0.114)	**Model 7** -0.269** (0.104)	**Model 8** -0.263* (0.130)	**Model 9** -0.369*** (0.102)	**Model 10** -0.356*** (0.102)	**PSM-DiD** -0.739**
Additional Control DiD controlling for Exports (Dummy)	**Model 11** -0.690*** (0.109)	**Model 12** -0.324** (0.102)	**Model 13** -0.206 (0.124)	**Model 14** -0.414*** (0.100)	**Model 15** -0.400*** (0.100)	**PSM-DiD** -0.901***
Sub-Sample DiD excluding GFC (Years 2007-2008)	**Model 16** -1.470*** (0.299)	**Model 17** -0.997*** (0.206)	**Model 18** 0 (.)	**Model 19** -1.035*** (0.206)	**Model 20** -0.991*** (0.204)	

The table sumarises our DiD estimations when replicating the results presented in Tables 3 and 5 (discussed in Section 4) after altering the model specification of Eq. 1 as a means of robustness checks. This is an extra measure to take into account the effects of the global financial crisis on employment. Detailed results are presented in Tables A1, A2, A3, A4, and A5 in the appendix. The outcome variable is the number of full-time workers. In addition to accounting for the firm's revenues (in log form), age (years and dummies), and location, we control for exports in models (6 through to 15) and reproduce our full sample results on a sub-sample (after excluding the global financial crisis years 2007 & 2008). PSM-DiD is the DiD coefficient after matching. Standard errors for the PSM-DiD estimation are based on bootstrapping the model 1000 replications, and the PSM is based on a probit model which in addition to our usual controls (firm's size, age, sector, and region) it controls for exports (first and second rows). *** denotes statistically significant coefficient at 1% level.*, **, *** denotes a statistically significant coefficient at 10%, 5% and 1% level, respectively.

contribute more than non-PCFs to employment creation.

For this purpose, we use an original firm-level database and utilise the incidence of the Egyptian uprising of 2011. Our unique dataset covers 4008 firms between 2004-2016, of which we were able to identify 544 politically connected firms. Different sources (e..g., Orbis, Thomson Reuters Eikon, WES) were used to compile such large dataset, which contains information on a firm's political connections, number of full-time workers, annual sales, age, in which region and sector it is based. Thus, we set-up a quasi-natural experiment environment in which we exploit the incidence of the Arab Spring in 2011 as an exogenous shock to measure the short-term impacts of a negative shock to firms' political connections on employment. More specifically, we employ the difference-in-difference (DiD) technique to investigate the impact of the Arab spring on employment growth through the channel of firms' political connections.

Our DiD estimator compares employment growth in PCFs before 2011 (treatment group), which were subject to a negative shock to their political connections, with firms that are

not politically connected either before or after the Egyptian uprising (control group). This captures the possible effect of the Egyptian uprising on employment through the firm's political connections channel. We find that connected firms before the shock decreased their job creation after the uprising. This implies that employment growth declined after politically connected firms have received a negative shock to their political connections.

The results are not surprising since Ramalho (2007) documented a long-term drift in performance of the connected firms in the year following the collapse of connections (In this case with Brazilian President Collor de Mello).

The DiD estimation procedure assumes that both treatment and control groups have no systematic differences in any other pre-treatment variable. We find this a very strong assumption since firms in our dataset are heterogeneous and therefore expected to be of different characteristics, which would result in a biased DiD estimation. We address this issue by complementing our DiD analysis by the propensity score matching (PSM) approach. The PSM approach identifies the average treatment effect by comparing employment growth in PCFs and other firms that, a *priori*, have similar characteristics. That is, for a given propensity score, receiving a political shock is random and therefore treated and control firms should be on average observationally similar. To obtain the propensity scores, we employ a *probit* model based on firm specific characteristics. Our PSM analysis confirms our results from the DiD estimation.

To gain more insights on how our results may differ across the distribution, we complement our PSM estimation with a quantile DiD regression based analysis. Our key findings are as follows. Political connections seem to contribute to employment growth in Egypt. Employment growth had fallen as a result of the Egyptian uprising in 2011. Politically connected firms responded to the negative shock to their connections (i.e., the Arab Spring and fall of Mubarak's regime) by reducing their job creation. The quantile DiD estimations show an interesting pattern - the results are driven mainly by larger firms.

Our results conform the findings in Aly et al. (2017) in that, unlike other regions, gazelles in MENA countries are not necessarily small. In fact, our findings for Egypt show that the bigger the firm is the more likely it is to be a gazelle. Our findings support the claim that this difference between MENA countries and other regions is related to the type of business environment that prevails in Egypt (and possibly other developing countries) which tends to favour bigger firms with better resources and political connections. That is, according to our findings for Egypt, political connections are important for job creation.

7. Future Research Agenda

Further research areas that need to be pursued include but not limited to, the role of transparent labour market regulations, enactments of conflict of interests laws, along with political activeness of watch-Dog NOGs and groups in reducing number of PCFs and eliminating the reasons/incentives for their mere existences. How access to foreign markets; free trade practices, exercising of corporate social responsibility; and improving the conditions for starting new business and attracting foreign investment may reduce PCFs number and influence on the economy. Is it true that PCFs prevent or hinder others firms from growing and creating more employment?

On the Gazelles side of the study, how all of the aforementioned factors may contribute to the creation of more gazelles in the Egyptian market. In addition, the dynamics of becoming a gazelle need to be studied further. Not only the profile of a gazelle firm needs to be fully drawn but also the time span that takes a firm to move to the gazelle rank. Does a firm become a gazelle right after inception? What is the average number of years a firm will take to become a gazelle or a turtle? Is there a typical move from the gazelle rank to the turtle or vice versa? In addition, what is the average number of workers a firm might employ before moving to the Gazelle rank? Additionally, can we ever break from the gazelle/turtle dichotomy and see a more evenly distributed (less skewed) job growth across all firms? These are all questions that might help the government target specific firms with its job creation policies.

However, a piece of research that could very well fill a vacuum in the literature, has to do

with the interplay between firm-characteristics, firm's performance, sector-characteristics, and the overall institutional quality (North, 1990). Such a research might answer the following questions: Does the importance of being "politically connected" depend on sector characteristics especially institutions-intensity? Do political connections influence the likelihood of being a turtle (gazelle), and if yes, does the importance of political connections vary across sectors? An interaction between the measure of "firm-political connection" and sector-institutional intensity could answer this question. Actually, in so doing, a study will able to speak to the responses of firm employment growth to institutional frictions and political connections. In addition, sector institutional dependence data that might be sourced from Nunn (2007), while data on skill and capital intensities of production would be calculated using the approach of Berman et al. (1994).

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A. Appendix

Table A1: Difference-in-difference estimations - Additional controls including exports (% sales)

	Model 6	Model 7	Model 8	Model 9	Model 10
Political Connection	1.548***	0.897***	1.026***	0.876***	0.883***
	(0.0802)	(0.0748)	(0.101)	(0.0733)	(0.0733)
Arab Spring	0.0107	-0.906***	-0.187***	-0.758***	-0.721***
	(0.0361)	(0.0410)	(0.0453)	(0.0412)	(0.0423)
DiD	-0.690***	-0.269**	-0.263*	-0.369***	-0.356***
	(0.114)	(0.104)	(0.130)	(0.102)	(0.102)
export	0.0215***	0.0172***	0.0273***	0.0149***	0.0149***
	(0.000585)	(0.000543)	(0.000978)	(0.000556)	(0.000556)
Revenues (log)		0.144***		0.173***	0.174***
		(0.00387)		(0.00437)	(0.00438)
Age			0.208***		
			(0.0238)		
10-50 years				0.312***	0.314***
				(0.0418)	(0.0420)
>50 years				0.844***	0.847***
				(0.0520)	(0.0520)
Delta Egypt					-0.0961
					(0.0512)
Upper Egypt					-0.279***
					(0.0762)
Other Regions					-0.0103
					(0.0366)
Cons.	3.406***	2.205***	3.007***	1.379***	1.391***
	(0.0243)	(0.0391)	(0.0762)	(0.0636)	(0.0686)
N	6350	6350	6350	6350	6350

The outcome variable is number of full-time workers. Political Connection is a dummy that takes the value of one if a firm is politically connected and zero otherwise. Arab Spring is a dummy variable that takes the value of one for the period 2011-2016 and zero for the period 2004-2010. DiD is the difference-in-difference estimator as shown in Eq. 1, including control variables. Revenue (in log form) is used as the value annual total sales as a measure of the firm's size. Age is the firm's age which is the difference between the year in which data was reported and the year its was first established. 10-50 years is a dummy variable that takes the value of one if the firm's age falls between 10 and 50 years. > 50 years is a dummy variables that takes the value of one if a firm is older than 50 years. The reference group is firms of 10 years or less. Delta, Upper Egypt, and Other regions are dummies of in which region a firm is based. Cairo is the reference group for other regions. *, **, *** denotes a statistically significant coefficient at 10%, 5% and 1% level, respectively.

Table A2: DiD estimation after matching (PSM) - including exports (% sales)

Outcome var.	No. Full employ	S. Err.	t	P>t
Baseline				
Control	3.872			
Treated	5.518			
Diff (T-C)	1.647	0.166	9.9	0.000***
Follow-up				
Control	3.997			
Treated	4.904			
Diff (T-C)	0.907	0.311	2.92	0.003***
Diff-in-Diff	-0.739	0.348	2.13	0.033**

Standard errors are based on bootstrapping the model 1000 replications; PSM is based on a probit model that includes firm's size, age, sector, and region. *** denotes statistically significant coefficient at 1% level.

Table A3: Difference-in-difference estimations - Additional controls including (exports = 1 or 0)

	Model 11	Model 12	Model 13	Model 14	Model 15
Political Connection	1.311***	0.801***	0.755***	0.791***	0.803***
	(0.0773)	(0.0735)	(0.0968)	(0.0721)	(0.0720)
Arab Spring	-0.0762*	-0.865***	-0.206***	-0.719***	-0.673***
	(0.0345)	(0.0404)	(0.0432)	(0.0406)	(0.0417)
DiD	-0.690***	-0.324**	-0.206	-0.414***	-0.400***
	(0.109)	(0.102)	(0.124)	(0.100)	(0.100)
ExDummy	1.751***	1.359***	1.813***	1.203***	1.208***
	(0.0392)	(0.0384)	(0.0503)	(0.0390)	(0.0390)
Revenues (log)		0.125***		0.157***	0.157***
		(0.00392)		(0.00443)	(0.00444)
Age			0.164***		
			(0.0226)		
10-50 years				0.264***	0.271***
				(0.0411)	(0.0413)
> 50 years				0.812***	0.815***
				(0.0511)	(0.0510)
Delta Egypt					-0.121*
					(0.0504)
Upper Egypt					-0.280***
					(0.0749)
Other Regions					0.0187
					(0.0360)
Cons.	3.343***	2.324***	3.028***	1.514***	1.511***
	(0.0234)	(0.0385)	(0.0723)	(0.0632)	(0.0679)
N	6350	6350	6350	6350	6350

The outcome variable is number of full-time workers. Political Connection is a dummy that takes the value of one if a firm is politically connected and zero otherwise. Arab Spring is a dummy variable that takes the value of one for the period 2011-2016 and zero for the period 2004-2010. DiD is the difference-in-difference estimator as shown in Eq. 1, including control variables. Revenue (in log form) is used as the value annual total sales as a measure of the firm's size. Age is the firm's age which is the difference between the year in which data was reported and the year its was first established. 10-50 years is a dummy variable that takes the value of one if the firm's age falls between 10 and 50 years. > 50 years is a dummy variables that takes the value of one if a firm is older than 50 years. The reference group is firms of 10 years or less. Delta, Upper Egypt, and Other regions are dummies of in which region a firm is based. Cairo is the reference group for other regions. *, **, *** denotes a statistically significant coefficient at 10%, 5% and 1% level, respectively.

Table A4: DiD estimation after matching (PSM) - including (exports = 1 or 0)

Outcome var.	No. Full Employ	S. Err.	t	P>t
Baseline				
Control	4.24			
Treated	5.484			
Diff (T-C)	1.244	0.159	7.85	0.000***
Follow-up				
Control	4.562			
Treated	4.904			
Diff (T-C)	0.343	0.307	1.12	0.264
Diff-in-Diff	-0.901	0.339	2.66	0.008***

Standard errors are based on bootstrapping the model 1000 replications; PSM is based on a probit model that includes firm's size, age, sector, and region. *** denotes statistically significant coefficient at 1% level.

Table A5: Difference-in-difference estimations - Sub-sample (excluding years 2007 & 2008)

	Model 16	Model 17	Model 18	Model 19	Model 20
Political Connection	2.389***	1.135***	0.841***	1.144***	1.140***
	(0.286)	(0.198)	(0.0920)	(0.197)	(0.195)
Arab Spring	0.143*	-3.471***	0	-3.325***	-3.118***
	(0.0629)	(0.0737)	(.)	(0.108)	(0.110)
DiD	-1.470***	-0.997***	0	-1.035***	-0.991***
	(0.299)	(0.206)	(.)	(0.206)	(0.204)
Revenues (log)		0.464***		0.461***	0.462***
		(0.00765)		(0.00765)	(0.00757)
Age			0.207***		
			(0.0326)		
10-50 years				0.243***	0.275***
				(0.0448)	(0.0446)
¿50 years				0.294**	0.384***
				(0.0895)	(0.0900)
Delta Egypt					-0.126*
					(0.0618)
Upper Egypt					-0.197**
					(0.0696)
Other Regions					0.221***
					(0.0504)
_cons	3.433***	0.103	3.028***	-0.167	-0.488***
	(0.0550)	(0.0667)	(0.0925)	(0.111)	(0.128)
N	3326	3326	3326	3326	3326

The outcome variable is number of full-time workers. Political Connection is a dummy that takes the value of one if a firm is politically connected and zero otherwise. Arab Spring is a dummy variable that takes the value of one for the period 2011-2016 and zero for the period 2004-2010. DiD is the difference-in-difference estimator as shown in Eq. 1, including control variables. Revenue (in log form) is used as the value annual total sales as a measure of the firm's size. Age is the firm's age which is the difference between the year in which data was reported and the year its was first established. 10-50 years is a dummy variable that takes the value of one if the firm's age falls between 10 and 50 years. > 50 years is a dummy variables that takes the value of one if a firm is older than 50 years. The reference group is firms of 10 years or less. Delta, Upper Egypt, and Other regions are dummies of in which region a firm is based. Cairo is the reference group for other regions. *, **, *** denotes a statistically significant coefficient at 10%, 5% and 1% level, respectively.