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Abstract

Using firm-level census data, we determine how politically-connected firms (PCFs) reduce job creation in Lebanon. After observing that large firms account for the bulk of net job creation, we find that PCFs are larger and create more jobs, but are also less productive, than non-PCFs in their sectors. On a net basis, at the sector-level, each additional PCF reduces jobs created by 7.2% and jobs created by non-PCFs by 11.3%. These findings support the notion that politically-connected firms are used for clientelistic purposes in Lebanon, exchanging privileges for jobs that benefit their patrons' supporters.

JEL Classifications: D47; J21; J38; L11; L53

Keywords: Job creation; politically-connected firms; clientelism; Lebanon

ملخص

باستخدام بيانات التعداد على مستوى الشركات، نقوم تحديد إمكانية الشركات المرتبطة سياسيا للحد من خلق فرص العمل في لبنان. بعد أن استحوذت الشركات الكبيرة على الجزء الأكبر من صافي خلق فرص العمل، نجد أن هذه الشركات أكبر وتستطيع خلق المزيد من فرص العمل، ولكنها أقل إنتاجية، من مثيلاتها في قطاعاتها. وعلى الأساس الصافي على مستوى القطاع، كل الشركات المرتبطة سياسيا تقلل من فرص العمل بنسبة 7.2 في المائة وفرص العمل التي تخلقها الشركات غير المرتبطة سياسيا -بنسبة 11.3 في المائة. وتدعم هذه النتائج فكرة أن تستخدم شركات مرتبطة سياسيا لأغراض تابعة في لبنان، وتبادل الامتيازات للوظائف التي تستفيد منها رعاة الداعمين.

1. Introduction

The most recent World Bank Enterprise Surveys for Lebanon show that three-fifths of firms identify corruption as a major constraint for their growth.[1] Similarly, recent Gallup surveys show that the Lebanese public views corruption in the public and private sectors more negatively than in any other Arab country (Figure 1). Moreover, it is reported that one in three young Lebanese want to leave the country to seek jobs abroad (Mory, 2016). This paper asks if the lack of job creation is related to political connections, and based on micro-level evidence from Lebanon, it answers the question with a resounding yes.

Following a recent literature at the intersection of corporate finance and political science, we look at corruption from the lens of public-private relations. The interest in the relation between power and money has risen sharply in the Arab region following the uprisings of 2011. In most of the region, the political economy context after the 1980s included economic but not political liberalizations. In such circumstances, to strengthen their ability to remain in control of the private sector, politicians have tended to encourage trusted clients to control the heights of the economy, in order to bind the elites together, gain access to political finance, and to prevent opposition forces from developing autonomous access to political finance.[2] In the Middle East, a large literature has focused on both the political and economic consequences of such an organization.[3]

The Lebanese context is however different from that of much of the Arab region, being more competitive as well as more clientelistic (See El-Khazen (2003), Gaspard (2004), Traboulsi (2007), Salem (1998), and Shehadi and Harney (1989). Thus, while "corruption" is perceived to be high, like in other countries of the region, the type of corruption that takes place in Lebanon is likely to be different from that of its neighbors. The Lebanese political system is described as a coalition of sectarian oligarchs whose power rests on the distribution of clientelistic rents to their constituencies ("khadamat"). In the post war reconstruction phase 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). This system initially resulted in large fiscal deficits. When the fiscal space shrunk under mounting public sector indebtedness, the financing of clientelistic networks had to rely increasingly on the creation of economic rents through exclusionary and distortionary regulatory economic mechanisms (Diwan and Chaitani, 2014).

In this paper we undertake the first effort to construct a micro-based quantitative assessment of the effect of political connections on firms' performance in Lebanon. Our central focus is job creation, *a priori*, for two opposing reasons. Firms that get economic privileges with the help of political oligarchs may have an obligation to pay back the favor by creating jobs for their constituencies ("wasta"). This would tend to advantage job creation. However, the provision of unfair privileges

[1] World Bank Enterprise Surveys (2013) are available at: http://www.enterprisesurveys.org/data/exploreeconomies/2013/lebanon

[2] Owen (2004) describes the economic regime that has emerged after the economy was liberalized in the following way: "Instead of encouraging a more plural political system .. the Arab regimes produced .. an Egyptian, or Tunisian, or Jordanian version of "crony capitalism" in which competition was stifled and entrepreneurs with close connections with the regime were able to obtain most of the major contracts, as well as to bend or break planning laws and other legal constraints when it suited them. What they had to put up with, in turn, is a great deal of bullying from the regime itself, which showed no compunction in forcing each country's leading businessmen to invest in its favourite business or welfare project as a quid pro quo" (p.234).

[3] For Egypt, see Kienle (2004) and Roll (2010); on Morocco, see Cammett (2007), Catusse (2008), and Henry (1996); on Tunisia, see Bellin (2002), Hibou (2006), and Chekir and Menard (2012); on Algeria, see Dillman (2000); on the GCC, see Hanieh (2011), Hertog (2010), and Moore (2004). For the region as a whole, see Heydemann (2004), Schlumberger (2007), King (2009), Owen (2004), and Henry and Springbord (2010).

to particular firms can reduce the incentives of their competitors to innovate and grow, reducing their own willingness to create new jobs. Our core hypothesis is that job creation in Lebanon has been constrained by the dominance of political connections in the economy – i.e, that the second effect has been larger than the first, resulting in a net loss of new jobs.

To test this hypothesis, we analyze the micro foundations of employment growth using firm-level data to compare the performance of firms with and without political connections. We examine whether politically-connected firms create more jobs than otherwise similar non-connected firms, and whether non-connected firms create less jobs in sectors where connected firms operate, compared to sectors with no such connections. We also compare sector performance, at the detailed 4-digit sector-level, asking whether sectors that include firms with political connections create less jobs than sectors that do not include politically-connected firms.

We exploit a unique dataset that we have obtained from the Lebanese Ministry of Finance. This dataset includes information about the whole universe of tax-paying firms in Lebanon, on a yearly basis between 2005 and 2010. We proceed in three steps. First, we establish several stylized facts about firm-level job creation patterns in Lebanon. In particular, compared to other countries in the region, employment is concentrated in larger firms in Lebanon. These larger firms tend to pay higher wages but do not exhibit better performance in terms of labor productivity.

Second, we construct a measure of market concentration at the sector-level and assess the impact of market concentration on job creation. We find that higher sector concentration is associated with lower competition, lower firm entry and exit rates, and lower net job creation rates, along the thesis of Aghion et al. (2001, 2009).

Third, we investigate the existence and impact of firms' political-connections. We identify 497 politically-connected firms (PCFs) by comparing a list of politicians and their associates with the names of corporate owners and officers drawn from the Lebanese Commercial Register which is available at the Ministry of Justice. We then show that sectors that include politically-connected firms tend to be more concentrated and exhibit less competition than sectors with no politically-connected firms. We also find that while PCFs tend to create more jobs than non-connected firms in connected sectors, non-connected firms create less jobs than similar firms in non-connected sectors. And, overall, sectors that include firms with political connections tend to create less jobs, on a net basis, than sectors with no politically-connected firms.

While the literature on capitalism in Arab countries is rich in its analysis of how the opening up of the economy has facilitated the exercise of power by autocrats, it has remained, until recently, largely impressionistic when describing the linkages between politicians and businesses. Besides the few papers cited above, these analyses do not include direct measurements of the extent of favoritism, or attempts to statistically evaluate the economic impact of political connections. Our analysis is the first to do so for Lebanon.

While we identify firms as politically-connected when one of their stakeholders (manager, board member, or shareholder) is directly related to a politician, we do not investigate in this paper the mechanisms that bestow privilege. This would require other micro-data, which bear on such mechanisms, which at this stage we have not found.

The remainder of this paper is as follows. In section 2 we review related literature and position our paper within it. We describe the firm-level dataset in section 3, extract key stylized facts on job creation in Lebanon, and look into the employment effect of sector concentration. Then, we

identify politically-connected firms and examine the impact of political-connections on sector concentration and job creation in section 4. The concluding section contains a summary of our main findings, and it discusses their policy implications. These implications are, however, uncertain. While the removal of privileges could improve the economy, it could also deteriorate the polity, leading to a worse overall equilibrium. Nevertheless, our hope is that a better understanding of the relations between power and money can only put informed citizen groups in a better position to militate for changes that can improve the overall economic and political environment.

2. Related Literature

At a broader level, our paper fits in the political economy literature, which considers that political settlements rest on rent extraction and distribution (Khan, 2010 and North et al., 2009). A theoretical framework is provided by North et al. (2009)'s Limited Access Order (LAO) model. In this analysis, national settlements involve deals between various groups that can improve their welfare by ensuring that the latent threat of violence is not exercised. Deals involve restrictions on social organizations (economic, social, and political) in ways that create rents that can be used by oligarchs to support their rule. A particular "settlement" is a combination of arrangements that institute peaceful relations by creating and distributing rents in such a way that ensure that the coalition in power retains the monopoly over violence, in a way that is superior among all players to a world with violence. The two basic conditions for stability are that rents should be high enough to police the settlement, but not too high so as not to tax economic efficiency too much.

The balance between these two conditions has been a great challenge for the settlement that took hold in the 1990s in Lebanon after its civil war. The necessity to institute a large coalition that included most of the civil war warring groups in order to ensure security has required the provision of large payoffs, especially given the clientelistic nature of power relations in Lebanon organized around sectarian oligarchs (Diwan and Chaitani 2014). But the ability of the state to provide politicians with "spoils of truce" (in the words of Leenders, 2012) has quickly been reduced after an initial reconstruction spurt, in the midst of a sharp rise in national debt and a fall in geo-political rents (especially from Saudi Arabia and the EU). As a result, the pressure on politicians to create "regulatory" rents (Eibl and Malik, 2015) must have risen over time.

The creation of regulatory rents is at the basis of political settlements over the world. Hallward-Driemeier et al. (2010) show that "deals" rather than rules characterize the corporate environments in developing countries. The nature of how these deals –predictable or ordered they are, and how inclusive vs closed they are - affect economic growth is important (Pritchett and Werker, 2015). In the political economy literature, these deals between elite business-people and politicians are considered to be an exchange of gifts. Shleifer and Vishny (1994) show how politicians try to influence firms through various forms of subsidies, explicit or implicit, while firms pay back their dues and influence politicians through various forms of political support. In this relation, connected firms are clients that obtain advantages that boost their profits, and they return the favor by supporting their patrons' political interests (Rock and Bonnet, 2004).

In a related corporate finance literature, researchers have found that politically-connected firms do indeed perform better than non-connected ones. Beginning with Fisman (2001) work on Indonesia, several country studies have documented the value of political connections by investigating movements in the stock prices of politically connected firms in response to exogenous changes in

the probability of regime change.[4] Boubakri et al. (2008) documented more clearly the causal path from connections to performance by finding that firms improve their financial performance after establishing political connections. Looking at the case of Egypt around the popular uprising of 2011 that displaced President Mubarak, Chekir and Diwan (2015) as well as Acemoglu et al. (2014) estimated the value of political connections for politically-connected, publicly traded firms to be about 15 to 20 percent of the firms' value.

A large literature has identified specific mechanisms through which regulatory rents are created and distributed to politically-connected firms. Connected firms tend to have better access to finance as well as exhibit higher default rates and receive more frequent bailouts. Moreover, they tend to enjoy tax advantages, better access to state subsidies, greater market power, and preferential access to government contracts. Evidence is available for China (Cull and Lixin, 2005), Malaysia (Johnson and Mitton, 2003), Pakistan (Khwaja and Mian, 2005), Indonesia (Leuz and Oberholzer-Gee, 2006), and Brazil (Claessens et al., 2008).

In the Arab world, Rijkers et al. (forthcoming) examined the behavior of Tunisian firms owned by members of the Ben-Ali family. They found that these companies disproportionately benefited from FDI restrictions, lower tax payments, and preferential access to licensing requirements. Diwan et al. (2015) studied several mechanisms bestowing privileges in Egypt. They showed that connected firms had preferential access to energy subsidies and to scarce land (especially in the housing and tourism sectors). In addition, they documented that regulations were applied to advantage politically connected firms and to hurt their competitors and that politically-connected firms tended to operate in sectors protected by several non-tariff barriers. It is also alleged that the connected firms in Egypt benefited from lax application of competition rules, and more generally, by getting closer to political elites, have affected state policies in ways that suited their business interests.

The presence of political connections also affects economic growth and job creation, the topic of this paper. Acemoglu and Robinson (2016) make the extent of economic inclusion/exclusion the central lens through which they explain why some nations fail to grow, while others succeed, over long term. Conceptually, there are two reasons why connections can be bad for growth. First, while politically-connected firms obtain privileges that tend to increase their profits, there is a counter-veiling factor that can depress their profits. These firms need to return the politicians' favours by financing political patronage and political campaigns in ways that benefit their political patrons. In a study of particular relevance for the case of Lebanon, Bertrand et al. (2007) found that firms managed by politically-connected CEOs in France create more jobs and pay higher wages than non-connected firms, and so on this account, reduce the value of firms they manage, although these firms tend to benefit from their political connections in other offsetting ways.

Second, the advantage conferred to connected firms is a dis-advantage for their competitors. 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 Schumpeterian 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*

[4] See for example Roberts (1990) for the United States, Ramalho (2007) for Brazil, Ferguson and Voth (2008) for Nazi Germany, and Haber and Maurer (2007) for Mexico

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.[5] Thus, overall, there is an inverted U-shaped relation between competition and growth.

The important empirical question then is whether the reduction in competition conferred by political connections is just large enough to generate growth, or so large as to reduce growth. The positive story can be connected with the experience of East Asian countries, such as Korean support for Chaebolls under General Park's discipline rule (Khan, 2001), where support was contingent on performance, including that of pulling smaller firms into networks of sectoral growth. The negative story is well illustrated by the experience of Egypt in the last decade of Mubarak's rule. In their study on the effects of cronyism in Egypt, Diwan et al. (2015) showed that the presence politically-connected firms (PCFs) hurt economic growth in Egypt. They identified the growth effects of the entry of PCFs by comparing detailed 4-digit sectors where they entered, between 1996 and 2006, and sectors that remained unconnected. They found that PCFs' entry into new and previously unconnected sectors slowed down aggregate employment growth and skewed the distribution of employment towards less productive, smaller firms. They argued that the entry of PCFs into a sector slows the growth of unconnected firms in this sector, for three reasons: by affecting the behavior of unconnected firms that remain in the sector, which might shrink due to fewer profitable investment opportunities;[6] by forcing unconnected firms to exit these sectors; and by discouraging new (potential) entrepreneurs from entering these sectors. As a result, employment in the connected sectors became concentrated in micro and small firms and in large and connected firms, with a "missing middle" of medium sized firms.

These considerations shape the main question investigated in this paper. It may well be that the distribution of rents is central to the current political settlement in Lebanon. It may also well be that regulatory rents are extracted for this purpose. This however in itself is not necessarily bad for growth. Conceptually, close state-business relations can be good or bad for growth, depending on country circumstances. Which is the case is an empirical matter that needs to be tested empirically. Moreover, in this discussion, one need to keep in mind the broader political framework - even when it has a negative direct effect on growth, rent extraction may be necessary for political stability.

3. Data, Stylized facts, and Sector Concentration

We employ data on tax-paying firms, which we got from the Lebanese Ministry of Finance (MoF). The dataset includes all registered firms at the Directorate of Revenues, and provides yearly information between 2005 and 2010.[7] While our dataset does not contain all the existing information about each firm, we had access to data about each firm's date of birth, 4-digit sector of business operation, number of employees, capital, output, and wages per year.

[5] 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.

[6] They might also stop growing in order to stay small enough to operate *under the radar* of their politically influential larger competitors, as in Tunisia (Chekir and Menard 2012).

[7] This data includes all firms that are registered at the Commercial Registry (CR) and National Social Security Fund (NSSF) in Lebanon.

This dataset has several advantages for our purposes. First, its complete coverage of all firms and sectors on annual basis allows us to compare performance within and across firms and sectors in a comprehensive manner, thus avoiding possible selection biases. To answer the question, for example, of whether small firms create more jobs than large firms, it is crucial to examine all sectors of the economy, instead of just the manufacturing sector that most previous research has focused on. Second, the data covers all registered firms, with no size threshold, capturing the universe rather than a sample of firms in Lebanon. Over the sample period of 2005-2010 that we study, the database includes information about 122,242 firms on average per year. This ensures that the analysis does not under-estimate the influence of large firms, which tend to be under-represented in surveys. Third, the dataset includes information on each firm's output and number of employees (and to a lesser extent on registered capital), which allows us to look not just at job creation, but also, at output per employee at the firm level and across sectors. Fourth, we are able to observe when particular firms enter or exit the economy, and thus to track entry and exit of formal firms from various sectors.[8] The dataset does not include information about profitability but only about output, which may be under-reported for tax evasion purposes.

It is also important, however, to keep in mind limitations of our dataset. The data only contains formal firms and formal labor in Lebanon - the data by definition covers only firms that pay taxes, and declared labor that pays social security contributions. However, the data covers a large share of formal jobs. For example, in 2010, firms in our database report employing a total of 775,540 workers while, according to International Labor Organization (2015), the total labor force employed in the formal sector in 2010 was 777,000 in Lebanon.[9]

To correct for weaknesses related to reporting errors, we dropped problematic firms by conducting necessary data cleaning. We discarded firms that exhibited high volatility in output per worker when using information about output.[10] We also dropped firms with obvious reporting errors - for example, some firms were born in 2007 but are reported as paying taxes in earlier years20. On average, 4.6% of the firms originally reported in the dataset in each year were false. After cleaning, the dataset includes 105,092; 111,223; 117,513; 124,877; 133,686; and 141,061 firms, respectively, in each of the six years between 2005 and 2010.

3.1 Stylized facts on job creation in Lebanon

The analysis of the relationship between firm size and growth in Lebanon has been hampered to date by important data limitations. As a consequence, existing studies have not been able to relate precisely (net) job creation to the underlying firm dynamics associated with job creation and destruction processes prevalent in Lebanese firms. The dataset from the MoF allows us to characterize a set of stylized facts on the distribution of jobs among types of firms in Lebanon. Our dataset will thus paint a more accurate picture of the landscape of jobs across firms in Lebanon, allowing for a better understanding of the type of firms that create jobs.

First, a specificity of Lebanon is that a large share of labor works in relatively large firms. Table 1 shows that over the period 2005-2010, large firms that employ 100 or more employees account for nearly half of total (formal) employment in Lebanon. This is a large figure by regional

[8] 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 to the CR registry data. We found that the MoF data identified firm start dates accurately.

[9] ILO (2015) also report another 613,000 informal workers working mainly in micro enterprises in Lebanon.

[10] We defined "high" volatility as a change that is equivalent to more than 100 percent between t and t+1 followed by a change that takes the output per worker level to less than its initial (t) value at t+2.

standards – in Turkey, Tunisia, and Jordan, that figure is between 20 and 30%, while in Egypt, and the West Bank and Gaza, it is below10% (World Bank, 2014, figure 1.5, page 19). Moreover, there is a trend toward larger sizes: from 2005 to 2010 the share of jobs in micro firms declined from 15.2% to 13% while it increased in large firms from 41.1% to 47.8% (Table 2).

Second, employment in Lebanon is concentrated in old firms. Table 3 documents the distribution of employment by firm age and size over the 2005-2010 period, demonstrating that most jobs were concentrated in old firms. Overall, not only do older firms account for a larger share of employment, but there is a monotonic relationship between firm age and employment share. During the sample period, firms that are at least 6 years old account for 84% of all jobs while new firms account for less than 2% of all jobs (on average per year). These patterns are similar to those observed in developed countries. For example, in U.S. firms younger than 6 years of age account for about 15% of all employment.[11]

Third, the correlation between size and age on the one hand, and firm performance in terms of output and wage per worker on the other hand appears to be relatively weak (Table 4). This is in contrast to the experience of fast growing economies, such as Turkey, were older and larger firms tend to have higher firm productivity (Atiyas and Bakis, 2015). But larger and older firms, paradoxically, pay higher wages in Lebanon although their workers are less productive than their peers in smaller and younger firms.

Fourth, firm mobility across size groups is limited. Table 5 shows the transition of firms between size groups. Most firms do not change size group, even during a five-year period. In addition, the transition matrices show that smaller firms are more likely to die. But, overall exit rates seem quite low, and are at odds with the existence of an up-or-out dynamic often observed in developed countries such as the U.S. in which entrants tend to either survive and grow or exit. Figure 2 also shows the same trends at the 2-digit sector level, demonstrating that this fact is not due to the averaging out of differences across sectors.

Fifth, and most important for our purposes, net job creation is largely driven by large firms. Figure 3 decomposes net job creation in each year by firm size. In any given year between 2006 and 2010, the bulk of net job creation was in larger firms. A closer look at the data in Table 6 shows that in most years, self-employed micro firms were actually responsible for the destruction of jobs, in net terms.[12] For example, in 2010, firms that employed at least 200 employees created 22,511 jobs while self-employed firms destructed 3,074 jobs - putting aside self-employed firms, these large firms accounted for 55 percent of net job creation. Indeed, net job creation is concentrated within larger firms across years and size classes. In contrast, more than 90% of the new jobs created in Tunisia and Egypt in the past decade came from small firms (World Bank 2014, page 24-27). Appendix 1 shows the sectors with highest and lowest net job creation rates throughout the sample period. Moreover, it is noteworthy that when it comes to job creation, it is the formal firms in our dataset, as opposed to the informal sector, that are the main creators of new jobs. According to International Labor Organization (2015), the labor force in Lebanon grew by 4% per year, mainly due to the end of the baby boom and increased female labor force participation. This growth would

[11] For related work, see Beck et al. (2005), Bigsten and Gebreeyesus (2007), Birth (1981), Davis and Haltiwanger (1992), Evans (1987), Haltiwanger et al. (2013), Klapper and Richmond (2011), Neumark et al. (2011), Sleuwaegen and Goedhuys (2002), and Van Biesebroeck (2005).

[12] This contradicts the report of World Bank (2014), which claims that most new jobs in Lebanon during the period were created by micro-firms. The World Bank report uses the same data as we do, but it turns out that it mistakenly coded employment in micro-firms in 2006 as new jobs.

mean that about 56,000 workers enter the market each year. Firms in our database create between 40,000 and 50,000 new jobs per year (with spikes in 2008 and 2009 as shown in Figure 4). As a result, the conclusion that it is large firms that create most of the new jobs holds up even when the informal sector is considered. It is in this dimension that Lebanon is most at odd with the countries of the region.

In sum, these stylized facts offer an interesting puzzle: why is Lebanon different from other Arab countries in terms of the role of large firms in job creation, while at the same time, these large (and older) firms do not display higher productivity as in some fast growing countries? Moreover, why do these large (and old) firms pay higher wages in such circumstances, especially that there is no labor movement to speak of in Lebanon that would force them to do so?

3.2 Sector concentration and job creation

Before plunging into the determination of which firms in Lebanon are politically connected in order to be in a position to gage the effects of privileges on competition and job creation, it is useful to first explore the extent and effects of market concentration in Lebanon. Sectors are more concentrated when fewer firms dominate them, possibly because some firms possess large advantages that cannot be bridged by would-be-competitors. 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 historical elite controls most of the economy and monopolizes large parts of it (Hamdan, 2003), and that this explains low levels of growth in these sectors.

We measure sector concentration using the Herfindahl-Hirschman Index (HHI). The HHI is a measure of the output size of firms in relations to the sector and an indicator of the amount of competition among them.[13] We used the most disaggregated sector (4-digit) classification in our data. Appendix 2 shows the most and least concentrated sectors in our dataset.

Our data allows us to assess the extent to which sector concentration affects firm entry and exit, net job creation, and productivity of firms at the sector-level. The results of our estimations are presented in Table 7. In each model, we regress a variable that measures performance at the four-digit sector level (entry, exit, job creation, productivity) on the concentration ratio in the sector, and a series of variables that describe the sector (average size, age, and capital of firms in each sector, total employment and number in firms in each sector, plus a year fixed effect). Our main coefficient of interest is HHI.

These estimations show that on average, at the sector level, a 10 percentage point increase in sector (output) concentration is associated with a 13.59 percent decrease in net job creation growth. Sector concentration is also correlated with lower firm entry rate and productivity (output per labor) levels, ceteris paribus, at the sector-level - these results are consistent with lower levels of competition in more concentrated sectors. Thus, it seems from these results that the folk belief in Lebanon that market concentration hurts growth is largely true. We also observe that net job creation growth rates are higher in sectors where firms are larger and older, and in sectors that have more firms, as is common in the industrial organization literature. The explanatory power of the variables in our estimations are relatively high, as evidenced by the R-squared measures. Each of the coefficients of interest is statistically significant at conventional levels.

[13] 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. Increases in the HHI indicate a decrease in competition and an increase of market power whereas decreases indicate the opposite.

4. Political Connections, Jobs, and Firm Dynamics

In this section, we examine the extent to which politically-connected firms (PCFs) affect sector concentration and whether (and how much) privileges given to the few affect economic performance of the sector in which they operate. To do so, we must first identify in our dataset of over 122,000 firms those that are politically connected. We would then be in a position to compare the job creation performance of connected and unconnected firms, and of sectors that include connected firms with those that do not (or with those that include fewer connected firms).

Determining which firms in our database are politically-connected is not an easy endeavor. It requires assembling lists of politicians and of businessmen connected to them, and then checking systematically over the universe of firms whether these individuals have a relation with each firm. We identified 497 PCFs in our MoF dataset by following a three-step procedure.

First, we developed a long list of politically-connected individuals. We defined a person as politically-connected if she or he is a direct family member (i.e. father, mother, brother, sister, wife, son, or daughter) or publicly-known friend of a parliament member, minister, or president who was in office between 1992 and 2010.[14]

Second, we used the Commercial Register at the Ministry of Justice to identify PCFs.[15] The Commercial Register includes information on all "formal" firms registered in Lebanon. It includes for each firm several variables: the names of owners and founders of the firm, board members and managers, paid in capital, date of birth, and sector of operation. We searched throughout the registry for all firms that include at least one name – partial owner, founder, shareholder, or officer - that is also on our list of politically connected individuals.[16] We supplemented this list with a few well-known cases of firms dominated by political parties. This procedure allowed us to identify 497 PCFs (of which 228 connected solely through friends of politicians). Of the existing 289 sectors disaggregated at the 4-digit level in Lebanon, 29 of these sectors include PCFs.

We mention here a few examples from the TV sector to clarify our approach. Future TV is owned by the sons, wife, brother, sister, and other friends of Rafic Hariri. The latter was a prime minister in Lebanon several times between 1992 and 2005. His sister has been a member of Lebanese parliament since 1992. And, his son has been a member in parliament since 2005 and served as a prime minister too during the time span of our dataset. Thus, we coded Future TV as politically connected. Al-Manar TV is well known to be the mouthpiece of Hizbullah, a political party in Lebanon. Even though the Commercial Register does not include names of owners or shareholders of Al-Manar TV, we still coded Al-Manar TV as politically connected as it is well known to be dominated by a political party. The NBN channel was also coded as a PCF, because several of its shareholders listed on the Commercial Register are on our list of political figures (i.e., Yassin Jaber, Nehme Tohme, and Amina Berri).[17] Where none of the owners or managers is on our list of politically-connected individuals, nor clearly affiliated with a party, we did not code the firm as PC – for example, in the TV sector, we coded LBC TV and Al-Jadeed TV as non-connected firms.

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[14] Our method of identifying PCFs is closely related to Faccio (2007), Rijkers et al. (forthcoming), and not far from Diwan et al. (2015). In the latter study, the authors treated friends of politicians as politically-connected too.

[15] See http://cr.justice.gov.lb

[16] Note that at this stage, we did not look into the issue of firms with connected interests owning other firms – we intend to enrich our dataset with such measures in the future. We would also consider including firms that got revealed in the Panama papers, which belong to Lebanese individuals that are politically connected. Some of these firms may also be shareholders of some Lebanese firms.

[17] See http://cr.justice.gov.lb/search/result.aspx?id=1000008745 .

In other words, we do not consider political-preference of firm owners as a proxy of their political connectedness.[18]

The PCFs that we identify are mainly 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. Table 8 shows the distribution of politically-connected firms in Lebanon. It is interesting that all the sectors identified by Leenders (2012) are captured by our method. It is noteworthy that nearly all sectors belong to the non-tradable group. Thus, a first difference between Lebanese and Egyptian or Tunisian cronyism, which are countries that have been studied in detail, is that the sectors of activity of connected firms in Lebanon are much more limited. In Egypt for example, Diwan et al., 2015 had identified 469 PCFs operating in 174 4-digit sectors (out of a total 350 sectors of operation in Egypt). In some of these sectors, rents were created artificially through a system of subsidies, or by closing off international competition through the imposition of non-tariff barriers, or by erecting barriers to foreign investors by closing off entire sectors to foreign firms. In Lebanon, a series of divided governments could not make such ambitious decisions. Instead, rents exist only in sectors of more traditional state influence, such as the application of zoning laws, the regulation of schools and hospitals, or the control over government procurement.

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 each firm's capital and date of birth. In all cases we looked at the date of birth, capital, 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 politically-connected firms that we wanted to identify. This procedure, thus, puts us in a position to compare the corporate characteristics of connected and unconnected firms in the MoF dataset.

It is clear that we could not hope to capture all the PCFs in Lebanon with our procedure. However, it is also unlikely that any of the firms we call PCF is not. By minimizing type 1 error, we tend to under-estimate the impact of political connections, and to the extent that our results are biased, they will be biased in ways that under-estimate the impact of political connections on economic performance.

Table 8 summarizes some of the key characteristics of PCFs, in relation to non-connected firms. First, PCFs in Lebanon tend to dominate the (few) sectors in which they operate: on average, their aggregate market share stands at 70% in the 29 sectors in which they operate; in 25 of these sectors, their aggregate market share is more than 50% of the market, and in 14 cases, over 75%. In the remaining 260 (4-digit) sectors that exist in Lebanon, we have found no PCFs operating. However, there are many PCFs in each of the 29 sectors with at least one political connection. This fact suggests that, although some PCFs may be monopolizing particular national or sub-national markets (i.e., import of pharmaceutical products, or quarries), in other sectors, their large number may have produced some extent of competition among themselves, which may have lowered rents in these sectors. This suggests that the number of PCFs in a particular sector will be an important characteristic of the sector.

[18] By doing so, we built on the works of Fisman (2001), Diwan et al (2015), Rijkers et al. (forthcoming), and Ibrahim and Saoud (2015) when deciding when a firm is politically-connected.

Second, PCFs tend to be larger firms than their non-connected direct sector competitors. On average, each PCF employs 220 workers (against 26 on average for non-connected firms and in the same sectors). Overall, they form 42.7% of large firms in Lebanon (of over 100 workers), and 72% of the large firms in the sectors in which they operate.

Third, as a group, the PCFs employ over 123,000 employees, which represents about 16% of the labor force in the formal sector. The PCFs have lower labor productivity than the non-connected firms in 17 of the 29 sectors in which they operate, and especially so in waterfront resorts, maritime and land transport, consulting firms, and stones and cement production. This is in spite of the fact that their capital tends to be larger. In almost all cases, they tend to pay higher average wages (with the exception of one sector).

These characteristics suggest that large firms in these particular sectors which are reliant on government discretion either get connected, or if they are connected to start with, tend to outgrow their competitors. They also suggest that, as one of the pay-back mechanism to the politician that supports them, they tend to hire more labor, presumably among the supporters of that politician, as in the French case as shown by Bertrand et al. (2007). This is most evident when we look at data for 2009, just before the competitive election of 2009. As shown in Figure 4, during that year, the overall hiring by PCFs jumped from an average of 8,000 new jobs per year over the 5-year period, to 14,500, at a time where the non-connected firms in the same 29 sectors reduced their hiring (from an average of 6,000 a year, to about 4,000). This fact suggests that the PCFs play an important role in making job creation an effective instrument of political clientelism. It also suggests that the expansion of PCFs comes at the cost of a parallel shrinking of non-PCFs in the same sectors.

Indeed, while PCFs seem to contribute directly to employment growth, their dominance in their sector of operation may have negative impact on job creation by their competitors. We thus focus next on the question of whether PCFs are associated with less market competition and employment growth in their sector of operation, as suggested already by our earlier results about the effects of market concentration. Clearly, we cannot observe a counterfactual of firm dynamics in absence of PCFs in particular sectors. Our identification strategy will compare firm and sector dynamics across and within sectors, given the variation in the intensity of their political connections. This comparison can be biased due to an endogenous selection effect of PCFs and non-PCFs into sectors with specific characteristics. In particular, it is possible that PCFs enter more into sectors that are rent-filled, and these sectors have lower growth opportunities. It is also possible that these sectors are naturally less competitive, for example because of high entry costs, and thus have lower entry and exit rates.

We start by examining the effects of political connectedness at the firm level, as a function of firm's characteristics (size and age), as well as characteristics of the sector in which the firm operates (number of politically connected firms). We measure all effects separately for connected and non-connected firms. Our hypothesis is that PCFs create more jobs than non-PCFs and pay higher wages – as a way of returning politicians favor. We expect that while the privileges they receive allow them to expand more, they nevertheless end up with lower labor productivity that non-PCFs due to their propensity to over hire. We are also interested in observing if the presence of more PCFs in a sector creates competitive pressures on the PCFs themselves that restrict their ability to serve political interests.

Table 9 shows the results, first when restricting the analysis to the 29 politically-connected sectors (sectors with at least one PCF), and then for the whole sample. Focusing first on job creation, we find that PCFs create 33.8 percent more jobs each year on average than non-connected firms that operate within their same sector, controlling for PCFs size and age (which have positive effects on job creation), and the number of PCFs in the sector. Interestingly, the rate of job creation falls when there are more PCFs in the sector (see the term PCF*PCFs) – in the presence of 10 PCFs in the sector, the PCF advantage at job creation actually disappears. This already suggests that competition among PCFs does bite. The increased presence of PCFs also affects the hiring by non-PCFs - indeed, their hiring falls by 11.3 % for each PCF in their sector of activity. This suggests that due to their advantages, PCFs crowd out non-PCFs, even when their number increases. In other words, competition among PCFs does not reduce their advantages over non-PCFs.

A focus on the other firms' decisions of interest – wages paid, output, and labor productivity tell a similar story. PCFs have larger output and pay higher wages than non-PCFs. But they exhibit lower labor productivity, which indicates that they over-hire (relative to their output level). Interestingly, more competition by other PCFs (i.e, larger PCF*PCFs) reduces PCFs' wage premium and size, and increases their labor productivity. This suggests that more competitive pressures by other PCFs reduces the profits and ability of all PCFs in the sector to over-expand – their privileges become less valuable, and as a result, their pay-back to politicians becomes less. We interpret the results as follows: non-PCFs also suffer from more competition, but since they do not have large profits as buffers, they not only end up smaller and paying lower wages, but moreover, their labor productivity falls as well.

Comparing firms in connected sectors has thus allowed us to get a set of results which confirms, but also enriches our priors. Political connections confer advantages to PCFs, and these rents are partially dissipated by more hiring and higher wages. Increased competition by PCFs reduces these rents and the extent of pay-back in clientelistic favors. On the other hand, non-PCFs shrink as PCFs expand. But so far, we have not measured the net effect of political connections in a sector – on a net basis, do they result in more jobs (because of their effect on PCFs), or less jobs (because of the reaction by non-PCFs)? To be in a position to measure the net effect of connections on jobs, we need instead to compare sectors. We expect that more connected sectors would create less jobs than non-connected, or less connected ones.

Comparing sectors is a much less precise endeavor than comparing firms, since the number of sectors with political connections is small. We can compare the 29 sectors with at least one PCF according to the number of political connections in each. We can also compare all 289 sectors according to whether they are connected or not (both at the 4-digit sector-level). To control for exogenous sector characteristics, we included controls for the average size and age of firms, PCFs and non-PCFs separately, and a time dummy.

We look at various measures of sector performance as a function of how many PCFs it contains: besides measures of net job creation in the sector as a whole, we are also interested in the average wages paid in the sector, average output, and average productivity, measures that we had focused on in the analysis of firms above. In addition, we can also look at the effect of political connections on how competitive the sector is. The results are in Tables 10 and 11.

First, we focus on the relationship between political-connectedness and market competition. We proxy market competition using different measures: HHI and firm entry to examine whether entry rates and sector concentration are lower in sectors where more PCFs exist. More precisely, in

different estimations, we regress firm entry rate and HHI in a given sector on the number of PCFs in the same sector. Columns 1 in Tables 10-11 show that firm entry rate is lower in sectors with more PCFs, and larger and older PCFs in the sector reduce firm entry rates by much more too. We also find significantly higher market concentration in sectors where a higher number of PCFs exist (column 2, Tables 10-11). Thus, it is not ambiguous that political-connectedness of firms is associated with lower entry of firms and higher market concentration at the sector-level. These results are consistent with the predictions of Aghion et al. (2001), inferring that firm entry and growth would have been higher if political-connectedness is lower.

Second, we compare the performance of sectors according to how connected they are (Table 10), and whether they are connected or not (Table 11). We also control for firm's average age and size in the sector. The results are in columns 3-6 of Table 10. Most important, we find lower net job creation growth rates in sectors that are more politically connected. This shows that on a net basis, the effect of crowding out competition is larger than the positive and direct job creation effect of connectedness. For every additional political connection in a sector, 7.2 percent less jobs are created each year on average. The other results provide more detail. More political connections are associated with higher average sector wages, higher in-sector average output per firm, but lower in-sector average labor productivity. These results hold when we include all sectors (Table 11).

7. Conclusions

To our knowledge, ours is the first paper that looks empirically at the prevalence and relationships between market concentration, political connections, and job creation in Lebanon. Using a unique dataset, we reach several important conclusions about the landscape of firm employment in Lebanon. First, a large share of job creation in Lebanon takes place in large firms. Second, employees in larger firms tend to be less productive than their peers in smaller firms. Third, market concentration tends to be relatively larger in politically-connected sectors and reduces job creation in non-politically-connected firms in these sectors. Finally, political connections are closely related to this market concentration.

All in all, these results tend to confirm the prevalent popular perceptions about the negative economic impact of corruption in Lebanon. We have found strong evidence that while Lebanon is characterized by a "deals rather than rules" environment that advantages job creation in the short term, these arrangements at the same time stifles growth and job creation in the long term.

Future research should examine the mechanisms used to benefit politically-connected firms. While we had not much to say about the topic, because of a lack of data, the evidence we presented suggests that such mechanisms are to be found in the traditional tools at the disposal of ministries: procurement contracts, allocation of licenses to schools, universities and hospitals, import licenses for oil and gas products, licenses to operate for quarries and beach resorts, as well as market protection for telecommunication companies.

It is hard to draw simple policy implications from these results. At one level, it would seem that competition policies, and a better enforcement of rules in ways that levels the playing field would lead to more growth and job creation over time, compared to second best policies such as those that support SME growth with subsidized credit for example. 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.

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Figure 1: Perception of Corruption in The Private and Public Sectors. Gallup 2013

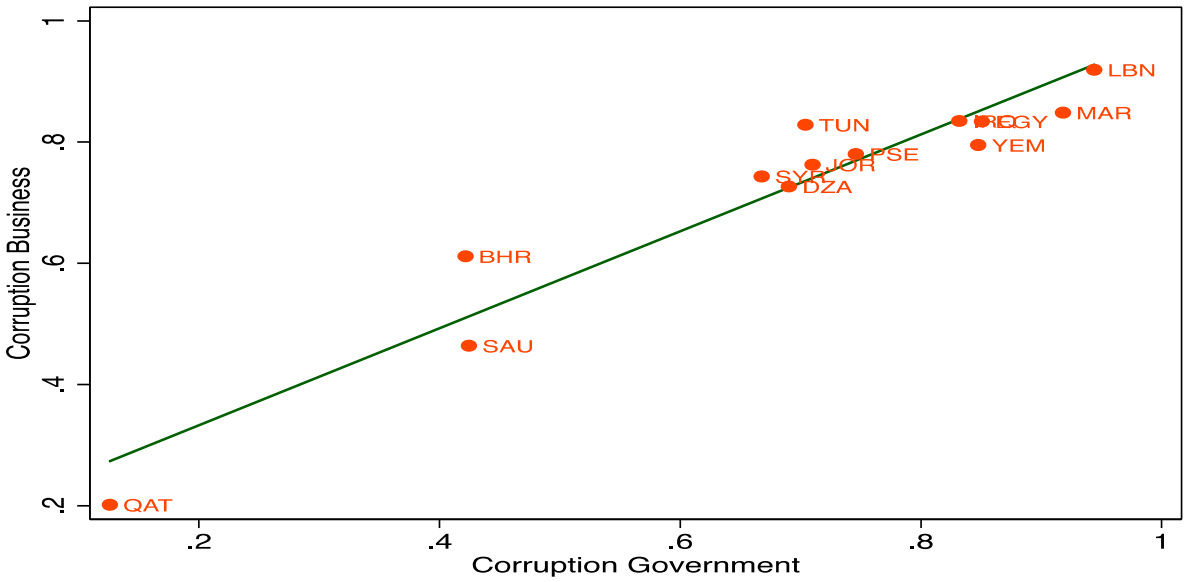

Figure 2: Firm Employment Growth is Limited in Lebanon

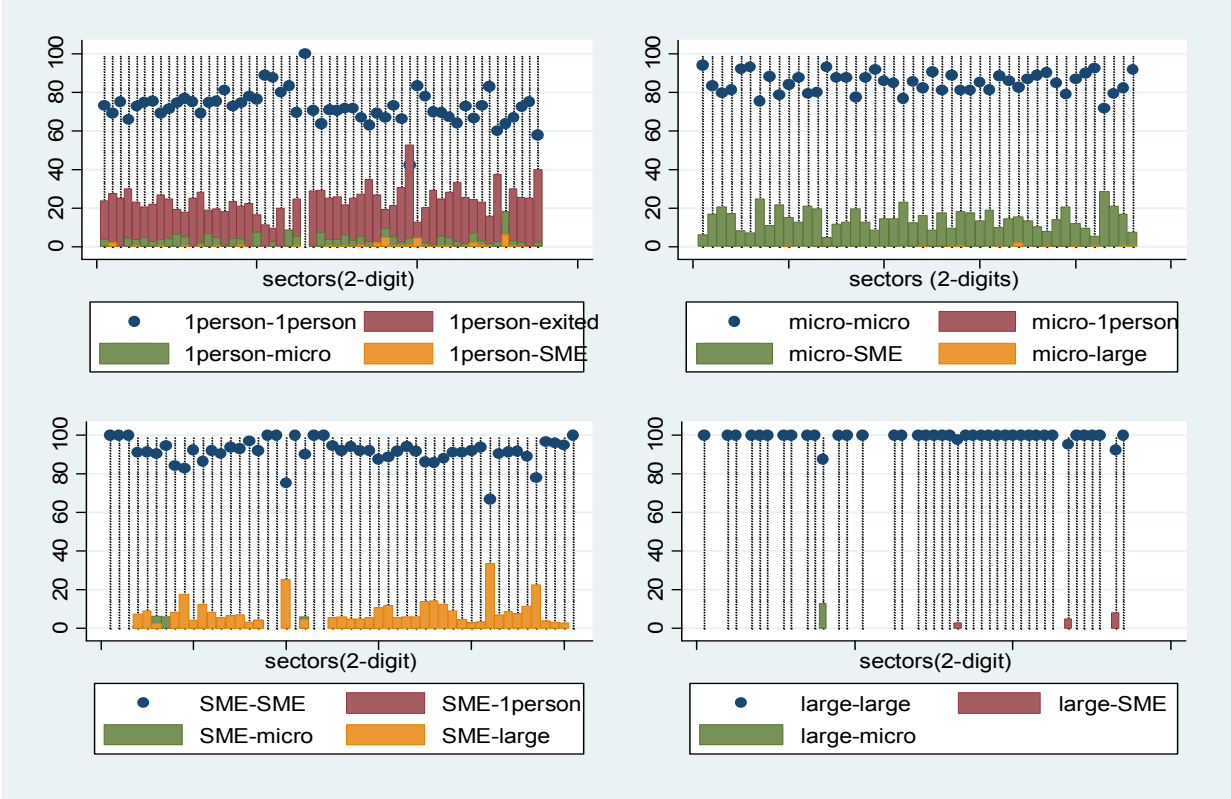

Figure 3: Net Job Creation by Firm Size in Lebanon (2006-2010)

Figure 4: Aggregate Net Job Creation in Lebanon

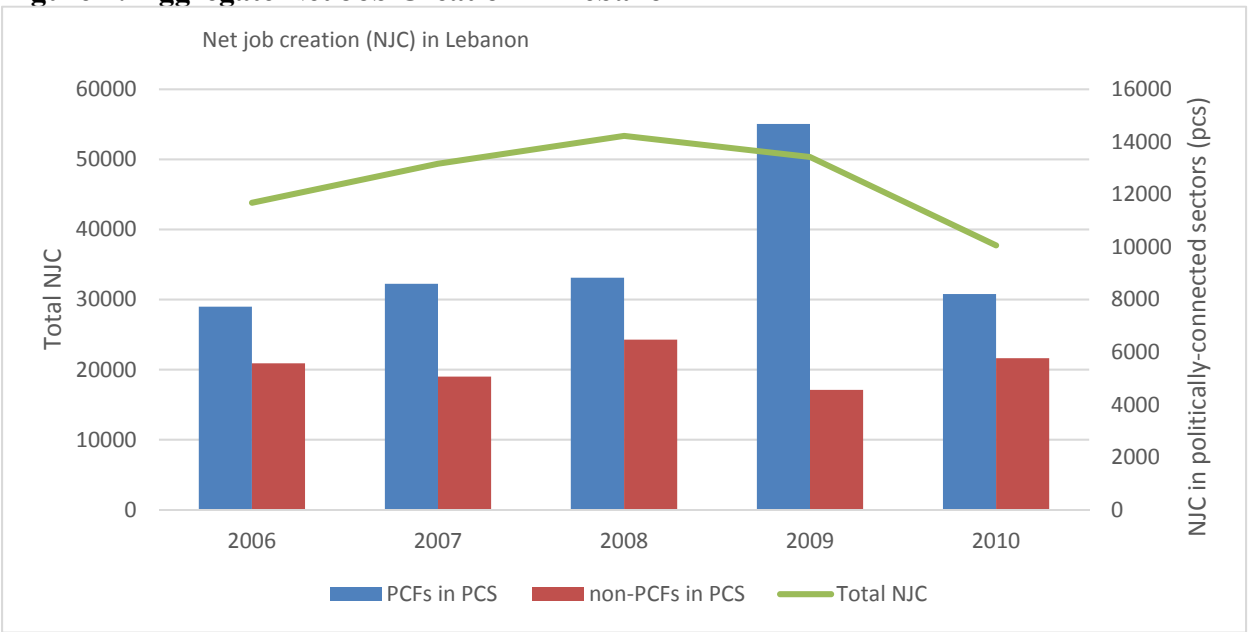

Table 1: Firm Size and Employment Distribution (Annual Average, 2005-2010)

Number of Employees	Number of Firms	% of firms	Number of jobs	% of employment	Age
1*	93370	76.38	93370	13.78	5.98
2	5674	4.64	11349	1.67	6.86
3	4332	3.54	12996	1.92	6.74
4	3287	2.69	13148	1.94	6.80
5	2317	1.90	11583	1.71	6.90
6-9	4974	4.07	35944	5.30	7.00
10-19	3915	3.20	52093	7.69	7.45
20-49	2535	2.07	76733	11.32	7.81
50-99	933	0.76	64364	9.50	8.31
100-199	469	0.38	65253	9.63	8.65
200-999	391	0.32	150573	22.21	8.80
>=1000	41	0.04	90407	13.34	9.32
Total	122237	100	677812	100	

Notes: * represent self-employed firms

Table 2: Firm Size and Employment Distributions Over Time

	2005	2006	2007	2008	2009	2010	2005	2006	2007	2008	2009	2010
number of employees	Share of firms						Share of jobs					
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

Notes: * represent self-employed firms

Table 3: Total employment by firms' size and age: 2005-2010 (annual averages)

	Size									
Age	1*	2	3-4	5-9	10-49	50-99	100-999	>=1000	Total	Share (%)
0	6717	439	783	891	1109	192	767	0	10611	1.57
1	6620	623	1453	2050	3061	741	1686	0	16234	2.40
2	6629	634	1576	2569	4424	1422	2649	530	20079	2.96
3	6778	675	1703	2948	5784	2085	3824	1789	24988	3.69
4	6700	699	1783	3214	7117	2657	6171	2875	30258	4.46
5	6671	686	1776	3456	8316	3065	8516	3353	34721	5.12
6	7054	720	1846	3626	9590	4238	12307	3152	42009	6.20
7	9963	1303	2850	5109	12962	6056	19543	8656	63556	9.38
8	9222	1352	3056	5719	16594	8718	29220	10892	84773	12.51
9	8018	1184	2664	4984	15488	8701	29833	12186	83058	12.25
10	7174	1066	2356	4450	14512	8241	29822	13339	80960	11.94
>=11	11826	1968	4299	8509	35844	21934	86092	48085	186564	27.52
Total	93371	11351	26143	47526	128826	64364	215826	90407	677812	
Share (%)	13.78	1.67	3.86	7.01	19.01	9.50	31.84	13.34		

Notes: * represent self-employed firms

Table 4: Output and Wage Per Worker by Firm Age and Size

	Output per worker Ln(Y/L)		Wage per worker Ln(W/L)	
By Age	Median	Mean	Median	Mean
1	17.46	17.59	15.52	15.61
2	17.40	17.51	15.52	15.59
3	17.41	17.51	15.46	15.51
4	17.42	17.51	15.45	15.50
5	17.42	17.51	15.47	15.51
6	17.40	17.49	15.47	15.50
7	17.37	17.46	15.38	15.39
8	17.39	17.49	15.44	15.48
9	17.39	17.50	15.45	15.48
10	17.43	17.55	15.54	15.56
>=11	17.53	17.64	15.67	15.70
By Size				
1*	17.37	17.48	15.10	15.16
2	17.47	17.55	15.30	15.30
3-4	17.53	17.60	15.43	15.43
5-9	17.71	17.73	15.56	15.58
10-49	18.01	17.97	15.73	15.75
50-99	18.07	18.07	15.85	15.87
100-999	17.38	17.39	16.02	15.98
>=1000	17.27	17.19	16.21	16.07

Notes: * represent self-employed firms

Table 5: Firms' Mobility in The Short- and The Long-Run (all firms)

Short-term transaction matrix
Annual Transitions

All Firms
Status in year t+1

Status in year t	Exited	1-person	Micro	SME	Large
1-person	31.81%	**62.15%**	5.50%	0.53%	0.01%
Micro	0.05%	0.25%	**96.92%**	2.75%	0.02%
SME	0.02%	0.03%	0.93%	**97.59%**	1.44%
Large	0.00%	0.00%	0.05%	0.41%	**99.54%**

Long-term transaction matrix
Transitions after 5 years

All Firms
Status in year t+5

Status in year t	Exited	1-person	Micro	SME	Large
1-person	39.51%	**59.24%**	1.20%	0.05%	0.00%
Micro	0.28%	0.88%	**86.59%**	11.97%	0.28%
SME	0.14%	0.36%	1.82%	**89.93%**	7.75%
Large	0.00%	0.15%	0.15%	0.73%	**98.98%**

Notes: Micro=(2-9 employees), SME=(10-99 employees), Large(>=100 employees).

Table 6: Net Job Creation by Firm Size (2006-2010)

Number of employees	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
	Net number of firms that Create jobs					Net jobs created				
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
Total	3964	3524	4824	4240	-2280	43828	49383	53362	50358	37732

Notes: * denotes self-employed firms

Table 7: The Effects of Output Concentration on Sector Characteristics

	Entry rate	Entry rate	Entry rate	NJCg	NJCg	NJCg	(Y/L)	(Y/L)	(Y/L)
HHI	-1.513***	-1.422***	-1.224**	-1.311***	-1.287***	-1.359***	-1.714***	-1.514***	-1.528***
	(0.000)	(0.000)	(0.021)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employment	-0.311**	-0.304**	-0.282	-0.102**	-0.091*	0.007	0.326**	0.191**	0.208**
	(0.035)	(0.041)	(0.291)	(0.014)	(0.055)	(0.153)	(0.041)	(0.037)	(0.033)
Firms		-0.584***	-0.613***		0.035***	0.024**		0.418*	0.315*
		(0.000)	(0.009)		(0.000)	(0.033)		(0.054)	(0.061)
Size			-0.374*			0.218***			-0.251***
			(0.062)			(0.005)			(0.000)
Age			-0.24			0.083***			-0.117*
			(0.468)			(0.004)			(0.067)
Capital			-1.244***			0.228			-0.034*
			(0.004)			(0.121)			(0.072)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of sectors	289	289	289	289	289	289	289	289	289
R-squared	0.412	0.443	0.645	0.441	0.521	0.539	0.611	0.712	0.615

Note: HHI refers to log of (output) Herfindahl-Hirschman Index at the sector-level. Entry represents the log of firm entry rate at the sector-year level. Size, age, and capital refer to log of average firm size, age, and capital, respectively, at the sector-level. Employment and firms refer to log of number of employees and number of firms at the sector-level. NJCg refer to log of net job creation growth rate at the sector level. P-values are in brackets. ***, **, and * refer to statistical significance at the 1, 5, and 10 percent levels.

Table 8: Characteristics of Politically-Connected Firms in Lebanon

Sector	Politically connected firms, PCFs						Non politically connected firms, non-PCFs					
	# of firms	# workers per firm	Output/ workers	Wage per worker	Age	Capital	# of firms	# workers per firm	Output/ workers	Wage per worker	Age	Capital
Real estate development	103	247.25	155.00	15.40	10.12	352	259	1.30	193.00	10.91	5.60	182
Private-contractors of public works	54	79.11	52.90	14.74	10.50	81	62	2.53	114.00	7.30	3.50	29
Hotels	34	80.44	100.00	13.70	7.83	298	147	3.52	120.00	10.80	2.62	166
Commercial banks	31	792.65	312.00	40.40	28.41	721	28	381.33	186.00	32.80	20.71	347
Private schools	28	619.04	38.51	14.10	8.00	50	450	41.33	31.55	8.60	7.76	2
Security companies	23	711.25	16.20	13.46	6.16	96	21	8.91	20.20	8.80	4.78	29
Building cleaning services	22	144.94	22.00	7.80	7.89	11	134	5.18	24.90	4.05	5.36	1
Waterfront resorts	21	228.59	17.10	10.12	7.72	2,300	88	12.22	68.60	8.74	6.76	2,000
Business and management consulting	17	72.41	23.25	12.11	8.41	25	196	1.56	47.90	7.90	5.95	13
Shipping lines	17	52.50	72.60	12.20	10.50	30	23	7.09	119.00	7.86	4.76	24
Financial intermediaries	15	18.62	181.43	16.20	11.32	161	39	5.27	169.00	8.60	5.39	140
Quarries	14	74.00	57.40	10.29	9.50	24	218	3.27	86.20	6.42	6.20	250
Telecommunications companies	14	24.81	68.21	11.23	12.01	18	51	2.15	94.80	7.83	7.06	32
Insurance companies	13	130.06	42.73	27.50	10.50	42	91	11.30	49.98	13.50	7.57	120
Garbage collection companies	11	315.11	21.20	7.56	8.50	380	56	4.51	24.30	5.30	5.19	15
Print houses	9	47.27	70.00	9.86	10.30	100	231	5.26	64.00	6.34	6.82	13
Domestic transportation companies	9	143.72	18.30	10.73	9.50	95	173	2.83	38.80	8.15	5.35	7
Hospitals	8	321.48	28.40	16.43	8.98	250	156	85.98	39.60	10.16	7.94	42
Mineral water production	7	166.72	46.50	11.63	9.83	370	32	6.69	13.60	6.98	7.36	130
Private universities	7	619.04	55.76	32.10	8.00	75	21	120.58	61.37	17.00	7.86	2
Sports centers	6	29.65	58.94	13.40	5.11	50	13	6.79	64.80	9.13	3.50	5
Gas distributors	4	146.00	347.00	11.80	10.50	1,200	16	4.68	127.00	7.01	8.32	240
Soft-drinks production	4	302.13	155.00	14.90	8.50	240	6	10.10	151.20	20.90	6.74	100
Dairy products manufacturing	4	157.43	200.00	8.23	9.90	97	132	4.85	100.00	6.28	6.23	44
Electrical equipment manufacturing	3	31.71	45.21	8.20	11.34	81	22	2.63	53.70	6.76	8.13	58
Importers and producers of pharma	2	180.04	322.00	14.80	0.00	250	159	7.00	301.00	7.89	5.71	120
Newspaper and magazine production	4	166.36	62.00	14.60	10.33	95	14	5.34	21.50	6.48	5.47	17
Radio and TV production	11	362.64	71.30	17.50	8.07	340	24	3.64	43.70	6.60	2.36	20
Advertising companies	2	103.00	92.20	18.70	10.10	120	14	3.83	72.30	6.73	5.54	39
Total	497						2876					

Note: Output per employee, wage per employee, and capital are in LBP millions.

Table 9: The Effects of Political Connections on Firm Characteristics

	Politically-connected sectors				All Sectors			
	NJC	**Wages**	**Output**	**Productivity**	**NJC**	**Wages**	**Output**	**Productivity**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PCF	0.307***	0.218***	0.424***	-0.319***	0.338***	0.259***	0.471***	-0.344***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.202***	0.187**	0.111**	-0.149*	0.227***	0.196***	0.128**	-0.157**
	(0.000)	(0.020)	(0.021)	(0.064)	(0.000)	(0.002)	(0.016)	(0.043)
Age	0.127*	0.129**	0.133*	-0.198**	0.133**	0.127***	0.133**	-0.209**
	(0.061)	(0.014)	(0.077)	(0.036)	(0.034)	(0.009)	(0.027)	(0.017)
PCF*Size	0.065***	0.069***	0.189**	-0.044**	0.028***	0.039***	0.065**	-0.021**
	(0.000)	(0.000)	(0.042)	(0.015)	(0.000)	(0.000)	(0.033)	(0.011)
PCF*Age	0.018**	0.042**	0.125**	-0.041*	0.022**	0.037**	0.131***	-0.0291**
	(0.035)	(0.017)	(0.023)	(0.051)	(0.018)	(0.016)	(0.000)	(0.043)
PCFs	-0.094***	-0.084**	-0.081**	-0.059**	-0.113***	-0.075**	-0.069**	-0.041***
	(0.000)	(0.033)	(0.021)	(0.018)	(0.000)	(0.003)	(0.000)	(0.000)
PCF*PCFs	-0.055***	-0.027***	-0.073**	0.038***	-0.034***	-0.040**	-0.056**	0.036***
	(0.000)	(0.000)	(0.011)	(0.000)	(0.000)	(0.027)	(0.018)	(0.000)
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of sectors	29	29	29	29	289	289	289	289
Number of observations	20238	20238	20238	20238	733410	733410	733410	733410
R-squared	0.722	0.735	0.709	0.731	0.758	0.746	0.692	0.699

Note: The estimations in columns 1-4 restrict the analysis to politically-connected sectors (sectors with at least one PCF). The estimations in columns 5-8 include all sectors. PCF is a dummy variable equal to 1 if the firm is politically-connected, and zero otherwise. Size and age refer to firm size (in terms of number of employees) and age, respectively, at the year level. PCFs represent the number of politically-connected firms at the sector-year level. NJC refers to the (log of) number of net jobs created at the firm-year level. Wage represent (log of) average wage per employee (in LBP million) at the firm-year level. Output represent (log of) output per firm (in LBP million) at the year level. Productivity represent (log of) average output per employee (in LBP million) at the firm-year level. Sector classification is at the 4-digit level. Standard errors are clustered at the sector level. P-values are in brackets. ***, **, and * refer to statistical significance at the 1, 5, and 10 percent level

Table 10: The Effects of Political Connections on Sector Characteristics

	Entry	Concentration	NJC	Wage	Output	Productivity
PCFs	-4.072***	6.317***	-0.072***	0.031***	0.063***	-0.023***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size_P	-3.325*	4.168***	-0.023**	0.025**	0.112***	-0.034***
	(0.058)	(0.000)	(0.028)	(0.037)	(0.000)	(0.000)
Age_P	-2.148**	3.146***	-0.033	0.023	0.072**	-0.022*
	(0.033)	(0.002)	(0.104)	(0.115)	(0.031)	(0.071)
Size_N	-0.243**	1.208	0.041**	0.014**	0.041**	0.018***
	(0.037)	(0.121)	(0.028)	(0.016)	(0.012)	(0.000)
Age_N	-0.435*	1.231	0.021**	0.029*	0.033	0.024*
	(0.091)	(0.263)	(0.014)	(0.062)	(0.110)	(0.042)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of sectors	29	29	29	29	29	29
R-squared	0.682	0.660	0.634	0.729	0.714	0.768

Note: The above estimations restrict the analysis to politically-connected sectors (sectors with at least one PCF). PCFs represent the number of politically-connected firms at the sector-year level. Size_P represent average (employment) size of PCFs at the sector-year level. Age_P represent average age of PCFs at the sector-year level. Size_N represent average (employment) size of non-PCFs at the sector-year level. Age_N represent average age of non-PCFs at the sector-year level. Entry represent firm entry rate (on a scale from 0-100) at the sector-year level. Concentration refers to (output) Herfindahl-Hirschman index (on a scale from 0-100) at the sector-year level. NJC refers to the (log of) number of net jobs created at the sector-year level. Wage represent (log of) average wage per employee (in LBP million) at the sector-year level. Output represent (log of) average output per firm (in LBP million) at the sector-year level. Productivity represent (log of) average output per employee (in LBP million) at the sector-year level. Sector classification is at the 4-digit level. P-values are in brackets. ***, **, and * refer to statistical significance at the 1, 5, and 10 percent levels.

Table 11: The Effects of Political Connections on Sector Characteristics

	Entry	Concentration	NJC	Wage	Output	Productivity
PCFs	-3.211***	7.224***	-0.077***	0.046***	0.081***	-0.041***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size_N	-1.333***	1.129**	0.053***	0.025***	0.084**	0.024***
	(0.005)	(0.036)	(0.000)	(0.008)	(0.026)	(0.000)
Age_N	-1.102*	2.426**	0.028**	0.031**	0.051	0.019*
	(0.061)	(0.38)	(0.021)	(0.048)	(0.087)	(0.033)
PCS*Size_P	-5.146***	3.845***	-0.044***	0.038***	0.186***	-0.049***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PCS*Age_P	-2.801**	4.021***	-0.037***	0.046***	0.122*	-0.038***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.052)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of sectors	289	289	289	289	289	289
R-squared	0.614	0.652	0.706	0.718	0.711	0.732

Note: The above estimations include all sectors. PCFs represent the number of politically-connected firms at the sector-year level. Size_P represent average (employment) size of PCFs at the sector-year level. Age_P represent average age of PCFs at the sector-year level. Size_N represent average (employment) size of non-PCFs at the sector-year level. Age_N represent average age of non-PCFs at the sector-year level. PCS is a dummy variable equal to 1 if the sector is politically-connected (with at least one PCF), and zero otherwise. Entry represent firm entry rate (on a scale from 0-100) at the sector-year level. Concentration refers to (output) Herfindahl-Hirschman index (on a scale from 0-100) at the sector-year level. NJC refers to the (log of) number of net jobs created at the sector-year level. Wage represent (log of) average wage per employee (in LBP million) at the sector-year level. Output represent (log of) average output per firm (in LBP million) at the sector-year level. Productivity represent (log of) average output per employee (in LBP million) at the sector-year level. Sector classification is at the 4-digit level. P-values are in brackets. ***, **, and * refer to statistical significance at the 1, 5, and 10 percent levels.

Appendix 1: Sectors with Highest and Lowest Net Job Creation, NJC (2006-2010)

Top 20 sectors in terms of net job creation	Bottom 20 sectors in terms of net job creation
Restaurants	Private medical practice
Hospitals	Legal practice
Private universities	Artisanal production
Commercial banks	Veterenian practice
Private schools	Garbage recycling
Hotels	Poultry farming
Supermarkets	Fish farming
Security companies	Tobacco production
Real-estate development companies	Auto parts manufacturing
Private contractors of public works	Textiles manufacturing
Garbage collection companies	Forestry
Building cleaners	Musical instruments manufacturing
Waterfront resorts	Sport instruments manufacturing
Gas stations	Fertilizers manufacturing
Business and management consulting firms	Electronics manufacturing
Auto sales	Boats manufacturing
TV and radio production	Salt production
Cement and stone production	Sugar production
Insurance companies	Watches manufacturing
Private domestic transportation companies	Toys manufacturing

Note: Rankings are based on sums of net jobs created at the sector-level between 2006 and 2010.

Appendix 2: Most and Least Concentrated Sectors (2005-2010)

Most concentrated sectors	Least concentrated sectors
Musical instruments manufacturing	Private medical practice
Poultry farming	Legal practice
Fish farming	Auto parts manufacturing
Electrical equipment manufacturing	Barber shops
Leather manufacturing	Furniture retail sales
Furniture imports	Libraries
Artisanal production	Home appliances
Sports equipment manufacturing	Clothes and shoes retailer stores
Electrical equipment manufacturing	Clothes wholesales
Cables manufacturing	Fruits and vegetables wholesale
Textiles manufacturing	Certified accounting offices
Computer refurbishment sector	Carpenter shops
Private contractors of public works	Forestry
Garbage recycling	Photography shops
Mineral water production	Money exchange shops
Tobacco production	Restaurants
Starch manufacturing	Insurance companies
Fertilizers manufacturing	Laundry shops
Boats manufacturing	Hospitals
Alcoholic drinks manufacturing	Printing houses

Note: Rankings are based on average HHI values at the sector level between 2005 and 2010.

Appendix 3: Who Are the Largest (>=1000 employees) Firms in Lebanon?

2005	2006	2007	2008	2009	2010
Airline firm (1)	Airline firm (1)	Airline firm (1)	Airline firm (1)	Airline firm (1)	Airline firm (1)
Casino (1)	Casino (1)	Casino (1)	Casino (1)	Casino (1)	Casino (1)
Commercial banks (5)	Commercial banks (6)	Commercial banks (6)	Commercial banks (8)	Commercial banks (8)	Civil engineering office (1)
Construction firm (1)	Construction firm (1)	Construction firm (1)	Construction firm (1)	Civil engineering (1)	Clothes retail store (2)
Garbage collection (1)	Garbage collection firm (1)	Garbage collection firm (1)	Garbage collection firm (2)	Clothes retail store (1)	Commercial banks (8)
Hotel (1)	Hotel (1)	Hotels (2)	Hotels (2)	Construction firm (1)	Construction firm (1)
Insurance firm (1)	Housing for children with special needs (1)	Housing for children with special needs (1)	Housing for children with special needs (1)	Garbage collection firm (2)	Garbage collection firm (2)
Poultry firm (1)	HR firm (1)	HR firm (1)	HR firm (1)	Hotel (2)	Hotels (2)
Private high school (1)	Insurance (1)	Insurance firm (1)	Civil engineering office (1)	Housing for children with special needs (1)	Housing for children with special needs (1)
Private hospitals (2)	Investigation and security (1)	Investigation and security (2)	Insurance firm (1)	HR firm (1)	HR firm (1)
Private university (3)	Poultry (1)	Poultry firm (1)	Investigation and security (5)	Insurance firm (1)	Insurance firm (1)
Real estate/ construction (1)	Private high schools (2)	Private high schools (2)	Poultry firm (1)	Investigation and security firm (5)	Investigation and security firm (5)
Restaurant (1)	Private hospitals (2)	Private hospitals (3)	Private high schools (3)	Post firm (1)	Post firm (1)
Security firm (1)	Private universities (4)	Private universities (4)	Private hospitals (3)	Poultry firm (1)	Poultry firm (1)
Supermarket (1)	Real estate construction (1)	Real estate construction (1)	Private universities (6)	Private high schools (3)	Private elementary school (1)
Telecom firm (1)	Restaurants (2)	Restaurants (2)	Public construction firm (1)	Private hospitals (4)	Private high schools (3)
	Supermarkets (2)	Supermarket (2)	Real estate construction (2)	Private universities (7)	Private hospitals (6)
	Telecom firm (1)	Telecom firm (1)	Restaurants (2)	Public construction firm (1)	Private universities (7)
		Paper & tissues, wholesale (1)	Supermarket (4)	Real estate construction (1)	Public construction (1)
			Telecom firm (1)	Restaurants (2)	Real estate construction (2)
			Paper, tissues, wholesale (1)	Supermarket (5)	Restaurants (3)
				Sweets factory (1)	Retail Mall (1)
				Telecom firm (1)	Supermarket (5)
				Paper, tissues, wholesale (1)	Telecom firm (1)
					Paper, tissues, wholesale (1)

Note: Number of firms in parentheses.