



Munich Personal RePEc Archive

# **Political Connections Reduce Job Creation: Firm-level Evidence from Lebanon**

Diwan, Ishac and Haidar, Jamal Ibrahim

École Normale Supérieure, Paris, The American University in Cairo,  
Harvard University

26 October 2020

Online at <https://mpra.ub.uni-muenchen.de/112109/>  
MPRA Paper No. 112109, posted 03 Mar 2022 04:46 UTC

# Political Connections Reduce Job Creation: Firm-level Evidence from Lebanon<sup>1</sup>

Ishac Diwan

École Normale Supérieure, Paris

E-mail: [Ishac.Diwan@ens.fr](mailto:Ishac.Diwan@ens.fr)

and

Jamal Ibrahim Haidar

The American University in Cairo and Harvard University

E-mail: [Jamal.Haidar@aucegypt.edu](mailto:Jamal.Haidar@aucegypt.edu) and [Jamal\\_Haidar@hks.harvard.edu](mailto:Jamal_Haidar@hks.harvard.edu)

October 26, 2020

**Abstract:** Using firm-level data, we document that politically connected firms (PCFs) create more jobs than unconnected firms in Lebanon. We observe, however, that the presence of PCFs in a sector is correlated with lower job creation. Although causality is difficult to establish due to endogeneity issues, we find that PCFs expand, and non-PCFs retract, more around elections. Our findings are consistent with the hypothesis that unfair competition by PCFs hurts unconnected competitors so much that aggregate employment growth in the sector is affected negatively.

**Keywords:** job creation; political connections; event study; competition

**JEL codes:** D02; D22; D47; J2; J38; J4; L22; L5; O43; P16

## 1. Introduction

Firm-level political connections are widespread. How politicians influence the behavior of firms, and how this translates into aggregate economic performance are important questions in economics.

To build intuition, there are two opposing forces to consider in this relationship. From one end, firms may get economic privileges via political connections, i.e., in the form of subsidies, licenses, lower regulatory burdens, or easier access to procurement contracts. Such political connections may be costly, however. These firms may need to pay back such favors, for instance, by offering jobs for constituencies of politicians. This type of mechanism could enhance job creation. From another end, the provision of unfair privileges to politically connected firms (PCFs) can reduce incentives of market entry and hinder the ability of unconnected competing firms to grow. This latter mechanism can reduce the willingness of non-politically-connected firms (NPCFs) to create jobs. The net effect of political connections on job creation is, thus, ambiguous.<sup>2</sup>

The economics literature on the economic effects of political connections has been growing. Shleifer and Vishny (1994) showed how politicians try to influence firms through subsidies while firms pay back politicians through political support. Various studies documented the effects of political connections on firm value (Fisman (2001), Acemoglu et al. (2018)) and likelihood of fraud detection (Yu and Yu, 2011). Others investigated mechanisms of influence, such as bailout (Faccio, 2006); access to finance (Claessens et al. (2008), Cull and Xu (2005), Dinc (2005), Khwaja and Mian (2005)); access to international markets (Leuz and Oberholzer-Gee, 2006); procurement contracts (Goldman et al., 2013); capital controls (Johnson and Mitton, 2003); tariff evasion (Rijkers et al., 2017); and tax sheltering (Hochman et al. (2013) and Francis et al. (2016)). This study contributes to this literature by analyzing how political connections influence employment decisions at the firm level by exploiting an exogenous election event in its identification strategy.

Our work relates to, but differs from, Bertrand et al. (2018). Using plant-level data, Bertrand et al. (2018) document that politically connected CEOs over hire workers in order to help politicians in their re-election efforts during election years in France. We also find, using firm-level census data, that PCFs in Lebanon create more jobs than non-PCFs in their sectors, and especially so just before an election. However, while Bertrand et al. (2018) find that in France, political connections by managers do not benefit firms and reduce their profits, we find that connected firms in Lebanon benefit from their connections as they are able to expand their market share. Moreover, Bertrand and

al (2018) focus only on the performance of PCFs themselves, while we also shed light on sectoral spillovers. We find that the existence of PCFs in a sector reduces net job creation at the sector level by reducing sharply the growth of non-PCFs. We also find that these effects were larger during the 2009 election year. One possible explanation of this phenomenon is that unfair competition by PCFs hurts their direct competitors and reduces their incentives to invest and expand their labor force.

Lebanon is a suitable country for this study for several reasons. First, there is anecdotal evidence of close links between politicians and firms in Lebanon. In the post war reconstruction period of the 1990s, the necessity to consolidate security led to the constitution of a large political coalition, which brought political stability at the cost of an extensive system of spoils (Leenders, 2012). Journalistic investigations (Ibrahim and Saoud, 2015) and anthropological work of Leenders (2012) have shown that many firms connected to politicians receive special advantages in particular sectors, including by state regulation and state procurement in the pharmaceutical, oil and gas, fuel imports, construction, and garbage disposal sectors as well as by licensing in the education, telecom, and media sectors, and by environmental regulations in the quarries sector. Second, political clientelism in Lebanon depends, in part, on the ability of politicians to find employment for their constituencies in the public or private sectors (Corstange, 2016). For example, three quarters of university students surveyed by the Lebanese Center for Policy Studies (LCPS) thought that political connections were important to find jobs, and 20 percent said that they had used them (LCPS, 2013).<sup>3</sup> Third, the World Bank Enterprise Surveys (2013) for Lebanon show that three-fifths of firms identify corruption as a major constraint for their growth. Similarly, the Gallup (2013) and Arab Barometer (2013) surveys show that the Lebanese public view corruption in the public and private sectors more negatively than in all other countries of the Middle East region. Finally, the Lebanese economy has been performing poorly in terms of job creation over the last two decades. While several reasons could limit job creation, we aim to shed light on whether political connections play a role.

Access to an original firm-level dataset allows us to study the relationship between political connections and job creation. Our data includes all registered (formal) firms at the Lebanese Ministry of Finance (MoF), providing annual information between 2005-2010 on levels of employment and output of firms. Using the Lebanese Commercial Register at the Ministry of Justice (MoJ), we are able to identify all the large firms in this set. To identify among these firms those with political connections, we first draw a list of all politicians and their main associates, and then identify firms as

politically-connected when at least one of their stakeholders (manager, board member, or shareholder) is on that list. The resulting database allows us to both analyse the micro foundations of employment creation in Lebanon, and also to compare the performance of firms and sectors with and without political connections.

Using this dataset, we reach two conclusions about the effect of political connections on employment growth in Lebanon. First, PCFs are larger, create more jobs and pay higher wages, but are also less productive than NPCFs in their sectors. Second, PCFs reduce net job creation at the sector level by affecting the growth of NPCFs: for every additional PCF in a sector, 9.4 percent less jobs are created on a net basis. These results thus highlight the negative economic impact of clientelism in Lebanon.

Our first set of results shows that, compared to other countries, employment is more concentrated in larger firms in Lebanon. These larger firms also tend to pay higher wages, but without exhibiting better performance in terms of labor productivity (output per worker) than smaller firms. However, once we look at firms that are not politically connected, the more usual pattern of larger firms having higher output per worker prevails. This suggests that PCFs are possibly over-hiring among the constituents of their political patron in exchange for economic privileges (but which we do not observe). Nevertheless, a correlation between PCFs and job creation does not prove causality. It is possible that successful firm owners tend to join the country's political elite, but that they do not receive particular economic privileges, and that over-hiring by large firms is due to economic shocks together with labor market inflexibilities. To rest this concern, we investigate whether the increase in employment by PCFs is due to market trends or to political considerations. We show, using different sets of evidence -- including the 2009 parliamentary election as an exogenous shock -- that it is more likely that political connections led to over-hiring, and not vice versa.

In the second part of the empirical analysis, we investigate the macro-economic implication of political connections. The possibility that NPCFs create fewer jobs in sectors where connected firms operate is plausible - they are likely to shrink when connected firms expand due to limited market size. The question, however, is whether a connected sector ends up as a whole growing relatively less, and creating relatively less jobs, than an otherwise similar sector. To answer this question, we compare sector performance as a function of the presence of PCFs in a sector, and find that sectors that include more PCFs have relatively lower net job creation rates than sectors that do not include PCFs. While this result establishes a correlation between privileges and lack of job

creation at the sector level, it is not sufficient to claim causality. There are several possible explanations for this correlation. It may be that more jobs get destroyed as the sector becomes more capital intensive when the market share of PCFs expand as PCFs may have better access to capital. Also, PCFs may be disproportionately more present in sectors that are rent-filled and have low growth potential. Finally, unfair competition may reduce economic activity by eroding the incentives of both the industry leader and its followers to innovate (Aghion et al. 2001, 2009). We argue that the third explanation only is consistent with the data.

The remainder of this paper is as follows. We present in section 2 relevant points about the centrality of clientelism and cronyism within the political economy of Lebanon. In section 3, we describe the firm-level dataset, identify politically-connected firms, and look at stylized facts about PCFs and NPCFs. We examine the impacts of political connections on job creation, wages, output, and output per worker at firm-level in section 4. In section 5, we present sector-level implications of PCFs. We summarize our main findings and discuss policy implications in section 6.

## **2. Political settlement and the evolution of business-state relations in Lebanon**

The present regime of power sharing among sectarian groups in Lebanon has been reconfigured over time as a result of changes in internal and external forces. Ziadeh (2006) and Traboulsi (2015) highlight changes that led to different political settlements. These settlements included several types of coalitions: (i) small size coalition which delivered a stable macroeconomic situation, but an unstable security environment, during the early “merchant republic” dominated by elite interests in 1950s and 1960s;<sup>4</sup> (ii) fragmented governance during the civil war of 1975-90; and (iii) large over-stretched multi-group coalitions with high costs in terms of budget deficits, during the current post-Ta’if agreement period.<sup>5</sup> When examining the most recent period, four characteristics of the political settlement stand out in terms of their economic implications.

First, the trade-off between security and economic performance, which was present in the various settlements, was especially constraining in the post-Ta’if (current) period. As the governing coalition came to include in the 1990s the main political groups, fiscal and public sector off-balance sheet spending rose as the coalition generated demands for large rents.<sup>6</sup> The ability of oligarchs to make horizontal deals depended on managing contestation within their community.

Access to rents was important to influence elections results, and to hinder the rise of alternative political forces within their group.

Second, a large fiscal expansion, financed by debt, initially allowed the state, starting in the early 1990s, to be the main source of clientelistic favors. The main political groups engaged in hiring their clients in the public sector, controlling funds for reconstruction, providing preferential treatment in the procurement of government contracts to PCFs, in addition to benefitting from a multitude of off-balance sheet cost-centers.<sup>7 8</sup> Large fiscal deficits, which were rarely below 20 percent of GDP in the 1990s, were predicated on fast economic growth. But growth rates declined sharply after a period of post-war recovery, as the regional outlook deteriorated substantially with the breakdown of the Israeli-Palestinian peace talks. As a result, large state expenditures became unsustainable, resulting in a ballooning public debt that reached 300 percent of GDP by the end of the 1990s. Given the lack of fiscal space, oligarchs had to look elsewhere to finance their clientelistic endeavor, turning more toward foreign patrons, and increasingly engaging in the extraction of regulatory rents from the domestic private sector.

Third, Lebanon has a weak state. Political scientists have stressed how the political economy of Lebanon has militated for a weak state, as a defensive mechanism by the various religious groups to retain some autonomy (Salibi, 1988). The small range of interventions by the state limited the size of regulatory rents extraction. But in sectors under state influence, the systematic allocation of privileges to connected businessmen along sectarian lines (the system of *Muhasasa*) has made Lebanon, in the eyes of the Lebanese, one of the most corrupt countries in the Arab region (World Bank Enterprise Surveys (2013), Gallup (2013), and Arab Barometer (2013)).

Fourth, there was greater inter-group competition after 2005, in part due to the growing regional rift between Iran and Saudi Arabia. This weakened the oligarchic settlement, and created more inter-group and intra-group competition. As a result, the parliamentary elections of 2009 were more competitive and under a new electoral law. On the face of it, an election effect seems apparent at the macro-level. Figure 1 shows that in 2009, the overall hiring by PCFs jumped up (from an average of 8,500 new jobs per year over the 5-year period to 14,500).<sup>9</sup> We conduct formal statistical tests below to check if PCFs have increased hiring in 2009 more than in non-election years. We are also interested in the reaction of NPCFs, and especially, in the possibility that net job creation in the politically connected sectors ended up lower.

### **3. Dataset, corporate landscape, and political connections**

In this section, we describe the firm-level dataset, identify politically-connected firms, and highlight differences in corporate characteristics such as job creation, output per worker, and wages between PCFs and NPCFs.

#### **3.1. Firm-level data**

We employ data on firms that paid taxes in Lebanon between 2005 and 2010. The dataset includes annual information about all registered firms at the Directorate of Revenues, Lebanese Ministry of Finance (MoF).<sup>10</sup> This dataset includes data about each firm's date of birth, 4-digit sector of business operation, number of employees, total wages per year, sales, as well as initial paid-in capital. Appendix 1 describes the variables.

The dataset has several advantages for the purpose of this study. Its complete coverage of all firms and sectors on an annual basis allows us to compare performance within and across firms and sectors in a comprehensive manner. For example, to answer the question of whether large firms create more jobs than small firms, it is crucial to examine firms of all sizes and in all sectors of the economy. The database includes information about an average of 122,242 firms per year. The dataset allows us to look not just at job creation, but also, at output per employee at the firm level and across sectors, and to observe when particular firms enter or exit.<sup>11</sup>

It is also important to keep in mind the limitations of our data. The dataset covers only formal firms and workers, that is, firms that paid taxes, and labor covered by social security. It does cover, however, a large share of formal jobs: firms in the dataset reported employing a total of 775,540 workers in 2010, while the total number of workers in the formal sector was estimated at 777,000 in the same year (International Labor Organization 2015). The dataset does not include information about profitability, but only about output, which may be under-reported for tax evasion purposes. The dataset also suffers from apparent reporting errors. To correct for this, we dropped firms that exhibited abnormally high volatility in output per worker, and other cases with obvious reporting errors.<sup>12</sup> On average, we dropped a total of 4.6 percent of the firms originally reported in the dataset in each year. The cleaned dataset includes 105,092, 111,223, 117,513, 124,877, 133,686, and 141,061 firms, respectively, in 2005-2010.



### 3.2 Stylized facts about the corporate landscape in Lebanon

The analysis of the relationship between firm size and employment in Lebanon has been hindered to date by data limitations. The dataset from the MoF allows us to uncover important stylized facts about the distribution of jobs among firms of different size and age groups.

A specificity of Lebanon is that a large share of labor works in relatively large firms, unlike the pattern typically observed in developing economies, where private sector jobs tend to be clustered around a vast abundance of small firms, and only a handful of substantially large ones.<sup>13</sup> Over the period 2005-2010, large firms with 100 or more employees accounted for nearly half of total (formal) employment in Lebanon, a figure that is large by regional standards (see Table SM1). In addition, while small-scale activities provide the majority of jobs in the Middle East and North Africa region, the share of employment in firms with less than five employees is only 19.3% in Lebanon.<sup>14</sup> This concentration of jobs in relatively large firms is not explained by a lack of small firms - 87% of firms have fewer than 5 employees in Lebanon.

Moreover, there is a trend toward larger size firms. From 2005 to 2010, the share of jobs in large firms increased from 41.1 to 47.8 percent while it declined in micro-firms from 15.2 to 13 percent (Table SM1). Large firms have thus increasingly driven net job creation. When decomposing net job creation by firms of different size categories, the bulk of net job creation was in larger firms in every year (Figure SM1). In fact, self-employed firms were responsible for a net destruction of jobs (Table SM2).<sup>15</sup> For example, in 2010, firms that employed at least 200 employees created 22,511 jobs while self-employed firms destroyed 3,074 jobs. Setting aside self-employed firms, large firms accounted for 55 percent of net job creation - in contrast to Tunisia and Egypt, where small firms accounted for more than 90 percent of the new jobs created (World Bank 2014).<sup>16</sup>

It is noteworthy that when it comes to job creation, macro-data indicates that it is the formal sector, as opposed to the informal one, that has been the main creator of new jobs during the study period (2005-2010), as well as more recently. For instance, according to International Labor Organization (2015), about 56,000 workers entered the market each year between 2005 and 2010. These figures are close to those implied by our data: firms in our database created between 40,000 and 50,000 new (formal) jobs per year, which is between 70 and 90% of all jobs created (Table SM2 and Figure 1). Overall, the large share of employment and of job creation in large firms in Lebanon is thus as unique in the Middle East as is its competitive political system.

### 3.3 Identifying politically connected firms (PCFs)

We aim to assess if the above stylized facts are related to PCFs in Lebanon. We start by identifying PCFs in our database. Doing so requires assembling lists of politically connected persons and then determining when these individuals have a relation with firms in our dataset. Our method of identifying PCFs is closely related to Faccio (2006), Rijkers et al. (2017), and Diwan et al. (2020).

First, we developed a list of politically connected persons. We define a person as politically connected if s/he was (i) a member of parliament, minister, or president anytime between 1992 and 2010; (ii) direct family member (i.e., father, mother, brother, sister, spouse, son, or daughter) of anyone in this group; (iii) publicly-known friend of anyone in this group; or (iv) known members of political parties. Because the same oligarchy has been in power after the civil war ended in 1989 (Traboulsi, 2015), we include in this list people that were in public office before 2005.<sup>17</sup> In other words, although our firm-level dataset covers the 2005-2010 period only, we assume that a firm with a connection to a politician who held public office before 2005 has a high probability of enjoying privileges in later years. The inclusion of people that were in public office before 2005 allows us to capture more firms that may have benefited from past political connections after 2005.<sup>18</sup>

Second, we used the Commercial Register at the Ministry of Justice to identify PCFs. The Commercial Register covers information on all formal firms that are registered in Lebanon. It includes the names of owners and founders, board members and managers, paid in capital, date of birth, and sector of operation of each firm. We identify as politically connected any firm that includes at least one individual – partial owner, founder, shareholder, or officer – who is on our list of politically connected persons.<sup>19 20</sup> Since PCFs can be expected to be large firms, to make the (manual) search-and-match task manageable, we restricted it to firms that employed at least 50 workers in at least one year between 2005 and 2010.

Third, we matched all the PCFs that we found in the Commercial Register with the MoF dataset. While our MoF dataset does not include names of firms, it includes date of birth and detailed sector of activity for each firm. In all cases we looked at the date of birth and sector characteristic of a firm in our database matched uniquely with a firm in the Commercial Register, allowing us to deduce the name of the PCFs that we wanted to identify.

It is clear that we do not capture all the PCFs in Lebanon with our procedure. However, our aim is to ensure that we do not erroneously characterize any of the firms as a PCF when it is not. In other words, our estimates of the effects of political connections are conservative.

### **3.4 Stylized facts – politically connected firms**

The above three-step procedure allows us to identify 497 PCFs in the MoF dataset. These PCFs include 228 firms connected solely through direct family members or publicly known friends of politicians as well as 269 firms connected directly through politicians themselves. These 497 PCFs are concentrated in the banking, media, energy (including oil and gas distribution), health (i.e. hospitals, drug import and distribution), real-estate construction, road paving, water extraction and sale, mining (including quarries), telecommunication, soft drinks, and pharmaceutical production sectors. All together, they operate in only 29 of the 289 (4-digit) sectors that operate in the country.<sup>21</sup> It should be noted that these are non-tradable sectors, in the sense that they are protected from foreign competition, and do not produce for the export markets. Although some PCFs seem to monopolize particular markets (such as import of pharmaceutical products, or quarries), their large number in other sectors may have increased competition among themselves, which should lower their market dominance in these sectors.

An important difference between PCFs in Lebanon and those in Egypt or Tunisia is that the range of sectors of activity of PCFs in Lebanon is narrower. In Egypt, Diwan et al. (2020) found that PCFs operate in 174 out of 350 4-digit sectors of activity. In Tunisia, the connected sectors are even more widespread – present in 30 of the 32 2-digit economic sectors (Rijkers et al., 2017). In both countries, rents were created by deliberate rent-creating policy changes, such as the introduction of industrial subsidies (mainly cheap fuel), the erection of barriers to foreign investors, and increased trade protection using higher tariff and non-tariff barriers to import (Eibl and Malik 2016). These studies have also shown that policy change tended to *follow* the entry of PCFs in particular sectors. In Lebanon, a weaker state has been unable to implement such ambitious interventions. Instead, rents exist only in sectors of more traditional state influence, such as the application of zoning laws, the regulation of the banking sector, the licensing of schools and hospitals (and quarries), or the control over government procurement.

Table 1 shows the distribution of PCFs in Lebanon, summarizes some of their key characteristics, and compares them to NPCFs in their sectors of activity. Overall, PCFs form 42.7

percent of large firms (with more than 100 workers) and 72 percent of the large firms in the sectors which they operate in. To compare PCFs with NPCFs of the same size category, we also focused on NPCFs that had 50 employees at least once during the period. We observe that PCFs tend to be larger than their non-connected direct sector competitors. On average, each PCF employs 225 workers, compared to an average of 90 employees in NPCFs in the 29 connected sectors (see Table 1). As a group, the PCFs employ over 123,000 employees, which is about 16 percent of the labor force in the formal sector.

One can also observe in Table 1 that, PCFs employ more workers per unit of output produced than NPCFs in 26 of the 29 sectors in which they operate (and especially so in the banking, gas distribution, and pharmaceutical sectors). The fact that larger firms have lower output per worker stands in sharp contrast to the experience of fast growing economies, such as Turkey, where larger firms tend to have higher firm productivity (Atiyas and Bakis, 2015). But although workers in PCFs are less productive than their peers, Table 1 also suggests that in many sectors, they receive higher wages on average.<sup>22</sup>

In sum, while PCFs are the main creators of jobs, they display lower output per worker and pay higher wages than NPCFs. One appealing hypothesis to explain this apparent puzzle is that PCFs are pushed to over-hire among supporters of their patron politician as a payback for the privileges they receive.<sup>23</sup> In the next section, we test the link between political connections and job creation by PCFs in more formal ways.

#### **4. The effects of political connections on firm performance**

We observed that PCFs tend to be larger, create more jobs, pay higher wages, but have less output per worker than NPCFs in their sectors of activity. In this section, we investigate the reasons for these differences: we first describe our hypotheses, and then sketch our econometric strategy. We finally present our empirical tests and firm-level results.

##### **4.1 Hypotheses**

We can only think of three hypotheses that are coherent with these observations. The first hypothesis (H1) is that PCFs are successful because of superior skills, and not because of political connections. As a result of innovations and better management, they are able to beat their competitors, increase their market share, and expand output and employment. Under H1,

successful entrepreneurs tend to become politically connected after they become large employers - they may become politicians themselves, or get close to politicians because of their national importance, but their firms do not receive special privileges from the state.

The second hypothesis (H2) is more in line with the stylized facts, but falls short of accepting that PCFs benefit from economic privileges. It incorporates H1, but in addition, considers the possibility that while PCFs are over the long-run more successful firms than NPCFs, they have been hit by a negative economic shock during our period of investigation and now operate below capacity. Thus, under H2, we expect that PCFs may have lower output per worker than NPCFs because they ended up overstaffed.

The third hypothesis (H3) is that PCFs are pushed to over-hire by politicians as a repayment for favors they bestow on them, and especially so around election time.<sup>24</sup> In other words, they spend part of their extra-profit on hiring more workers than implied by pure profit maximization - with the extent of over-hiring dependent on the relative bargaining powers of PCFs and their political patrons -- ending up with lower levels of output per worker than NPCFs.

## 4.2 Econometric strategy

We are limited in our ability to test H3. A direct test would involve structured fieldwork directed at the employees of these companies and their non-connected competitors. Statistically, we cannot use time-variation to identify a change of behavior by firms when they become connected because the Commercial Register only allows us to capture if a firm was politically connected when it initially registers. Our econometric strategy will instead take advantage of the data we have to construct an indirect proof that argues that: (i) the data contradicts implications of H1 on corporate behavior; (ii) the data supports the implications of H2 and H3 regarding the PCFs and the NPCFs corporate and employment behavior; (iii) the behavior of firms around the 2009 elections supports H3 but not H2; and (iv) H3 is a reasonable statement in the context of the political economy of Lebanon.

Our empirical specifications will focus on the impacts of political-connectedness on the corporate strategies of firms. We estimate:

$$Y_{it} = \beta_0 + \beta_1 PCF_i + \beta_2 Year + \beta_3 Year * PCF_i$$

$$\begin{aligned}
& +\beta_4Size_{it} + \beta_5Age_{it} + \beta_6PCF_{it} * Size_{jt} + \beta_7PCF_{it} * Age_{jt} + \beta_8PCFs_{jt} + \beta_9PCF_i * PCFs_{jt} + \\
& \beta_{10}Size\_S_{jt} + \beta_{11}Age\_S_{jt} + \beta_{12}HHI_{jt} + \beta_{13}Entry_{jt} + \beta_{14}Employment_{jt} + \beta_{15}Capital_{jt} + \\
& \gamma_j + \epsilon_{it} \tag{1}
\end{aligned}$$

where the dependent variable,  $Y_{it}$ , will represent in different estimations net job creation, average wage per employee, output, and productivity per employee at the firm-year level, for firm  $i$ , at time  $t$ . PCF is a dummy variable equal to 1 if the firm is politically-connected, and zero otherwise.<sup>25</sup> Measuring  $\beta_1$  allows us to determine if firm performance vary between PCFs and NPCFs.

The variables on the second line are used to test the existence of an election effect. Year is a vector of dummy variables that equal to 1 in 2007-2010 (year 2006 is the comparator base year). For instance, 2009 is a dummy variable equal to 1 in year 2009, and zero otherwise.<sup>26</sup> The multiplicative term  $PCF_i$  allows us to gauge if PCFs and NPCFs behaved differently during that election year.

The controls on the third line are meant to ensure that firms are compared with others with similar corporate and sector characteristics, so as to reduce possible omitted variable bias.  $Size_{it}$  and  $Age_{it}$  refer to firm size (in terms of number of employees) and age.  $PCFs_{jt}$  represents the number of politically-connected firms at the sector-year level.  $\gamma_j$  denotes 2-digit sector fixed effects. Size\_S, Age\_S, and Capital refer to the average firm employment size, age, and capital (in LBP 10 million), respectively, at the 4-digit sector-year level. Employment refers to the number of employees (in '000) at the sector-year level. Entry rate is the firm entry rate (number of entrants/total number of firms) on a scale from 0-100 at the sector-year level. HHI refers to (output) Herfindahl-Hirschman Index at the sector-year level.<sup>27</sup>

We restrict the regression analysis to the sectors that have sufficient numbers of large firms. We do so because while large firms are more likely to respond to unfair competition by adjusting employment size (i.e., by hiring and firing), while small firms are more likely to respond by exiting a sector. Since we are focusing on the former type of adjustment, we need to ensure that the sectors we look at include a sufficient number of large firms. In the base estimations, we only keep firms in sectors when at least 10% of the firms have more than 50 employees in at least one year between 2005 and 2010.

### 4.3 Results

We now turn to test the above hypotheses. Table 2 report the results of the above empirical specifications. Before turning to election considerations, we observe that the main results provide three reasons to reject H1, the hypothesis that successful firms become politically connected, but are supportive of both H2 and H3.<sup>28</sup>

First, the results confirm that PCFs create more jobs, produce larger output, but exhibit lower labor productivity (output per worker) than firms in their same sector of activity and of similar age and size. Column 3 of Table 2 shows that annual growth rate of employment in PCFs is, on average, 24.23 percent higher than annual growth rate of employment in NPCFs that operate within their same sector (after controlling for the number of PCFs in that sector and for firm size and age).<sup>29 30</sup> For H1 to be consistent with the fact that PCFs are more labor intensive than non-PCFs, it must be the case that NPCFs have privileged access to capital compared to PCFs, and are unsuccessful in spite of this advantage. But while our dataset does not include data on different types of capital, it shows that PCFs have higher initial paid-in capital than NPCFs (Table 1).<sup>31</sup>

A second reason to reject H1 is provided by a comparison of wage setting in PCFs and NPCFs. Table 2 suggests that workers in PCFs do indeed receive higher wages, on average, than workers in NPCFs. Columns 7, 11, and 15 in Tables 2 show that, compared to NPCFs, PCFs pay 21.65 percent higher wage per employee and enjoy 30.08 percent more output per firm while output per employee is 26.94 percent lower.<sup>32</sup> These magnitudes are large. But under H1, there would be no reason to expect good businessmen to offer higher wages when workers are less productive. However, firms with more long-term growth prospects (as in H2) are more likely to offer efficient wages, and the workers employed by PCFs, being clients of powerful politicians, may be able to exert pressure on firms to receive higher wages under H3.

Third, the differential effects of age and size also run counter to H1. We find that older and larger firms are associated with more net job creation, and more so if they are PCFs. However, older and larger PCFs are associated with even lower output per employee and higher average wages, suggesting that overstaffing and overpayment of wages increase over time. These results further favor H2 (PCFs are successful firms hit by shocks), and H3 (PCFs are connected politically and overstaffed because of that), but contradict H1.

The evidence discussed above suggests that we can reject H1, the hypothesis that PCFs are simply successful firms. But it does not strongly allow us to reject H2 in favor of H3. One reason

to suspect that H2 does not apply is that, during our period of study, there was no pattern of fast growth followed by a shock, that could justify why successful firms would be overstaffed. The Lebanese economy grew at a moderate speed during the first half of the 2000s, average 2.5% a year during the period, with a peak of 5.9% in 2004, and a low of 1.6% in 2006, a period of political crisis. Growth rate accelerated in the second half of the decade, at 9.5% in 2007, 9.1% in 2008, 10.3% in 2009, and 8% in 2010, as Lebanon managed to position itself as a safe-haven during the global financial crisis. Growth collapsed afterwards, with the beginning of the Syrian civil war in 2011, oscillated between 1 and 2% between 2011 and 2020.

Beyond these trends, the main argument that we have for rejecting H2 and accepting H3 is the differential performance of PCFs and non-PCFs around the elections of 2009. Under H2, elections should affect all firms in the same manner—negatively, if they generate uncertainty, or positively if they usher a more attractive future. Under H3, elections should generate more pressures for job creation among PCFs as a way to help their political patrons secure votes. Thus, the question is: did PCFs hire more than NPCFs during the 2009 elections, compared to their behavior during other years? We find that the coefficients on PCF\*2009 are positive and significant, implying that net job creation by PCFs was higher than in 2009, compared to 2006. At the same time, their output did not rise by an extra amount in 2009, and as a result, we observe a large deterioration in output per worker. Such effects are not present in other years, as coefficients for the Year and PCF\*Year interactive terms are not significant at conventional statistical levels. The fact that PCFs expand more than NPCFs during the election year, but not in other years, strongly backs H3, and contradicts H2.

Our results also shed light on the effects of increased competition among PCFs, a signal of increased political competition among the political coalitions in Lebanon. Table 2 shows that the increased presence of PCFs in a sector affects the behavior of PCFs and NPCFs differently. More competition by other PCFs (i.e, larger PCF\*PCFs coefficient) reduces PCF's net job creation, wage, and output premiums as well as increases their labor productivity. Column 2 of Table 2 shows that annual growth rate of employment in a PCF is, on average, 28.78 percent higher than annual growth rate of employment in non-PCF that operate within their same sector.<sup>33</sup> Once we control for the number of PCFs in the sector, we find that the average annual employment growth rate differential between PCF and non-PCF, *ceteris paribus*, decreases by 4.56 percentage points to 24.23 percent. Also, the increased presence of PCFs affects hiring by non-PCFs. The log-linear



regression analysis shows that hiring growth of non-PCFs falls by 4.1 percent for each additional PCF in their sector of activity (Column 3, Table 2), but their output per worker is not affected. These findings suggest that more competitive pressures by PCFs reduce their profits and ability to over-expand – their privileges become less valuable, and as a result, their pay-back to politicians becomes less. NPCFs also suffer from more competition. In other words, competition among PCFs does not move the sector to full competition, and the advantages of PCFs over NPCFs remain.

It can be also checked more directly that sector concentration matters. It has long been asserted in Lebanon that in spite of what appears as unbridled competition, markets are in reality heavily concentrated, and that a relatively small elite controls most of the wealth and monopolizes large parts of the economy, and that this may explain low levels of growth in these sectors (Credit Suisse, 2015). Column 4 in Table 2 shows that higher output concentration within a sector is associated with lower employment growth at the firm level in that sector.<sup>34 35</sup>

The explanatory power of the variables in our estimations is relatively high, as evidenced by the R-squared measures. The high R-squared measures are brought about by the explanatory variables and not by the fixed effects in our estimations. Also, each of the coefficients of interest is statistically significant at conventional levels.

Comparing firms in connected sectors has thus allowed us to accept H3, the hypothesis that PCFs over-hire. We also found evidence that employment growth in NPCFs shrinks as the number of PCFs expands in their sectors. But so far, we have not measured the net effect of political connections on sector-level job creation. To answer this question, we compare in the next section sector performance as it relates to the presence PCFs in each sector.

## **5. The effects of political connections on sector performance**

The above results show that PCFs contributed positively to employment growth in Lebanon. However, they had negative impact on job creation by their competitors. Thus, their net effect on aggregate job creation in their sectors is undetermined, and an open empirical question. But even if we found (as we do) a negative association between the existence of political connections and sector-level growth and job creation, the problem of identifying the underlying cause of this under-performance remain a complicated task, as correlation does not prove causality. As in the previous section, our strategy is to list all plausible reasons that can explain this

correlation, and to then proceed by elimination to approach proving that causality runs from political connection to low sector performance.

## 5.1 Hypotheses

We cannot observe a counterfactual of firm dynamics in absence of PCFs in particular sectors, since our time series is not long enough to observe the entry of PCFs in previously unconnected sectors. So, we will have to resort to comparing dynamics in sectors that are *similar*, as a function of the variation in the intensity of their political connections.

We can only think of three coherent hypotheses that can explain the differential effects of sector-level political connections and job creation. The first possible interpretation is along Aghion et al (2001) competition argument (call this hypothesis, H4). In industries that exhibit monopolistic competition, competing firms have incentives to pursue productivity growth only when they have comparable cost structures. Each firm is pushed to invest in the adoption of new technologies to reduce its costs and escape competition, at least temporarily, and thus generate productivity gains that boost aggregate economic growth. Aghion et al. (2001) showed that while perfect competition can reduce the incentives for innovation by reducing the discounted present value of rents from innovations (*rent-dissipation effect*), too little competition has the same effect. When leading firms in their sector have large (and exogenous) cost advantages that cannot be overcome by trailing firms, the market leaders have little incentive to invest in innovation, since they do not face competitive pressures to reduce their costs. At the same time, the laggard firms are too far away from the frontier to bridge the cost gap, and instead, they use vintage production technologies, focusing on local market niches to survive.<sup>36</sup> Thus, too little competition can also hurt growth.

A second possible hypothesis is that there is an endogenous selection of PCFs into sectors with specific characteristics. In particular, PCFs may exist more in rent-filled sectors which may have low growth opportunities - for example, PCFs tend to operate predominantly in the construction sector, which benefits disproportionately from state procurement of public works, but which does not experience fast technical change. In this case, PCFs would not be causing low growth in the sectors they enter - instead, they simply prefer to enter into low growth sectors.<sup>37</sup> We call this hypothesis H5.

A final alternative possibility is that PCFs are likely to be capital intensive, because of their preferential access to credit, as implied by Chaaban (2019) finding that banking is dominated by

PCFs. When they expand, sector output expands, but jobs can disappear at the sector-level because machines substitute for jobs, and not because NPCFs shrink. We call this hypothesis H6.

Thus, and as we cannot think of other coherent explanations, we need to find empirical methods that test whether sector dynamics are consistent with H4, but contradict H5 and H6. H4 (but also H5 and H6) would be supported if the performance of connected sectors is lower than that of non-connected sectors. To test H5, we should control for *enough* sector characteristics, to compare sectors with and without PCFs that would otherwise tend to show similar characteristics. To test H6, we can compare sector output and employment with and without the presence of PCFs. If output is higher but employment is lower, this would be evidence to support H5. However, if connected sectors have a lower performance in terms of both employment and output, then this would be taken to be evidence that helps reject H6. The elections episode provides an additional (but weaker) test. If sectors with PCFs deteriorate more during elections year, then H5 would be disproved, since the sectors with PCFs cannot become less growth friendly only around elections. However, this would be coherent with H4, indicating that NPCFs have cut their output in marked way to offset an expansion of PCFs production in their sector.

## 5.2 Econometric strategy

Comparing sectors is a less precise endeavor than comparing firms, since the number of sectors with political connections is relatively small.<sup>38</sup> We can compare sectors according to whether they are connected or not (both at the 4-digit sector-level). To control for sector characteristics, we include many relevant controls. More precisely, we estimate:

$$\begin{aligned}
 Y_{jt} = & \beta_0 + \beta_1 PCFs_{jt} \\
 & + \beta_2 Year + \beta_3 Year * PCFs_{jt} \\
 & + \beta_4 Size_{P_{jt}} + \beta_5 Age_{P_{jt}} + \beta_6 Size_{N_{jt}} + \beta_7 Age_{N_{jt}} + \beta_8 HHI_{jt} + \beta_9 Entry_{jt} + \\
 & \beta_{10} Employment_{jt} + \gamma_j + \epsilon_{it}
 \end{aligned} \tag{2}$$

where  $Y_{it}$ , in different estimations represents net job creation, average wage per employee, output, and output per employee at the sector-year level.  $PCFs_{jt}$  is the number of politically-connected firms at the sector-year level.

As before, the elements on the second line test for the existence of an elections effect.  $Year$  is a vector of dummy variables that equal to 1 in 2007-2010 (year 2006 is the comparator base year). For instance, 2009 is a dummy variable equal to 1 in year 2009 (year of parliamentary

elections), and zero otherwise. The third line includes a long list of sector characteristics. Size\_P and Age\_P represent average size (employment) and age of PCFs in the sector-year. Size\_N and Age\_N represent average (employment) size and age of NPCFs in the sector-year. These terms allow for a comparison of the effect of size and age in sectors with and without PCFs. Entry rate represents the firm entry rate (number of entrants/total number of firms) on a scale from 0-100 at the sector-year level.  $\gamma_j$  denotes 2-digit sector fixed effects. HHI refers to the (output) Herfindahl-Hirschman Index at the sector-year level. Employment refers to the number of employees (in '000) in the sector-year. We restricted the analysis to all 4-digit sectors with at least 10 percent of the firms having at least 50 employees in at least one year between 2005 and 2010.<sup>39</sup>

### 5.3 Results

The results are in Table 3. There are four main findings. First, politically connected sectors (PCSs) grow less, create less jobs, have lower output per labor, and pay higher wages than non-connected sectors. Second, all these characteristics get worse when the number of PCFs in the sector rises. Third, the presence of old and large firms improves sector performance when these firms are non-connected, but worsens it when they are connected. Fourth, all sectors grew less during the 2009 election year, but politically connected sectors grew less than non-connected sectors.

The explanatory power of the variables in our estimations are relatively high, as evidenced by the R-squared measures. The high R-squared measures are brought about by the explanatory variables and not by the fixed effects in our estimations. Moreover, all the coefficients of interest are statistically significant at conventional levels.

These results support H4. Not only do connected sectors grow less than non-connected sectors, but growth gets smaller the more PCFs operate in the sector. For every additional PCF in a sector, 9.4 (6.8+2.6) percent less jobs are created. Importantly, the negative impact of every additional PCF on job creation in a sector is strengthened during the year of elections of 2009 (column 3, Table 3). On the other hand, the Year and PCF\*Year interactive terms other than 2009 have coefficients that are not significant at conventional statistical levels, showing that this additional effect is particular to the election year. Since we had found earlier that PCFs expand more during the election year, one can infer that it is this expansion that causes the sector to grow less, by making NPCFs create fewer jobs as they shrink when PCFs expand due to limited market

size. Also, sector growth gets smaller the older and larger the PCFs in the sector - characteristics that should reduce competition. But the opposite holds with respect to the average size and age of NPCFs, characteristics that are likely to increase competition in the sector.

Importantly, the evidence contradicts elements of the two alternative hypotheses. It is possible to reject H5 - that PCFs tend to be more present in low-growth sectors to start with - because the main result noted above survives even after the addition of the battery of sector controls. Moreover, we find that sectors dominated by PCFs deteriorate even more during the election year. And, we disprove H6 because we find that connected sectors shrink in terms of output, jobs, and labor productivity. Thus, the loss of jobs in the connected sectors is not due to improved labor productivity.

This process of elimination makes H4 the only data-supported hypothesis. Although PCFs over-hire, the negative incentives to innovate and invest created by unfair competition in the sector in which they operate lead to less job creation compared to non-connected sectors. The magnitude of the dis-incentive effect can be compared to the case of Egypt. Diwan et al (2020) estimate that the entry of a PCF into a previously unconnected sector in Egypt reduces employment growth in this sector by 15-25 percent. Where there is more than 3 PCFs in a sector (as evident in Table 1), the negative sector effect of cronyism on jobs would be larger in Lebanon than in Egypt. However, as stated earlier, a larger share of sectors of activity are politically connected in Egypt, and thus, the overall macroeconomic cost of cronyism is likely to be larger in Egypt than in Lebanon.

We acknowledge that the identification of causal effects is a challenging task, given that the distribution of political connections is non-random. Also, it is difficult to make a strong case for particular mechanisms when applying a reduced-form empirical strategy. However, by using the election event as an identification strategy, and finding that these dynamics are exacerbated in the vicinity of the election, we believe that we have been able to more convincingly connect the expansion of PCFs with a reduction in aggregate jobs.

## **6. Conclusions**

Using a new dataset, we reach two conclusions about the effect of political connections on employment growth in Lebanon. First, politically connected firms are larger and create more jobs, but are also less productive and pay higher wages than non-PCFs in their sectors. Second, PCFs reduce net job creation at the sector level by affecting the growth of non-PCFs: for every additional

PCF in a sector, 9.4 percent less jobs are created. These results thus suggest that cronyism and clientelism have weighted down on economic growth in Lebanon, and that the negative effect is large.

It would be tricky to draw policy implications from these results. At one level, they suggest that pro-market competition policies would lead to more growth and job creation over time, compared, for example, to second best policies such as those that support creation and growth of small and medium enterprises using subsidized credit. At a deeper level, however, a more competitive economic structure would not support the current oligarchic political equilibrium, and would possibly lead to political chaos, unless a different political system was in place in the country. Nevertheless, a better understanding of the state-business relations can put informed citizen groups in a better position to influence changes that can improve the overall economic and political environment.

Future research can examine further the general equilibrium implications of the existence of connected firms. While we have focused on the within sector implication of lower levels of competition, other broader effects may exist. Additional effects in the labor and capital markets may crowd out non-connected firms in all sectors of the economy. In particular, if PCFs push national wages up, especially around election years, firms in all sectors may react by reducing hiring. Similarly, if the expansion of PCFs is financed from the financial markets, this can crowd out borrowing by other firms, and result again in lower job expansion, even in sectors that PCFs do not dominate.

---

<sup>1</sup> Acknowledgements: An earlier version of this paper has been circulated under the title “Do Political Connections Reduce Job Creation? Evidence from Lebanon”. We acknowledge research funding from the Economic Research Forum. We thank Khalid Abu-Ismaïl, Mohammad Amin, Jihad Azour, Jose de Sousa, Shantayanan Devarajan, Sergei Guriev, Philip Keefer, Adeel Malik, Bob Rijkers, Charbel Nahhas, Nisreen Salti, as well as seminar participants at Harvard University, Université Paris-Dauphine, University of Massachusetts (Boston), Pomona College, University of Oxford, University of Massachusetts (Amherst), The American University of Beirut, The American University in Cairo, The Doha Institute for Graduate Studies, World Bank MENA Chief Economist Office, UN-ESCWA, and EBRD Chief Economist Office for useful comments, insights, and suggestions. Haya Anis provided effective research assistance. Jawad Ahmad Hassan provided inspiration. We thank the Directorate of Revenues, Lebanese Ministry of Finance (MoF) for granting us access to proprietary data subject to complying with the confidentiality requirements set by Lebanese Law. We are solely responsible for the conclusions and inferences drawn from these data.

<sup>2</sup> It is important to recognize that there are payoffs beyond job creation that politicians may enjoy. For instance, political support by politically connected media is more likely to be in influencing public opinion rather than in creating jobs.

<sup>3</sup> International Labor Organization estimates show that total youth unemployment ranged between 17-23 percent between 2005 and 2010 in Lebanon.

<sup>4</sup> The restricted coalitions of the 1960s allowed for a large degree of macro stability that oversaw some of the fastest economic growth rates in the world. However, the narrow socio-economic coalition could not hinder the rise of groups that fell excluded, and the country burst increasingly into cycles of grievances and violence that ultimately led to the civil war of 1975-1989.

<sup>5</sup> The Ta'if Agreement, also known as the National Reconciliation Accord, was reached in October 1989 to provide the basis for ending the Lebanese civil war. It was negotiated and signed in Ta'if, Saudi Arabia.

<sup>6</sup> Different types of rents can differ in the extent to which they support economic growth (rents from cooperation) versus the extent to which they tax growth (external rents that generate political divisions, regulatory rents). The first type relates to the conditions of security that allowed Lebanon, at a time, to become a touristic entrepot and banking center in a troubled region. The second type relates to the use of state provided

---

patrimonial instruments (such as state employment, controls over various funds, choice of infrastructure investments) as well as economic distortions (such as access to public procurement, and the way in which the policy framework benefits particular groups).

<sup>7</sup> The distribution of state favors in the post-war period neglected redistribution to the poorest in favor of equal shares to the different communities. Group composition and share of public spending were strikingly equal, based on distribution of public capital expenditure (1996-2005) and distribution of registered voters (Salti and Chaaban, 2010).

<sup>8</sup> For example, The Council of Development and Reconstruction (CDR), the Council of the South, the Ministry of Energy (and its lucrative import of oil), and the Ministries of the Displaced, Public Works, and Health were under the suzerainty of different political groups (Leenders, 2012).

<sup>9</sup> Public sector recruitment also rose from 3300 positions in 2008 to 5941 in 2009 but then dropped to 762 in 2010 (see Abou Jaoude, 2015).

<sup>10</sup> These firms are legally bound to be also registered in the Commercial Register and at the National Social Security Fund (NSSF).

<sup>11</sup> To check the accuracy with which the MoF data captures new firms, we compared the sector-capital-year-date-of-birth-data in the MoF dataset with the CR registry data. We found that the MoF data identified firm start dates accurately.

<sup>12</sup> We defined “abnormally high” volatility as a change that was equivalent to more than 100 percent between  $t$  and  $t+1$  followed by a change that took the output per worker level to less than its initial ( $t$ ) value at  $t+2$ . An example of reporting error is when a firm is reported to pay taxes before it is established.

<sup>13</sup> Ayyagari et al. (2014), Aga et al. (2015), and World Bank (2016)

<sup>14</sup> In Turkey, Tunisia, and Jordan only 20 to 30 percent of labor work in firms with more than 10 workers, while in Egypt and the West Bank and Gaza this figure is below 10 percent. The share of employment in firms with less than five employees is much larger in Egypt and the West Bank (about 60%), Jordan (40%), Tunisia (37%), and even in Turkey (34%) (Figure 1.5, page 19, World Bank 2014).

<sup>15</sup> This contradicts the result in World Bank (2014), which, using the same dataset, claims that most of the new jobs in Lebanon during the period were created by micro-firms. Upon further inspection, it turns out that this study mistakenly coded all employment in micro-firms as new jobs.

<sup>16</sup> Haltiwanger et al. (2013) found similar trend for United States as well. See Evans (1987), Klapper and Richmond (2011), Neumark et al. (2011), and Van Biesebroeck (2005) for related evidence.

<sup>17</sup> Using the framework of Macneil (1978), we considered that firm-level political connections in Lebanon are relational, as there is anecdotal evidence that firms in Lebanon maintain long-term benefits from political connections, instead of transactional, and directed towards short-term economic benefits.

<sup>18</sup> We checked whether the effect of connections is different for those who were in office in 2005-2010 compared to ones who were in office before then, and did not find a statistically significant difference.

<sup>19</sup> The process of matching (Arabic) names creates possibilities of errors when different database use a different spelling, or when different individuals have the same name. We tried to minimize this error by allowing for common spelling variants, and matching first, middle, and last names before classifying a firm as politically connected.

<sup>20</sup> Admittedly, this procedure may exclude PCF firms owning other firms, if no politically connected individual is involved publicly in that lower tier firm. There is also a risk that our measure is correlated with a firm's attributes, such as its number of owners, since having more owners may increase the chances of matching.

<sup>21</sup> All the sectors identified by Leenders (2012) as politically connected are captured by our methodology.

<sup>22</sup> T-tests have also been calculated and show the mean differences are statistically significant. T-test results are not reported for space reasons.

<sup>23</sup> Bertrand et al. (2018) provide support for this hypothesis using data from France.

<sup>24</sup> This supposes a long-term relation of trust, which is typically provided by repeated games that end up constituting a relational contract.

<sup>25</sup> We are not in a position to determine the strength of political connections of firms as that involves making subjective judgments about how much influence each politician possesses. In addition, given that we consider firm-level political connections to be relational instead of transactional, and that we did not find statistically significant difference when we tested whether the effect of connections is different for those who were in office in 2005-2010 compared to those who were in office before then (see section 3.3), we did not differentiate between different types of connections based on alignment with the ruling coalition.

<sup>26</sup> The 2009 elections resulted in winners and losers. One would expect positive impacts amongst firms aligned with the winners, and negative impacts among firms that are not. But our dataset ends in 2010 and thus does not allow further analysis of effect of election results on corporate behavior.

<sup>27</sup> HHI is defined as the sum of the squares of the market output shares of the firms within the sector, where the market shares are expressed as fractions. The result is proportional to the average market share, weighted by market share. As such, it can range from 0 to 1, moving from a large number of very small firms to a single monopolistic firm. To facilitate empirical interpretation, we multiplied HHI figures by 100; so, in the above estimations HHI figures range from 0 to 100.

<sup>28</sup> For robustness checks, i.e., to reduce selection bias and avoid generating a spurious correlation between political connectedness and employment growth at firm level, in a separate exercise, we also limited the analysis to firms with more than 50 employees. Results hold but are not presented for space purpose.

<sup>29</sup> Along the lines of the firm growth rate that was introduced by Davis, Haltiwanger, and Shuh (1998), NJC-f in column 3 of Table 2 refers to the log of net employment growth, using our measure of firm-level employment growth which is equal to the log of (change in employment from year  $t-1$  to year  $t$ , divided by employment in year  $t-1$ ).

<sup>30</sup> After controlling for firm size and age, column 3 of Table 2 shows that annual growth rate of employment in PCFs is, on average, 24.23 percent  $[100*(EXP(0.185+0.047+0.023+0.015-0.053)-1)]$  higher than annual growth rate of employment in NPCFs that operate within their same sector. Note that in computing these effects, we replace non-significant estimates by zero.

<sup>31</sup> Moreover, Chaaban (2019) shows that banks in Lebanon are overwhelmingly owned by politically connected individuals, and we can thus expect them to lend disproportionately to firms that belong to their corporate networks.

<sup>32</sup> Compared to NPCFs, PCFs pay 21.65 percent  $[100*(EXP(0.151+0.037+0.028-0.02)-1)]$  higher wage per employee and enjoy 30.08 percent  $[100*(EXP(0.238+0.033+0.016-0.024)-1)]$  more output per firm while output per employee is 26.94 percent  $[100*(EXP(-0.228-0.051-0.019-0.026+0.01)-1)]$  lower.

<sup>33</sup> Annual growth rate of employment in a PCF is, on average, 28.78 percent  $[100*(EXP(0.186+0.038+0.018+0.011)-1)]$  higher than annual growth rate of employment in non-PCF that operate within their same sector.

---

<sup>34</sup> We also checked whether political connections correlate with market concentration. We found on average significantly higher market concentration in sectors where a higher number of PCFs exist - although some highly concentrated sectors are not dominated by PCFs, and some sectors dominated by PCFs are not highly concentrated.

<sup>35</sup> For robustness checks for all estimations in Table 2, i.e., to reduce selection bias, in separate exercises, we also limited the analysis to firms with more than 50 employees. Results hold but are not presented for space purpose. And, all regressions include time dummies for all years, not just 2009. The Year and PCF\*Year interactive terms had coefficients that are much smaller while still positive in terms of magnitude in years other than 2009 but that are not significant at conventional statistical levels.

<sup>36</sup> Also, Aghion, et al. (2009) reported empirical tests of predictions of the model with respect to the effects of product market competition and entry deregulation on growth.

<sup>37</sup> A related argument is that rent-filled sectors may be naturally less competitive, for example because of high entry costs, and thus have lower entry and exit rates.

<sup>38</sup> There are 289 sectors disaggregated at the 4-digit level in Lebanon. 29 of these sectors include PCFs.

<sup>39</sup> All regressions in Table 3 include time dummies for all years, not just 2009. The Year and PCF\*Year interactive terms had coefficients that are much smaller while still negative in terms of magnitude in years other than 2009 but that are not significant at conventional statistical levels.

## References

- Abou Jaoude, H., (2015). "Labour market and employment policy in Lebanon." ETF Working Paper.
- Acemoglu, D., Hassan, T., & Tahoun, A. (2018). The Power of the Street: Evidence from Egypt's Arab Spring. *Review of Financial Studies*, 31(1), 1-42. <https://doi.org/10.1093/rfs/hhx086>
- Aga, G., Francis, D., Rodriguez Meza, J., (2015). "SMEs, age, and jobs: A review of the literature, metrics, and evidence." World Bank Policy Research Working Paper 7493.
- Aghion, P., Harris, C., Howitt, P., & Vickers, J. (2001). Competition, Imitation and Growth with Step-by-Step Innovation. *The Review of Economic Studies*, 68(3), 467-492. <https://doi.org/10.1111/1467-937X.00177>
- 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. <https://doi.org/10.1162/rest.91.1.20>
- Atiyas, I. and Bakis, O., (2015). Structural Change and Industrial Policy in Turkey. *Emerging Markets Finance and Trade*, 51(6), 1209-1229. <https://doi.org/10.1080/1540496X.2015.1080523>
- Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V., (2014). Who creates jobs in developing countries? *Small Business Economics*, 43(1), 75-99. <https://doi.org/10.1007/s11187-014-9549-5>
- Bertrand, M., Kramarz, F., Schoar, A., & Thesmar, D. (2018). The Cost of Political Connections. *Review of Finance*, 22, 849–876. <https://doi.org/10.1093/rof/rfy008>
- Chaaban, J. (2019). Mapping Connections between Lebanon's Banking Sector and the Ruling Class. in *Crony Capitalism in the Middle East: Business and Politics from Liberalization to the Arab Spring* (edited by Ishac Diwan, Izak Atiyas, and Adeel Malik), Oxford University Press.
- Claessens, S., Feijen, E., & Laeven, L. (2008). Political connections and preferential access to finance: The role of campaign contributions. *Journal of Financial Economics*, 88, 554–580. <https://doi.org/10.1016/j.jfineco.2006.11.003>
- Corstange, D. (2016). *The Price of a Vote in the Middle East: Clientelism and Communal Politics in Lebanon and Yemen*. Cambridge University Press. Cambridge, UK. <https://doi.org/10.1017/CBO9781316227169>



Credit Suisse, 2015. *Global Wealth Databook*.

Cull, R., & Xu, L. (2005). Institutions, ownership, and finance: The determinants of profit reinvestment among Chinese firms. *Journal of Financial Economics*, 77(1), 117–146. <https://doi.org/10.1016/j.jfineco.2004.05.010>

Davis, S. J., Haltiwanger, J. C., & Schuh, S. (1998). *Job creation and destruction*. MIT Press, Cambridge, MA, USA.

Dinc, I. (2005). Politicians and banks: Political influences on government-owned banks in emerging markets. *Journal of Financial Economics*, 77, 453–479. <https://doi.org/10.1016/j.jfineco.2004.06.011>

Diwan, I., Keefer, P., & Schiffbauer, M., (2020). Pyramid Capitalism: Political Connections, Regulation, and Firm Productivity in Egypt. *Review of International Organizations*, 15(1), 211-246. <https://doi.org/10.1007/s11558-018-9327-2>

Eibl, E., and Malik, A., (2016). The Politics of Partial Liberalization: Cronyism and Non-Tariff Protection in Mubarak's Egypt. Center for the Study of African Economics (CSAE) Working Paper Series 2016-27, Oxford, UK.

Evans, D. S. (1987). The Relationship Between Firm Growth, Size, and Age: Estimates for 100 Manufacturing Industries. *The Journal of Industrial Economics*, 567–581. <https://doi.org/10.2307/2098588>

Faccio, M. (2006). Politically Connected Firms. *American Economic Review*, 96(1), 369–386. <https://doi.org/10.1257/000282806776157704>

Fisman, R. (2001). Estimating the Value of Political Connections. *American Economic Review*, 1095–1102. <https://doi.org/10.1257/aer.91.4.1095>

Francis, B. B., Hasan, I., Sun, X., & Wu, Q. (2016). CEO political preference and corporate tax sheltering. *Journal of Corporate Finance*, 38, 37–53. <https://doi.org/10.1016/j.jcorpfin.2016.03.003>

Goldman, E., Rocholl, J., & So, J. (2013). Politically Connected Boards of Directors and The Allocation of Procurement Contracts. *Review of Finance*, 17, 1617–1648. <https://doi.org/10.1093/rof/rfs039>

Haltiwanger, J., Jarmin, R. S., & Miranda, J. (2013). Who Creates Jobs? Small versus Large versus Young. *Review of Economics and Statistics*, 347–361. [https://doi.org/10.1162/REST\\_a\\_00288](https://doi.org/10.1162/REST_a_00288)

Hochman, G., Tabakis, C., & Zilberman, D. (2013). The impact of international trade on institutions and infrastructure. *Journal of Comparative Economics*, 41(1), 126–140. <https://doi.org/10.1016/j.jce.2012.07.001>

Hsieh, C.-T., & Klenow, P. J. (2009). Misallocation and Manufacturing TFP in China and India \*. *Quarterly Journal of Economics*, 1403–1448. <https://doi.org/10.1162/qjec.2009.124.4.1403>

Ibrahim, R., and Saoud, G., (2015). The Ruler by Money's Order – *Al-Hakem bi Amr Al-Mal. Al-Akhbar*.

International Labor Organization. Towards Decent Work in Lebanon: Issues and Challenges in

- Light of the Syrian Refugee Crisis. 2015.
- Johnson, S., & Mitton, T. (2003). Cronyism and capital controls: Evidence from Malaysia. *Journal of Financial Economics*, 351–382. [https://doi.org/10.1016/S0304-405X\(02\)00255-6](https://doi.org/10.1016/S0304-405X(02)00255-6)
- Khwaja, A. I., & Mian, A. (2005). Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market. *The Quarterly Journal of Economics*, 1371–1411. <https://doi.org/10.1162/003355305775097524>
- Klapper, L., & Richmond, C. (2011). Patterns of business creation, survival and growth: Evidence from Africa. *Labour Economics*, S32–S44. <https://doi.org/10.1016/j.labeco.2011.09.004>
- Lebanese Center for Policy Studies, (2013). Finding a Job in Lebanon: The Hidden Cost of Using Personal Connections.
- Leenders, R. (2012). *Spoils of truce: Corruption and state-building in postwar Lebanon*. Ithaca, New York. <https://doi.org/10.7591/cornell/9780801451003.001.0001>
- Leuz, C., & Oberholzergee, F. (2006). Political relationships, global financing, and corporate transparency: Evidence from Indonesia. *Journal of Financial Economics*, 411–439. <https://doi.org/10.1016/j.jfineco.2005.06.006>
- Macneil, I. R. (1978). Contracts: Adjustment of Long-Term Economic Relations under Classical, Neoclassical, and Relational Contract Law. *Northwestern University Law Review*, 72, 854–905.
- Neumark, D., Wall, B., & Zhang, J. (2011). Do Small Businesses Create More Jobs? New Evidence for the United States from the National Establishment Time Series. *Review of Economics and Statistics*, 93(1), 16–29. [https://doi.org/10.1162/REST\\_a\\_00060](https://doi.org/10.1162/REST_a_00060)
- Rijkers, B., Baghdadi, L., & Raballand, G. (2017). Political Connections and Tariff Evasion Evidence from Tunisia. *The World Bank Economic Review*, 459–482. <https://doi.org/10.1093/wber/lhv061>
- Rijkers, B., Freund, C., & Nucifora, A. (2017). All in the family: State capture in Tunisia. *Journal of Development Economics*, 124, 41–59. <https://doi.org/10.1016/j.jdeveco.2016.08.002>
- Salibi, K. S. (1988). *A House of Many Mansions: The History of Lebanon Reconsidered*. New York, NY: I.B. Tauris & Co Ltd
- Salti, N., & Chaaban, J. (2010). The Role of sectarianism in the Allocation of Public Expenditure in Post-War Lebanon. *International Journal of Middle East Studies*, 637–655. <https://doi.org/10.1017/S0020743810000851>
- Shleifer, A., & Vishny, R. W. (1994). Politicians and Firms. *The Quarterly Journal of Economics*, 995–1025. <https://doi.org/10.2307/2118354>
- Traboulsi, F. (2015). *A History of Modern Lebanon*. London: Pluto Press. <https://doi.org/10.2307/j.ctt183p4f5>
- Van Biesebroeck, J. (2005). Firm Size Matters: Growth and Productivity Growth in African Manufacturing. *Economic Development and Cultural Change*, 545–583. <https://doi.org/10.1086/426407>
- World Bank (2014). *Jobs or Privileges: Unleashing the employment potential of the Middle East and North Africa*. Washington, DC: World Bank.

- Yu, F., & Yu, X. (2011). Corporate Lobbying and Fraud Detection. *Journal of Financial and Quantitative Analysis*, 1865–1891. <https://doi.org/10.1017/S0022109011000457>
- Ziadeh, H. (2006). *Sectarianism and intercommunal nation-building in Lebanon*. London: Hurst and Co. <https://doi.org/10.1177/00223433070440030715>

**Table 1: Characteristics of politically-connected firms in Lebanon**

Sector	Politically connected firms, PCFs						Non politically connected firms, NPCFs					
	Number of firms	# workers per firm	Output per worker	Wage per worker	Age	Initial Paid in Capital	Number of firms	# workers per firm	Output per worker	Wage per worker	Age	Initial Paid in Capital
Real estate development	103	247	155	15	10	352	51	48	181	12	13	320
Private-contractors of public works	54	79	53	15	11	81	18	55	73	9	15	76
Hotels	34	80	100	14	8	298	22	52	82	9	9	210
Commercial banks	31	793	312	40	28	721	28	421	380	24	26	590
Private schools	28	619	39	14	18	50	118	111	42	10	23	45
Security companies	23	711	16	13	6	96	5	86	19	9	9	73
Building cleaning services	22	145	22	10	8	11	12	62	33	9	11	14
Waterfront resorts	21	229	17	10	8	2300	17	48	27	8	10	1610
Business and management consulting	17	72	23	12	8	25	23	51	28	9	11	17
Shipping lines	17	53	93	12	11	30	4	65	69	9	8	26
Financial intermediaries	15	39	162	16	11	161	10	56	171	12	13	138
Quarries	14	74	57	10	10	24	42	46	65	8	15	31
Telecommunications companies	14	65	68	11	12	18	16	48	74	9	14	13
Insurance companies	13	130	43	28	11	42	19	80	51	15	16	34
Garbage collection companies	11	315	21	10	9	380	8	91	28	9	10	140
Print houses	9	47	141	15	10	100	39	82	73	8	10	73
Domestic transportation companies	9	144	18	11	10	95	43	45	28	8	16	32
Hospitals	8	321	28	36	19	250	100	123	39	23	25	161
Mineral water production	7	167	47	12	10	370	8	63	61	8	12	224
Private universities	7	619	56	32	8	750	21	212	82	20	9	410
Sport centers	6	93	59	13	5	150	3	41	79	8	6	112
Gas distributors	4	146	347	12	11	1200	3	52	378	9	13	910
Soft-drinks production	4	302	155	15	19	240	2	87	173	9	15	210
Dairy products manufacturing	4	157	200	9	13	97	8	61	229	6	16	68
Electrical equipment manufacturing	3	52	45	9	11	81	2	69	51	7	14	78
Importers and producers of pharma	2	180	322	15	12	250	6	59	361	9	9	280
Newspaper and magazine production	4	166	62	15	30	95	3	80	84	9	18	84
Radio and TV production	11	363	71	18	13	340	5	231	85	9	10	224
Advertising companies	2	103	92	19	10	120	3	73	101	10	12	87
Totals	497	224.51	97.37	15.89	12.06	300.93	639	89.58	108.51	10.48	13.37	216.89

Note: Output per worker, wage per worker, and capital are in LBP millions. Figures represent annual averages at the firm-level. This table includes only firms with at least 50 employees in any year between 2005 and 2010 in politically-connected sectors (PCSs). None of the remaining (2237) firms in PCSs had 50 employees in any year between 2005 and 2010. T-tests have also been calculated and show the mean differences are statistically significant. T-test results are not reported for space reasons.

**Table 2: The effect of political connections on net job creation, wage per employee, output, and output per worker at the firm level**

	NJC-f				Wage-f				Output per firm at year level				Output per worker at the firm-year level			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PCF	0.191*	0.186*	0.185**	0.180**	0.163**	0.155**	0.151**	0.141**	0.249**	0.242**	0.238**	0.217**	-0.251***	-0.332***	-0.228***	-0.223**
	(0.053)	(0.051)	(0.048)	(0.049)	(0.012)	(0.016)	(0.022)	(0.013)	(0.027)	(0.022)	(0.019)	(0.024)	(0.008)	(0.005)	(0.000)	(0.011)
2009	0.049	0.046	0.051	0.058	0.064	0.082	0.071	0.068	0.036	0.028	0.031	0.039	0.023	0.024	0.031	0.029
	(0.124)	(0.122)	(0.124)	(0.134)	(0.217)	(0.144)	(0.156)	(0.126)	(0.291)	(0.264)	(0.286)	(0.317)	(0.317)	(0.159)	(0.198)	(0.215)
PCF*2009	0.034*	0.038*	0.047**	0.051**	0.034	0.117	0.113	0.079	0.014	0.013	0.017	0.024	-0.036*	-0.040**	-0.051**	-0.052**
	(0.067)	(0.058)	(0.028)	(0.027)	(0.115)	(0.124)	(0.126)	(0.141)	(0.115)	(0.184)	(0.145)	(0.135)	(0.073)	(0.031)	(0.0281)	(0.029)
Size		0.024**	0.020**	0.026**		0.015*	0.019*	0.016*		0.022*	0.017*	0.021*		0.009	0.013	0.014
		(0.023)	(0.011)	(0.031)		(0.062)	(0.059)	(0.055)		(0.061)	(0.055)	(0.057)		(0.136)	(0.129)	(0.116)
Age		0.012*	0.009*	0.012*		0.010*	0.009*	0.010*		0.019*	0.013	0.019		0.011	0.021	0.019
		(0.067)	(0.063)	(0.057)		(0.053)	(0.048)	(0.050)		(0.085)	(0.101)	(0.144)		(0.134)	(0.134)	(0.142)
PCF*Size		0.018**	0.023**	0.025**		0.028*	0.037*	0.032*		0.021*	0.033**	0.017**		-0.010*	-0.019**	-0.013*
		(0.049)	(0.041)	(0.036)		(0.081)	(0.061)	(0.054)		(0.054)	(0.048)	(0.043)		(0.051)	(0.014)	(0.054)
PCF*Age		0.011*	0.015*	0.016*		0.020*	0.028*	0.021*		0.011*	0.016*	0.023*		-0.016*	-0.026*	-0.018*
		(0.073)	(0.069)	(0.063)		(0.063)	(0.064)	(0.051)		(0.072)	(0.062)	(0.062)		(0.073)	(0.019)	(0.066)
PCFs			-0.041**	-0.044**			0.017	0.016			-0.068*	-0.071*			0.012	0.016
			(0.022)	(0.013)			(0.523)	(0.597)			(0.055)	(0.053)			(0.175)	(0.148)
PCF*PCFs			-0.053**	-0.058**			-0.020**	-0.019*			-0.024**	-0.048**			0.010**	0.013*
			(0.044)	(0.052)			(0.047)	(0.052)			(0.046)	(0.037)			(0.024)	(0.052)
Herfindahl-Hirschman				-0.008*				0.021				-0.009*				-0.028*
				(0.061)				(0.113)				(0.081)				(0.054)
Entry rate				0.024*				0.018				0.028				0.051*
				(0.091)				(0.314)				(0.117)				(0.092)
Employment				0.011				0.018				0.014				0.010
				(0.138)				(0.128)				(0.128)				(0.141)
Size_S				0.016**				0.010*				0.022*				0.021
				(0.033)				(0.051)				(0.059)				(0.132)
Age_S				0.019*				0.017				0.014*				0.016
				(0.055)				(0.163)				(0.087)				(0.108)
Capital_S				0.021*				0.031*				0.013**				0.053
				(0.067)				(0.052)				(0.025)				(0.162)
2-digit Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	12130	12130	12130	12130	12130	12130	12130	12130	12130	12130	12130	12130	12130	12130	12130	12130
R-squared	0.514	0.593	0.602	0.711	0.412	0.455	0.622	0.673	0.605	0.629	0.648	0.708	0.614	0.629	0.672	0.695

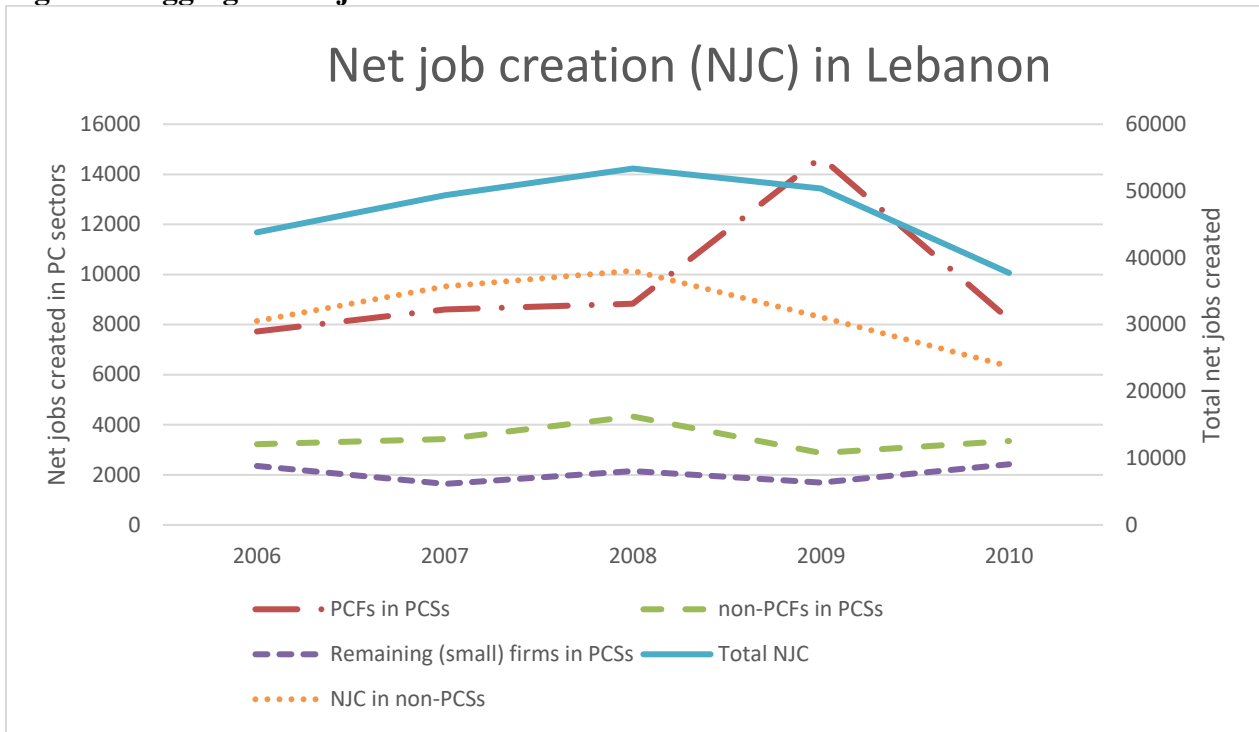
Note: P-values are in brackets. \*\*\*, \*\*, and \* refer to statistical significance at the 1, 5, and 10 percent level. Standard errors are clustered at the sector level.

**Table 3: The effect of political connections on net job creation, wage per employee, output per firm, and productivity at the sector level**

	NJC-S			Wage-S			Output per firm at sector-year level			Output per worker		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
PCFs	-0.081*** (0.000)	-0.076*** (0.000)	-0.068*** (0.004)	0.058** (0.017)	0.055** (0.019)	0.046** (0.013)	-0.041*** (0.000)	-0.038** (0.011)	-0.033** (0.010)	-0.048** (0.013)	-0.042** (0.022)	-0.036*** (0.005)
2009	-0.090* (0.056)	-0.091* (0.061)	-0.078* (0.052)	0.126 (0.208)	0.129 (0.135)	0.122 (0.301)	0.013 (0.129)	0.017 (0.133)	0.041 (0.281)	0.068 (0.155)	0.060 (0.125)	0.044 (0.253)
PCFs*2009	-0.041** (0.023)	-0.039** (0.034)	-0.026** (0.017)	0.029* (0.062)	0.022* (0.051)	0.011** (0.043)	-0.019* (0.052)	-0.020* (0.075)	-0.017** (0.036)	-0.017** (0.042)	-0.012** (0.027)	-0.016* (0.045)
Size_P		-0.043*** (0.009)	-0.024** (0.032)		0.021* (0.072)	0.016** (0.027)		-0.026** (0.015)	-0.032*** (0.008)		-0.039** (0.031)	-0.036** (0.011)
Age_P		-0.038** (0.046)	-0.019* (0.072)		0.028 (0.125)	0.019 (0.215)		-0.045** (0.026)	-0.029** (0.015)		-0.028** (0.010)	-0.017* (0.053)
Size_N		0.028*** (0.002)	0.019** (0.021)		0.023 (0.178)	0.016 (0.140)		0.041** (0.039)	0.033* (0.061)		0.019* (0.061)	0.024** (0.018)
Age_N		0.021** (0.011)	0.014** (0.033)		0.007 (0.413)	0.013 (0.122)		0.022* (0.081)	0.024* (0.053)		0.025** (0.042)	0.014** (0.037)
Herfindahl-Hirschman Index			-0.011 (0.138)			0.027 (0.188)			-0.038 (0.168)			-0.024* (0.056)
Entry rate			0.0183 (0.265)			0.011 (0.273)			0.019 (0.117)			0.022** (0.028)
Capital_S			0.014* (0.066)			0.018* (0.064)			0.012** (0.024)			0.078 (0.141)
2-digit Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	910	910	910	910	910	910	910	910	910	910	910	910
R-squared	0.531	0.604	0.611	0.582	0.553	0.602	0.531	0.604	0.611	0.582	0.551	0.651

Note: P-values are in brackets. \*\*\*, \*\*, and \* refer to statistical significance at the 1, 5, and 10 percent level. Standard errors are clustered at the sector level.

**Figure 1: Aggregate net job creation in Lebanon**



Source: Authors' calculations using MoF datase

---

**Appendix 1: Description of Variables**

---

NJC-f	The log of net employment growth, using our measure of firm-level employment growth which is equal to the change in employment from year t-1 to year t, divided by employment in year t-1
NJC-S	The log of number of net jobs created at the sector-year level
PCF	A dummy variable equal to 1 if the firm is politically-connected, and zero otherwise
2009	A dummy variable equal to 1 in year 2009 (year of parliamentary elections), and zero otherwise
Size	Firm size in terms of number of employees
Age	Age of the firm at the year level
PCFs	The number of politically-connected firms at the sector-year level.
NPCFs	The number of non -politically-connected firms at the sector-year level.
HHI	HHI refers to (output) Herfindahl-Hirschman Index at the sector-year level. HHI is defined as the sum of the squares of the market output shares of the firms within the sector, where the market shares are expressed as fractions. The result is proportional to the average market share, weighted by market share. As such, it can range from 0 to 1, moving from a large number of very small firms to a single monopolistic firm. To facilitate empirical interpretation, we multiplied HHI figures by 100. In the estimations HHI figures range from 0 to 100.
Entry Rate	The firm entry rate (number of entrants / total number of firms) on a scale from 0-100 at the sector-year level. Entry refers to the first time the firm entered the market.
Employment	The number of employees (in '000) at the sector-year level.
Wage-f	The log of average wage per employee (in LBP million) at the firm-year level.
Wage-S	The log of average wage per employee (in LBP million) at the sector-year level.
Output per firm at year level	The log of output per firm (in LBP million) at the year level.
Output per firm at sector-year level	The log of average output per firm (in LBP million) at the sector-year level.
Output per worker	The log of average output per worker (in LBP million) at the firm-year level.
Size_S	Average firm employment size at sector-year level
Age_S	Average firm age at sector-year level
Capital_S	Average firm initial capital (in LBP 10 million) at the sector-year level
Size_P	Average (employment) size of PCFs at the sector-year level
Age_P	Average age of PCFs at the sector-year level.
Size_N	Average (employment) size of NPCFs at the sector-year level.
Age_N	Average age of NPCFs at the sector-year level.

---



## Online Supplementary Material (SM)

**Table SM1: Firm size and employment distributions over time**

Number of employees	Share of firms						Share of jobs					
	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
1*	76.1	76.1	76.3	76.4	76.5	76.7	15.2	14.6	13.9	13.4	13.2	13.0
2	5.1	4.8	4.6	4.5	4.4	4.5	2.0	1.9	1.7	1.6	1.5	1.5
3	3.8	3.7	3.5	3.5	3.4	3.4	2.3	2.1	1.9	1.8	1.8	1.7
4	2.8	2.8	2.7	2.7	2.6	2.6	2.2	2.2	2.0	1.9	1.8	1.8
5	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.8	1.7	1.7	1.6	1.6
6-9	4.0	4.0	4.1	4.1	4.1	4.1	5.8	5.6	5.4	5.2	5.1	5.0
10-19	3.0	3.1	3.2	3.3	3.3	3.2	8.1	8.0	7.8	7.7	7.5	7.3
20-49	1.9	2.0	2.1	2.1	2.2	2.1	11.5	11.5	11.4	11.4	11.2	11.0
50-99	0.7	0.7	0.8	0.8	0.8	0.8	9.8	9.7	9.5	9.4	9.5	9.2
100-199	0.3	0.4	0.4	0.4	0.4	0.4	9.7	9.5	10.	9.7	9.5	9.4
200-999	0.3	0.3	0.3	0.3	0.3	0.3	21.3	22.0	22.4	22.1	22.5	22.6
>=1000	0.03	0.03	0.03	0.04	0.04	0.04	10.1	11.2	12.2	14.2	14.7	15.8

Note: \* represent self-employed firms. The average number of firms and jobs per year between 2005 and 2010 is 122237 and 677812, respectively.

**Table SM2: Net job creation by firm size (2006-2010)**

Number of employees	Net number of firms that created jobs					Net jobs created				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
1*	-2917	-3524	-2513	-3010	-6830	-459	-870	1610	1455	-3074
2	592	457	434	473	272	1612	798	886	1058	478
3	590	552	533	533	293	1021	1235	1016	953	594
4	461	518	495	467	244	1042	926	802	932	449
5	391	442	434	451	202	928	899	753	852	403
6-9	1254	1248	1283	1187	623	2804	2784	2708	2594	1478
10-19	1342	1386	1498	1451	829	4165	4098	4431	4531	2259
20-49	1211	1273	1385	1384	952	6077	6803	6872	7014	4212
50-99	505	561	616	621	484	4958	5764	6244	5280	3779
100-199	277	317	342	327	312	5299	5594	6466	4852	4643
200-999	233	264	282	313	290	10543	12396	13935	13535	11902
>=1000	25	30	35	43	49	5838	8956	7639	7302	10609
<b>Total</b>	<b>3964</b>	<b>3524</b>	<b>4824</b>	<b>4240</b>	<b>-2280</b>	<b>43828</b>	<b>49383</b>	<b>53362</b>	<b>50358</b>	<b>37732</b>

Note: \* represent self-employed firms. Net number of firms that created jobs refers to the difference between the number of firms that created jobs and the number of firms that destructed jobs (negative sign refer to firms that destructed jobs). Net jobs created refers to the difference between the number of jobs created and the number of jobs destructed (negative sign refer to jobs destructed).

**Figure SM1: Net job creation by firm size in Lebanon (2006-2010)**



Source: Authors' calculations using MoF database