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Private Sector Job Creation in MENA: Prioritizing the Reform Agenda

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Private Sector Job Creation in MENA: Prioritizing the Reform Agenda

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Abstract

This paper examines the extent to which firms in selected MENA countries reported being constrained by the business environment around the time of the Arab Spring and the extent to which these constraints affected their employment performance. The results suggest that small firms in MENA faced more structural constraints than similar firms in other regions. We also find that MENA firms' weaker job creation can be explained in great part by the macroeconomic environment and structural constraints. Low GDP growth, falling external competitiveness, corruption, lack of access to finance and poor access to electricity are found to explain a significant part of the lack of employment growth in MENA firms compared to their peers.

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CONTENTS PAGE

I. INTRODUCTION

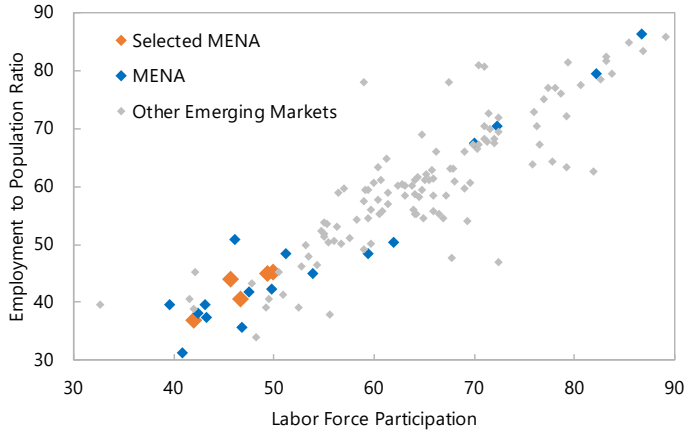
In December 2010, the Arab Spring started in Tunisia, when a small business owner set himself on fire to protest the harassment inflicted on him by municipal officials. What seemed at first like a single act of desperation spilled over into a wave of protests and resulted in a political movement that spread across the region; the movement was largely sustained by the youth that the region had failed to integrate productively into the economy. In 2010, the Middle East and North Africa region (MENA) had one of the highest unemployment rates worldwide, with more than a quarter of the youth unemployed versus 20.4 percent on average in other emerging market economies.

MENA's economic model, inward-looking and state-centric for a long time, resulted in protracted high unemployment in the region. Competition policy, legal and regulatory structures were designed and used to protect a few well-connected economic players, rather than encourage the emergence of new dynamic small and medium-size firms. Competition and private sector dynamism were further stifled through limited trade integration (Hoffman and Jamal, 2012, World Bank, 2009 and 2013, Rijkers and Arouri, 2012). Education systems were geared towards preparing the rapidly growing working-age population for public rather than private sector jobs (Dhillon and Yousef, 2009).

As a consequence, the private sector was characterized by a large informal sector (representing about ¼ of economic activity) and a concentration of small firms, of which only few were able to grow into larger and more productive ones (Schneider, 2012, World Bank, 2009). Firm labor productivity was low by international standards, innovation and sophistication were lagging peers and non-commodity exports remained very low. Job creation in the private sector was also too low to absorb the rapidly growing population. With labor force participation rates across the whole MENA region at an average of 76 percent for men and 26 percent for women in 2010,[1] a significant source of growth remained untapped (Figure 1). The result was a growing dissatisfaction amongst MENA citizens. For example, according to Gallup polls conducted between 2005-2009, the share of people who said they were "thriving" was less than 14 percent on average for MENA countries outside the GCC, compared to an average of 27 percent among emerging markets.

[1] And it is important to stress that this trend has not improved since 2010 and the challenge remains relevant. As of 2018, the average labor force participation rate of men was 75 percent and that of women was 28 percent.

Figure 1. Labor Market Indicators, MENA vs. Emerging Markets
(Percent, 2010)



Source: International Labor Organization; and IMF staff calculations.

This paper seeks to identify the main constraints to MENA firms' employment creation compared to firms in other regions globally. It looks back not only at business environment constraints, but also the macroeconomic situation, and how that might affect job creation. Our contribution to the literature is two-fold: we analyze the degree to which business climate is a constraint, comparing the differences across types of firms within MENA to those in other regions; we identify the constraints and policies that are most likely to influence job creation. The paper answers the following questions:

(i) What type of firms were the most affected by business climate constraints?

(ii) Were business climate constraints systematically different in MENA compared to other regions?

(iii) How firms' characteristics, macroeconomic and structural variables affect job creation?

(iv) What are the main priorities for policymakers as they design structural reform agendas and macroeconomic policies to support MENA private sectors?

The results show that several aspects of the business environment disproportionately affect MENA firms. In particular, MENA firms have been more likely than elsewhere to be constrained by political instability, access to finance and infrastructure, especially electricity. At the same time, firms with different characteristics are affected in varying ways. Small firms tended to report being less affected by these constraints, possibly because they were able to stay under the radar or did not request these services at all. However, it might occult the fact that firms remain small as they would face more constraints were they to become larger, as illustrated by the fact that medium-size firms report more constraints. Despite being able to access diverse sources of financing, large MENA firms, and especially expanding firms, still reported access to finance as a constraint.

Our analysis shows that firms in MENA generated fewer jobs than firms in other regions, even after controlling for firms' characteristics. We find that the macroeconomic environment and structural constraints explain, to a great extent, the worse performance of MENA firms compared to their peers in other countries. Access to finance, access to electricity and corruption appear as the most binding structural constraints while growth and external competitiveness appear as the macroeconomic factors that affected MENA firms' performance the most. In other words, the lack of job creation by MENA firms does not seem to reflect a "MENA specificity" but to reflect weaker economic fundamentals and business environments.

The rest of the paper assesses the characteristics and performance of the MENA private sector around the time of the Arab Spring. The next section presents stylized facts. Section III provides a picture of how business climate constraints affect different firms, answering the first two questions posed above. Section IV presents the analysis of the determinants of employment growth, focusing on the role of macroeconomic policies and business regulations, answering our last two questions. Section V concludes.

II. CHARACTERISTICS OF THE PRIVATE SECTORS IN MENA

A. Data Description

We use the World Bank Enterprise Survey (WBES) data to analyze the characteristics of the private sector in selected MENA countries in the aftermath of the Arab Spring and compare them to other emerging and developing economies. The sample includes surveys conducted in 2013 for five MENA countries (Egypt, Jordan, Lebanon, Morocco and Tunisia) and surveys conducted in 2013 or 2014 for a comparator group of 48 emerging and developing countries (See Annex A for more details). A caveat of the WBES is that the survey only includes firms that are registered and have at least five employees. It is worth stressing that the WBES does not include informal firms, which represent a significant share of private sector activity in MENA and more generally in other emerging economies.

B. Results

The formal private sector was skewed towards small firms.[2] Small firms (i.e., firms with less than 20 employees) represented about 60 percent of formal private sector firms at the time of the survey, while medium-sized firms (i.e., firms with 20 to 99 employees) represented another 33 percent of firms. This is not unusual in emerging market economies, for example small firms also dominated the formal private sectors in Sub-Saharan Africa (SSA) and Eastern Europe and Central Asia (ECA), accounting for 73 percent and 64 percent

[2] In the paper, MENA refers to the five MENA countries included in our sample: Egypt, Jordan, Lebanon, Morocco and Tunisia.

(continued…)

of firms respectively. Within MENA, some countries had a "thicker middle" than others—in Morocco medium-sized firms account for 38 percent of all firms. In addition, large firms are twice as common in Morocco and Tunisia as in Jordan or Lebanon (Table 1).[3]

Table 1. Distribution of Firms by Firm Size
(Percent)

	Share by firm size			
	Small (5-19)	Medium (20-99)	Large (100+)	Number of Firms in Sample
Egypt	60.8	32.3	6.9	2,443
Jordan	67.5	26.2	6.3	548
Lebanon	63.0	30.5	6.5	483
Morocco	49.5	38.4	12.1	371
Tunisia	57.7	33.7	11.6	580
Selected MENA	**58.5**	**33.2**	**8.3**	**4,426**
ECA	64.3	29.5	6.3	8,854
SAR	43.2	43.3	13.5	11,518
SSA	72.5	21.6	5.9	8,047

Sources: World Bank Enterprises Survey, and IMF staff calculations.
Note: The distribution of firm sizes is weighted by strata survey weights for firms, sector of activity, and region.

MENA small and medium-sized formal firms tended to be more productive than large firms. Moreover**,** large firms accounted for only about 43 percent of sales, while they represented around 62 percent of employment in the formal sector. This contrasts with large firms in ECA and South Asia (SAR), where large firms account for the majority of total sales, and better than in SSA where they account for less than 20 percent (Tables 2 and 3).

Labor productivity in MENA firms deteriorated significantly around the time of the Arab Spring. While labor productivity growth before 2010 was moderately positive (World Bank 2009 and 2015), it became negative after 2010. Between 2009 and 2012, annual labor productivity growth was negative in every single MENA country in our sample, with small firms experiencing an annual decline of 5.1 percent, versus 3.8 percent for medium-sized firms and 3.4 percent for large firms. There were only a few pockets of positive labor productivity growth among medium-sized and large firms in Lebanon (Table 4). This result is consistent with what was happening in most other regions in the same period, as labor productivity growth was also negative for firms in all other regions included in our sample, except for ECA.

[3] For detailed country specific results, see the country profiles: http://www.enterprisesurveys.org/.

Table 2. Distribution of Permanent Workers by Firm Size
(Percent)

	Share by firm size		
	Small (5-19)	Medium (20-99)	Large (100+)
Egypt	14.2	30.2	55.6
Jordan	14.2	27.2	58.6
Lebanon	17.7	28.7	43.5
Morocco	6.7	20.4	72.9
Tunisia	9.9	26.0	64.1
Selected MENA	**11.6**	**26.9**	**61.6**
ECA	16.5	31.7	51.8
SAR	6.2	25.0	68.7
SSA	22.5	24.8	52.8

Sources: World Bank Enterprises Survey, and IMF staff calculations.
Note: The distribution of firm sizes is weighted by strata survey weights for firms, sector of activity, and region.

Table 3. Distribution of Sales by Firm Size
(Percent)

	Share by firm size		
	Small (5-19)	Medium (20-99)	Large (100+)
Egypt	15.3	30.6	54.2
Jordan	12.1	25.6	62.2
Lebanon	24.4	32.5	43.1
Morocco	24.8	38.2	37.0
Tunisia	9.9	28.2	61.9
Selected MENA	**24.5**	**32.5**	**43.1**
ECA	16.4	24.8	58.8
SAR	6.6	29.5	63.9
SSA	38.4	42.8	18.8

Sources: World Bank Enterprises Survey, and IMF staff calculations.
Note: The distribution of firm sizes is weighted by strata survey weights for firms, sector of activity, and region.

Employment creation was weak, especially in medium-sized firms. Over the period 2009-2012, average annual employment creation among MENA formal firms was well below the rate observed in other regions—0.8 percent, against 4 to 6.4 percent in other regions (Table 5). Looking across firm sizes, we find that small MENA firms performed relatively better, posting a positive growth rate of about 2 percent, although still significantly below peers in other regions where employment grew between 6 and 8 percent. Medium-sized and large firms saw their employment decline, a trend also observed in ECA and SSA. This finding is partly consitent with the literature which suggests smaller firms tend to create more jobs. If a negative relationship between initial firm size and employment growth is not a surprise, the sharper contraction of job creation for medium-sized firms in MENA might indicate that

these firms face more constraints to their development. This has been highlighted in previous studies as the "missing middle" in MENA's private sectors.

Table 4. Annual Labor Productivity Growth between 2009 and 2012
(Percent change)

		By initial size of firm		
	Annual Labor Productivity Growth	Small (5-19)	Medium (20-99)	Large (100+)
Egypt	-5.1	-5.4	-4.8	-4.0
Jordan	-4.1	-6.3	-2.1	-1.4
Lebanon	-1.3	-5.0	4.5	3.1
Morocco	-2.3	-1.8	-2.9	-2.5
Tunisia	-6.6	-8.7	-4.2	-3.6
Selected MENA	**-4.5**	**-5.1**	**-3.8**	**-3.4**
ECA	3.9	3.4	4.7	7.1
SAR	-8.0	-8.3	-7.6	-8.0
SSA	-13.0	-14.4	-9.4	-3.1

Sources: World Bank Enterprises Survey, and IMF staff calculations.
ECA= Eastern Europe and Central Asia; SAR= South Asia Region; SSA= Sub-Saharan Africa.
Note: The distribution of firm sizes is weighted by strata survey weights for firms, sector of activity, and region.

Table 5. Annual Employment Growth between 2009 and 2012
(Percent change)

		By initial size of firm		
	Annual Employment Growth	Small (5-19)	Medium (20-99)	Large (100+)
Egypt	-1.3	-0.5	-2.6	-2.0
Jordan	3.8	5.8	-3.0	1.8
Lebanon	1.3	5.3	-5.9	-0.9
Morocco	6.0	7.9	4.2	1.3
Tunisia	0.4	2.9	-3.6	-0.2
Selected MENA	**0.8**	**2.2**	**-1.3**	**-0.9**
ECA	4.0	6.1	-0.5	-0.8
SAR	5.4	6.8	4.1	3.7
SSA	6.4	7.8	-1.3	-5.6

Sources: World Bank Enterprises Survey, and IMF staff calculations.
Note: The distribution of firm sizes is weighted by strata survey weights for firms, sector of activity, and region.

Trade integration, innovation and firm's age were important factors behind MENA firms' performance in terms of labor productivity and job creation. Overall, the performance of firms that were integrated into global value chains was better—the labor productivity of exporting MENA firms contracted by 1.5 percent instead of 4.4 percent for the regional sample. The employment growth of exporters was 1.7 percent on average in the region and that of fully integrated firms (both exporters and importers) was 3.2 percent. MENA firms that did not innovate saw their labor productivity decline by twice as much as firms that launched product innovations. Firms that innovated in processes or products also generated up to three times more jobs than other firms. Mature and older firms performed worse than young firms: their average labor productivity contracted by 5.9 percent and 3.8

percent, respectively, compared to 2.1 percent for young firms of the region. Young firms' employment growth was 4.7 percent on average in MENA against 1.6 percent for mature firms and -1.1 percent for old firms. This is consistent with findings in the literature that young firms are more dynamic (World Bank, 2015).

III. THE ROLE OF BUSINESS CLIMATE CONSTRAINTS IN MENA PRIVATE SECTORS.

This section tries to answer two questions: What type of firms were the most affected by business climate constraints? Were business climate constraints systematically different in these countries compared with other regions?

A. Methodology

We analyze both subjective and objective constraints in six of the areas that were identified in the literature as the most pressing obstacles to private sector-led growth and which are covered by the WBES data: (i) political instability, (ii) governance, (iii) access to finance, (iv) infrastructure, (v) business regulation and (vi) labor market regulations.

One way to assess the business climate is to ask firms their opinion. Respondents are presented with a list of 15 common business environment obstacles and are asked to indicate how severe an obstacle these constraints are to their business activity. The set of constraints presented covers a wide range of possible impediments to firms' activity, from macroeconomic and political instability to electricity; from corruption to access to finance and labor regulations.[4] Because they capture perceptions, we will refer to these constraints as "subjective" in the remainder of the paper.

When surveying firms on their perceptions of constraints to the business, one cannot avoid problems of endogeneity, definition ambiguity and different reference points.[5] Firms' answers might be driven by their own performance. By responding to a set menu of possible constraints the enterprise surveys make answers comparable across regions, but they also make it impossible for firms to point out additional, maybe more pressing, constraints, which might bias their responses. Firms' perceptions might also simply reflect the degree of optimism or pessimism of the respondent. We account for differences that occur at the country or sector levels by using dummies, and we control for the propensity of a respondent to be optimistic or pessimistic by including each respondent's average tendency to complain

[4] The complete list of possible constraints includes access to finance, access to land, business licensing and permits, corruption, courts, crime, theft and disorder, customs and trade regulation, electricity, inadequately educated workforce, labor regulations, political instability, practices of the informal sector, tax administration, tax rates and transport. Firms can assign the following values to each constraint: 0 for no obstacle, 1 for minor obstacle, 2 for moderate obstacle, 3 for major obstacle and 4 for very severe obstacle.

[5] For more details on these issues and the use of subjective measures, see Pierre and Scarpetta (2006); Hallward-Driemeier and Aterido (2009); and Aterido and others (2009).

(continued…)

across constraints (a higher value indicating the respondent reported the constraints as more severe). We also distinguish between micro firms (with less than 10 employees) and other small firms since the former may be better able to stay "under the radar" and in many countries are exempt from some labor regulations. We complement our analysis by using objective constraints that are available in the WBES. These constraints capture measures such as the number of electricity outages faced by firms, the share of sales spent on security or bribes, and the share of management time spent on dealing with regulation.[6]

For the subjective constraints, we use a probit model to estimate the association between the probability that firms report a constraint to be a major or very severe obstacle and firms' characteristics (size, age, ownership structure, degree of trade integration of firms, location in business city, recent employment changes, sector, level of technology (for manufacturing firms only), technology absorption and product diversification. We also control for firms' average tendency to complain, as well as country fixed effects. For the objective constraints, we estimate the same specifications excluding the average propensity to complain, using OLS regressions.[7]

B. Results

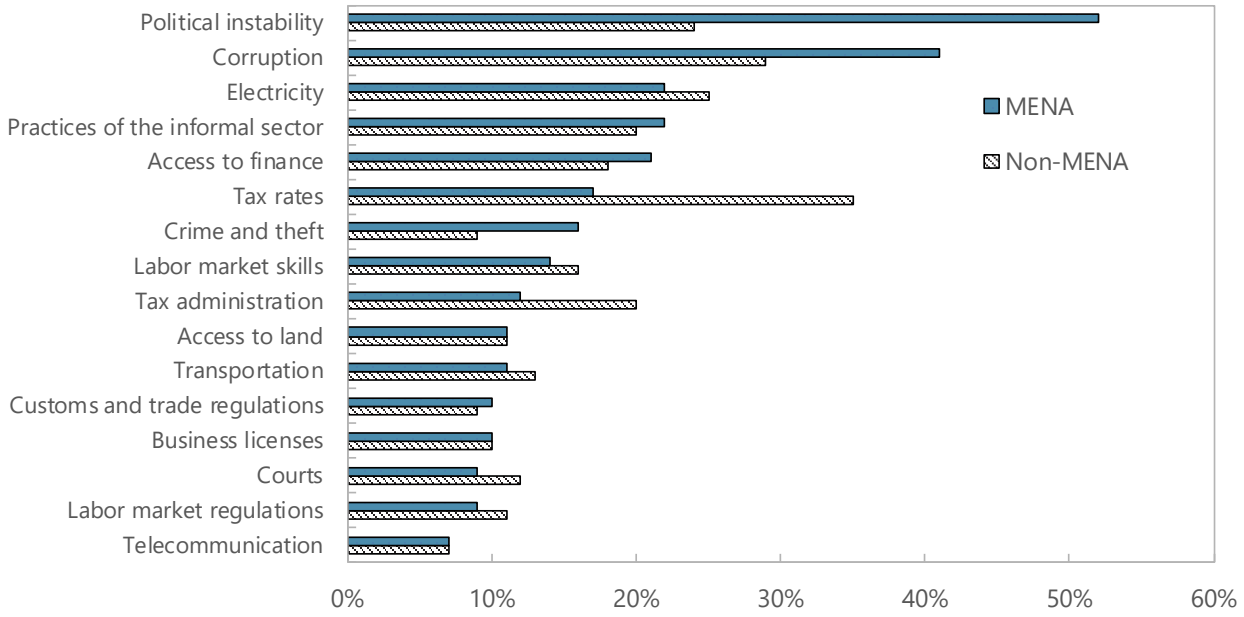
Political instability

MENA firms were more likely to complain about political instability than firms in other regions. Political instability is the greatest constraint for MENA firms (Figure 2). The other four most important constraints reported by firms in MENA are, in order of importance: corruption, electricity, informal practices, and access to finance. On average, 52 percent of firms reported political instability as a major constraint versus 24 percent of non-MENA firms. It is true for firms of all sizes, especially micro and large firms (for which the differences are statistically significant). Within MENA, as is the case among non-MENA countries, it is interesting to note that there are no differences across firm sizes regarding the likelihood to report this constraint as major or very severe. This result is hardly surprising given that most of these countries saw popular uprisings, and those that did not were affected by the spillovers of conflicts in the region, such as flows of refugees, or decrease in investor confidence (Rother and others, 2016).

[6] See Annex B, Table B1 for descriptive statistics of the objective constraints.

[7] See Aterido and others (2011) for an example of the use of such models.

Figure 2. MENA Firms Consider Political Instability and Corruption the Greatest Obstacles to Their Business
(Percent of Firms Reporting Constraint as Major or Severe)



Source: World Bank Enterprise Surveys; and IMF staff calculations.

Governance

MENA firms complained more about corruption than peers outside MENA, and large firms were more affected. Controlling for other characteristics, MENA firms were significantly more likely to report corruption as a major or very severe obstacle than firms in comparator countries—41 percent of MENA firms reported corruption as a constraint, versus only 29 percent of non-MENA firms. Larger firms in MENA and comparator countries were significantly more likely to report being affected by corruption than small firms (Table 6). In MENA, 39 percent of micro firms reported being constrained by corruption versus 48 percent of large firms. This compares with 25 percent versus 35 percent elsewhere. Large firms also experienced higher level of bribes (as a percent of a firm's sales) than other firms in MENA and large firms outside MENA (Annex C).

This is consistent with previous findings in the literature. World Bank (2009) and Freund and Rijkers (2012) report that corruption was identified as a major concern in the region before 2011 with most firms reporting that they had experienced bribe payment requests at a much higher rate than in any other region in the world. Officials were also perceived as being partial in changing or applying the law, for the benefit of a few well-connected firms, families, and institutions. It is likely that poor governance at the state level created a stifling environment for business that hampered the economies, as the literature has identified that better-governed countries tend to be more successful in creating investment, growth, and employment (Mauro, 1995; Svensson, 1998; Hall and Jones, 1999; Kaufmann and others, 1999; Acemoglu and others, 2001).

Table 6. Firm Probability of Reporting a Constraint as a Major Obstacle, MENA vs. Rest of World
(Based on results of subjective constraints regressions)

	Electricity		Telecom		Customs regulation		Transport	
	RoW	MENA	RoW	MENA	RoW	MENA	RoW	MENA
Micro	0.24	0.18	0.12	0.10	0.09	0.11	0.13	0.09
Small	0.24	0.24	0.12	0.07	0.08	0.10	0.12	0.11
Medium	0.26	0.24	0.10	0.10	0.09	0.09	0.14	0.12
Large	0.28	0.19	0.09	0.09	0.10	0.10	0.12	0.14
Difference Micro/Large	-0.04	-0.01	0.03	0.01	-0.01	0.01	0.01	-0.05

	Tax rates		Tax Administration		Licenses		Political Instability	
	RoW	MENA	RoW	MENA	RoW	MENA	RoW	MENA
Micro	0.33	0.17	0.20	0.12	0.09	0.08	0.27	0.49
Small	0.35	0.16	0.20	0.12	0.10	0.12	0.23	0.54
Medium	0.36	0.17	0.21	0.12	0.10	0.11	0.23	0.53
Large	0.38	0.17	0.18	0.12	0.10	0.11	0.26	0.50
Difference Micro/Large	-0.05	0.00	0.01	0.00	-0.02	-0.03	0.01	-0.01

	Crime		Access to Finance		Labor Regulation		Labor Skills	
	RoW	MENA	RoW	MENA	RoW	MENA	RoW	MENA
Micro	0.11	0.16	0.20	0.26	0.10	0.07	0.15	0.16
Small	0.09	0.16	0.17	0.21	0.12	0.08	0.17	0.12
Medium	0.07	0.17	0.17	0.18	0.12	0.11	0.16	0.13
Large	0.07	0.17	0.14	0.20	0.15	0.07	0.15	0.13
Difference Micro/Large	0.04	-0.01	0.06	0.07	-0.06	0.01	0.00	0.02

	Informal competition		Land		Corruption		Courts	
	RoW	MENA	RoW	MENA	RoW	MENA	RoW	MENA
Micro	0.22	0.23	0.12	0.12	0.25	0.39	0.08	0.06
Small	0.20	0.20	0.12	0.12	0.28	0.40	0.07	0.08
Medium	0.19	0.23	0.10	0.09	0.31	0.42	0.08	0.06
Large	0.17	0.20	0.08	0.08	0.35	0.48	0.06	0.06
Difference Micro/Large	0.05	0.02	0.03	0.04	-0.10	-0.09	0.02	0.00

Source: World Enterprise Surveys; and IMF staff calculations.
Note: Full regression results available upon request. Green shade represents statistically significant differences at 5 percent level of significance. Values for the probabilities go from 0 to 1.

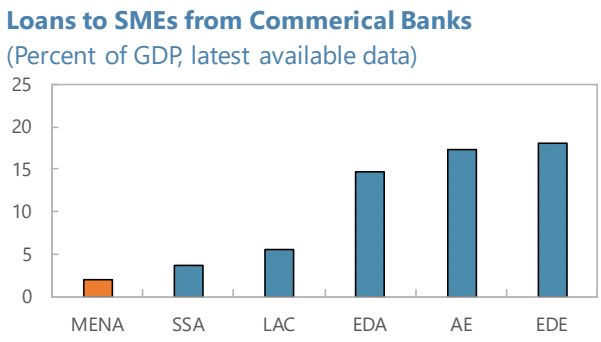
Access to Finance

MENA firms were complaining more about access to finance than firms in other regions. Even though the average MENA firm ranked access to finance only fifth on its list of constraints, MENA firms complained on average more about it than firms elsewhere. About 21 percent of MENA firms complained about access to finance as being a major or very severe obstacle to doing business compared with 18 percent elsewhere. Differentiating by firm size, the results show that both within MENA and among non-MENA countries,

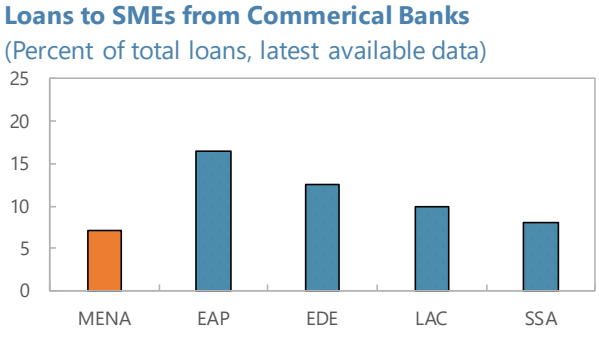
micro firms were significantly more likely to report access to finance as a major or very severe obstacle than large firms. But, it is notable that only large firms were significantly more constrained in MENA than non-MENA: while 20 percent of large MENA firms reported access to finance as a major or very severe obstacle, only 14 percent of large firms in comparator countries did. Another significant difference is among firms that expanded employment in the previous three years: MENA firms (28 percent) were more likely than their counterpart outside MENA (17 percent) to complain about access to finance. Again, this is consistent with the literature which has found that limited access to finance has deprived firms of resources in the region (World Bank, 2015, World Bank, 2013, Freund and others, 2013, Freund and others, 2014).

Small and medium-sized firms were also less likely to rely on external financing. Access to finance can be constrained in terms of quantities or the financing terms. Regarding the financing terms, WBES contains only comparable data on the collateral needed to obtain a bank loan. Eighty-three percent of the loans on firms' books required collateral, with an average value of just over twice the loan amount, slightly above that of comparator countries. As highlighted in the literature, because of insufficient credit bureaus and collateral registry systems, the MENA region had the lowest percentage of firms with credit lines or loans from financial institutions, and small firms in MENA were disproportionately credit constrained (Blancher and others, 2019, Alvarez de la Campa, 2011; Rocha and others, 2011, Figure 3). Our objective constraint analysis shows that MENA firms, except large ones, financed a smaller share of their working capital through financial institutions or externally than non-MENA firms. Outside MENA, there is a strong correlation between the share of external financing and firms' size, while large MENA firms were more likely to get such financing than all other MENA firms (Box 1 and Annex C).

Figure 3. Loans to SMEs



Source: Financial Access Survey; and IMF staff calculations.
Note: SSA = Sub-saharan Africa, LAC = Latin America and the Carribean, EDA = Emerging Asia, AE = Advanced Economies, EDE = Emerging Europe.



Source: Financial Access Survey; and IMF staff calculations.
Note: SSA = Sub-saharan Africa, LAC = Latin America and the Carribean, EDA = Emerging Asia, EDE = Emerging Europe.

Box 1: Evaluating access to finance.

To reliably establish if firms are constrained in terms of the quantities of financing they would like to access, one would need to construct a proxy of a firm's financing needs and compare it with the actual financing obtained. Unfortunately, the WBES surveys do not provide all the data that would be needed to make this assessment (see Claessens and Tzioumis, 2006 for a discussion of the difficulties in measuring access to finance at the firm level). While the WBES provide information on the different sources of financing firms use and the financing terms, the surveys do not provide data on the original financing need.

Different authors have tried to work around this challenge, usually by using other data than WBES. Fazzari, Hubbard, and Petersen (1988) have argued that a firm's external financing need depends on the magnitude of its internal cash flows relative to its investment opportunities. Based on this assumption they have proposed that firms are credit constrained, when a high correlation between their long-term investment and internal financing can be observed. Kaplan and Zingales (1996) later put this assumption into question when they found that in 85 percent of all cases, firms could have increased their investment regardless of their internal financing position. Demirguc-Kunt and Maksimovic (1998) use a financial planning model to estimate firms' credit constraints by estimating the excess growth rate at which firms could have grown if they had not only access to internal earnings for funding. Rajan and Zingales (1998) use the ability of US industries to obtain external financing as a benchmark to assess how constrained comparable industries are in other countries.

Authors who have used the WBES data have recognized its limitations and have either used the subjective constraint data only or they have used data on the share of firm financing received from financial institutions and treated it as a measure of "reliance on a particular type of financing" rather than as a measure of "access to finance" (Beck and others. (2005), Love and Mylenko (2003)). For our objective constraint regression, we follow this approach and use data on the share of investment and working capital financed through external financial institutions.

Infrastructure

Weak electricity infrastructure was a major and costly constraint for firms in MENA. On average, fewer firms considered electricity a major or very severe obstacle in MENA than elsewhere (22 percent of MENA firms vs. 25 percent of non-MENA firms). When distinguishing by firm size, we find this result comes from MENA large and micro firms which complained less about electricity than their peers in other countries. Small and medium-sized firms in MENA, on the other hand, were as likely to complain about electricity as their peers in other regions. Firms everywhere and of all sizes were less concerned with transportation and telecom infrastructure than electricity (Table 6). While MENA firms were on average less likely to complain about electricity than non-MENA firms, they objectively faced a greater number of outages than firms in other regions, with micro and small firms facing the most (about seven to eight times more on average). Consequently, MENA micro and small firms also reported greater sales losses due to outages—on average about 2 percent more of sales than similar non-MENA firms (Annex C).

Business regulations

Business regulations were not rated amongst the top concerns of firms in MENA. Business regulatory constraints such as tax rates and administration, customs and land regulations and business licensing ranked low on the list of constraints for MENA firms (Figure 2). And except for tax rates and tax administration, there were no significant differences between how MENA firms and firms in comparator countries perceived business regulatory practices (Table 6).

But business regulations were as strict in MENA as elsewhere. MENA firms' tolerance for business regulations seems to be greater than in other regions. Despite not ranking tax administration as a major obstacle, firms in MENA were as likely as firms in comparator countries to have a higher-than-average number of tax inspections[8]—because there is a lot of variation across firms within MENA, the differences between MENA and non-MENA are not statistically significant in Table 7. While outside MENA, large firms were more likely than others to get a higher than average number of tax inspection this was not the case in MENA (Table 7). Finally, despite not being more likely to report that business regulations were a burden, large MENA firms reported spending greater numbers of hours with public officials than their counterparts outside MENA (Annex C). Large MENA firms spent about 6 percentage point more time dealing with regulations than large firms in non-MENA countries and micro-firms in MENA. This is significant given that the average time spent on dealing with regulations in the sample is around 9 percent.

Table 7. Probability to Have Number of Tax Inspections Above Average

	RoW	MENA
Micro	0.19	0.31
Small	0.24	0.39
Medium	0.23	0.36
Large	0.37	0.36
Difference Micro/Large	-0.18	-0.06

Source: World Enterprise Surveys; and IMF staff calculations.
Note: Full results available upon request. Green shade represents statistically significant differences at 5 percent level of significance. Values for the probabilities go from 0 to 1.

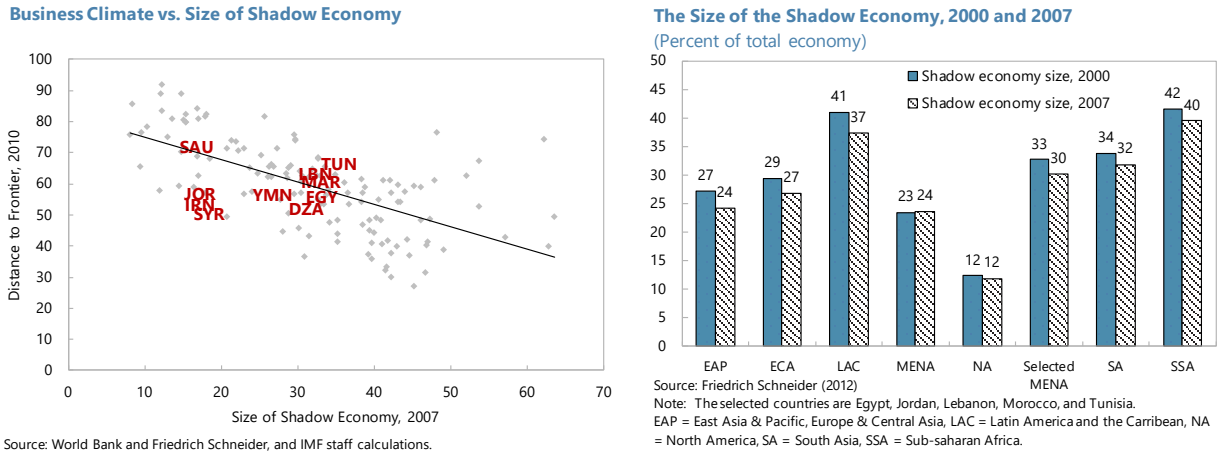
However, the survey results may underestimate the effects of burdening regulation, notably as they can discourage firms' entry altogether. In effect, the literature has highlighted that firm entry in the region was hampered by inefficient and opaque legal and regulatory regimes that were more likely to protect a few existing firms than foster entrepreneurship (Freund and Rijkers, 2012). Firm exit was restricted by bankruptcy regimes that were more

[8] This could also mean the number of tax inspections does not fully reflect the quality of tax administration.

likely to lead to insolvency than a restructuring of valuable assets. MENA bankruptcy regimes are not efficiently enforced, and debtors tend to be stigmatized and are not discharged from their debt, making a fresh start impossible (Helmy, 2009). These regulations limited formal firm creation, since in systems where firm exit is costly, firms are less likely to start up (World Bank 2015).

More generally, complex regulatory regimes tend to be associated with larger informal sectors. About a quarter of economic activity in the region was taking place in the informal sector (Schneider, 2012, Figure 4). As acknowledged at the beginning of this paper, the WBES do not cover informal firms so the apparent benign impact of business regulations in the survey results may indicate a sample bias towards firms that were indeed able to overcome these constraints. Moreover, there is evidence that even formal firms may be able to avoid taxation, since actual tax collection is low in the countries of the region.

Figure 4. Size of the Shadow Economy



Source: World Bank and Friedrich Schneider, and IMF staff calculations.

Source: Friedrich Schneider (2012)
Note: The selected countries are Egypt, Jordan, Lebanon, Morocco, and Tunisia.
EAP = East Asia & Pacific, Europe & Central Asia, LAC = Latin America and the Carribean, NA = North America, SA = South Asia, SSA = Sub-saharan Africa.

Labor Markets

Labor market constraints were not among the main concerns of MENA firms. In addition, compared to firms in comparator countries, MENA firms were less likely to report labor market restrictions as a major constraint.[9] But it is worth noting that, even though the share of MENA firms reporting difficulties finding the right labor market skills among the labor force was no different than elsewhere, it was significantly higher than the share reporting labor market regulations as a major constraint. Within MENA, the likelihood of reporting skills as a constraint decreases with firm size, while no clear pattern can be detected in other countries. On the other hand, the likelihood of reporting labor regulations as an issue generally increases with firm size, but not in MENA.

[9] 14 and 9 percent of MENA firms reported skills and regulations as a major or very severe obstacle, versus 16 and 12 percent of firms in our comparator countries.

IV. THE IMPORTANCE OF MACROECONOMIC POLICIES AND BUSINESS REGULATIONS IN EXPLAINING FIRM EMPLOYMENT PERFORMANCE

The previous section highlighted the structural constraints that were more salient for firms in MENA countries and how these constraints affected firms of different sizes in different ways. Firms in the region reported political instability, corruption, access to electricity and access to finance as important obstacles to their businesses. This section seeks to analyze to what extent these constraints reduced job creation in the region compared to other regions. Beyond firm-specific characteristics, we suppose that country-level macroeconomic and business environment may have limited firms' development.

A. Methodology

We use the WBES data to control for firms' characteristics as well as structural constraints. We also rely on IMF World Economic Outlook (WEO) data to control for macroeconomic conditions and on the World Bank's Doing Business data as an alternative measure to control for the business environment (see Annexes A and B.2 for data sources and summary statistics).

To capture the macroeconomic enviroment, we use three variables: GDP per capita growth, the fiscal balance and the real effective exchange rate (REER) evolution. GDP per capita growth can proxy for several dimensions of the economic situation: it reflects the overall health of the economy and outcome of macroeconomic policies and can capture the political environment (the literature shows that political instability is generally associated with lower and more volatile growth). Because we use a per capita growth measure, we also capture whether economic growth allows to raise population income levels given demographic trends. The fiscal balance variable controls for fiscal policy: a lower balance may indicate a problem of fiscal sustainability and a potential crowding out of the private sector from domestic financing. A high deficit migh indicate a lax fiscal policy that may result in a lack of confidence in the economy and translate in firms investing less. Finally, the REER proxies for external competitiveness. A REER appreciation indicates a loss of external competitiveness compared to trade partners, which may negatively affect firms, especially in open economies.

We then capture structural constraints in the areas of access to finance, corruption, labor market regulation and business environment. We control for these dimensions using two sets of variables in order to ensure the robustness of the results. First, we capture structural constraints with a set of objective measures: for access to finance, we use the collateral need and access to a credit line variables from the survey; for corruption, we use the bribery depth index from the survey; for employment regulation, we use a measure from the World Bank Doing Business; we also use the ease of doing business indicator from the World Bank to control for the business environmnent at large. To complement the analysis, as structural constraints are sometimes also about implicit processes difficult to capture through purely quantitative measures, we also use perception-based measures from the survey. In particular, we use the perceptions indicators of how corruption, access to finance and access to

electricity are perceived as obstacles to do business. Altough the firm-specific answers are subjective, given that we use the local average of the responses around the firm in the regressions, our variable can proxy for the level of structural constraints firms effectively face.

We also include a MENA dummy to study whether firms' performance in MENA differed from that of firms in other regions after controlling for firms' characteristics, country fundamentals and structural constraints. In other words, we want to test if there is a MENA specificity or if cross-regional performance disparities can be explained by differences in firms' characteristics, macroeconomic outcomes and business environment.

We perform the estimations using OLS. To address the potential issue of correlation in the error terms due to omitted variables and aggregation of variables at the country level, we cluster the standard errors at the country level as in Harrison and others (2014). We also exclude the 1st and 99th percentiles in the dependant variables to avoid biasing the results with outliers.

B. Results

Firms in MENA created fewer jobs than firms in other regions. Over the period 2009-2012, within the regression sample, the job growth rate of MENA firms was 0.2 percent annually against 4 percent annually on average for firms in other regions. In both groups, there was high persistence in firm size, with 84-96 percent of the firms remaining in the same size group (small, medium or large) in 2012 compared to 2009 which points to the fact that the low job creation of MENA firms is prevalent over all firms sizes. However, there were significantly more firms in MENA than in other regions that saw their size shrink over the period of study. Twelve percent of MENA firms that were medium (i.e. between 20 and 99 employees) in 2009 had become small (i.e. less than 20 employees) in 2012 against 4 percent in other regions. Nine percent of MENA firms that were large (i.e. over 99 employees) in 2009 had become medium in 2012 against 4 percent in other regions. Interestingly, 9 percent of firms in MENA grew from small to medium, a slightly higher share than for firms in other regions (7 percent). In both groups, 5 percent of medium firms grew to become large (table 8).

Table 8: Evolution of firms' size between 2009 and 2012

		MENA firms			**Firms in the rest of the World**		
		End of period			*End of period*		
		Small	Medium	Large	Small	Medium	Large
Beginning of period	Small	**91%**	9%	0%	**93%**	7%	0%
	Medium	12%	**84%**	5%	4%	**91%**	5%
	Large	0%	9%	**91%**	0%	4%	**96%**

Firms' characteristics are important factors to explain employment growth in the full sample of emerging market countries. Most of the coefficients on firms' characteristics are statistically significant and these results are robust across all specifications (Annex D, Table D2).

- Overall, based on the estimation results, the employment growth of young firms tends to be between 2.3 and 4.8 percentage points higher than that of other firms. This is again consistent with findings in the literature that new firms tend to be more dynamic (World Bank 2015).

- Smaller firms also perform better than firms with 20 employees or more: their employment growth is between 2.6 and 3.1 percentage points higher which is consistent with other studies that find that small firms tend to create a higher number of jobs.

- Firms that innovate create more jobs: weak innovators have about 1 percentage point higher annual employment growth rate and moderate to strong innovators have a 2 percentage points higher annual employment growth. Again, this is consistent with the literature on firms dynamics and the finding that young and innovative firms grow faster.

- Being integrated into global trade is associated with higher job creation of about 2.5 percentage point. This may reflect the fact that integrated firms benefit from foreign inputs, technology and consumption markets. However, the sector of activity doesn't appear to matter for employment creation.

- Employing a larger share of temporary workers is associated with lower creation of permanent jobs, although the impact is very small: about 0.05 percentage points lower when the share of temporary workers increases by 25 percent. This is consistent with the decision trade-off between employing permanent versus temporary workers.

- In some cases, we find that public and mixed ownership firms have a higher annual employment growth rate by up to 1.4 percent, but this result is not statistically significant across all specifications. A caveat is also in order on the representativeness of this result given the very small share of publicly-owned and mixed ownership firms in the sample (2 percent of total firms).

The weaker performance of firms in MENA is not fully explained by firms' characteristics. After controlling for firms' characteristics, MENA firms created significantly fewer jobs than firms in comparator countries. The annual employment growth of around 3 percentage points was lower than firms in comparator countries. Looking at the structure of the sample (Annex D, Table D1) compared with the sample of peers, the main differences lie in that the MENA sub-sample includes a higher share of older firms than in comparator countries (9 percent higher), a lower share of small firms (10 percent lower) and a higher share of firms that do not innovate (¾ of MENA firms against ½ of firms in comparator countries). This suggests that factors beyond firms' characteristics explain the difference in firms' employment growth of 0 percent in MENA compared to 4 percent in comparator countries.

In addition, MENA medium-sized firms appear to be more affected by factors unrelated to firms' characteristics than other-sized firms. When interacting the MENA dummy with firms' size, we find that the coefficient remains negative and significant only for MENA medium firms. Their employment growth rate on average is 1.6 percent lower than that of medium-sized firms in other countries. This might indicate that medium-sized firms are more affected by structural constraints, compared to small firms that may be able to stay under the radar or large firms that may be more resilient.

MENA countries' macroeconomic environment helps explain firms' relatively poorer employment performance. As expected, higher GDP per capita growth is associated with greater job creation for all firms, highlighting that firms in countries with a better overall economic performance and stronger demand thrive and create more jobs. In addition, this is consistent with the fact that private sector firms often rely on public sector demand. Interacting with the MENA dummy shows that the impact is not significantly different for MENA firms than for firms in other countries. The coefficient on the fiscal balance is insignificant. The change in the REER has a very small and non-significant impact for the overall sample. However, interacted with the MENA dummy, it shows that higher REER appreciation, which negatively affects countries' external competitiveness, is associated with lower firms' performance in MENA which indicates a non-linear relation between the change in REER and job creation. Since MENA firms in the sample are more integrated in international trade, they might also have been more affected by losses in external competitiveness: the REER in MENA appreciated by 8 percent on average compared to 0.2 percent for countries in other regions.

Corruption, and access to finance and electricity are confirmed as the most binding constraints among structural constraints for firms' development in MENA. Controlling for structural factors, previous results on firms' characteristics and macro variables hold (Annex D, Tables D3). We only find small and mostly non-significant impacts of the structural variables for the overall sample. Among the objective constraint variables, none of our indicators appear as significative determinants of employment creation. Interacting structural variables with the MENA dummy, access to finance, proxied by the size of the collateral required to get a loan, has a significant and negative impact on MENA firms job creation. Among the perception-based constraints, more difficult access to finance is associated with lower employment growth by about 3 percent. We find the same impact for the corruption constraint although it is not always statistically significant. In both cases, the impact for MENA firms is no different from that on firms in other regions. Interestingly, higher difficulties in accessing electricity are associated with higher job creation for the whole sample but adding interactions with the MENA dummy shows that in the region, a difficult access to electricity is associated with a very negative and statistically significant impact on employment generation. The negative and significant impact for MENA could be linked to the fact that objectively, MENA firms faced more power outages than firms in other countries, as described in the first part of the paper.

MENA firms' weaker performance compared to firms in peer countries disappears, once we control for macro-economic performance and structural constraints. Overall the combined addition of macroeconomic and structural variables improves the explanatory power of the model by about 30 percent compared to the initial specification with firms' characteristics only. Importantly, the coefficient on the MENA dummy becomes lower and insignificant with the addition of the macroeconomic and structural variables. This means that if firm-level characteristics are very important determinants of their employment performance, country-specific characteristics also help explain firms' performance. Indeed, the results indicate that MENA firms' worse performance compared to peers can be explained to a great extent by worse macroeconomic fundamentals and business environments. Nevertheless, the effect of structural constraints appears non-linear with MENA firms' employment generation being more affected than their peers by losses of external competitiveness, lack of access to finance and poor access to electricity.

V. CONCLUSION

Macroeconomic performance and political instability partly explain lower job creation in MENA around the time of the Arab Spring. Overall, we find that firms' employment performance in MENA was weak over the period of study, compared to firms in other emerging and developing countries. There was little job creation in MENA firms overall, compared with about 4.3 percent annual average growth in comparator countries. These results are not surprising in a context of social and political uprisings in several countries of the region, and as political instability was highlighted as the biggest constraint to doing business by MENA firms. In fact, we find that the low job creation in MENA can be explained in large part by the relatively more difficult macroeconomic environment prevalent over the period—per capita growth was 2.2 percentage point lower in MENA compared to comparator countries—while the lack of external competitiveness also constrained job creation.

But structural factors, specific to the region, further constrain firms' growth. The study shows that the performance of medium-sized firms was particularly lackluster. This is consistent with the assessment in the literature that MENA private sector are missing a dynamic "middle". Moreover, even after controlling for firms' characteristics and macroeconomic environment, we find that firms in MENA were more affected by structural constraints than firms in other regions. Among structural factors, we find that lack of access to finance, corruption and poor access to electricity were associated with lower job creation in MENA. Moreover, this negative impact seems higher for firms within MENA.

Policies to address structural weaknesses can help job creation even in difficult political contexts. The paper shows that sound macro-economic policies providing a stable environment for the private sector would help create more jobs in the region. This is at least as important as improving structural impediments to foster private sector job creation. But, MENA can have significant payoffs from improving structural constraints where it is

currently lagging the most. The paper also confirms that removing constraints that disproportionally affect small and medium-sized entreprises would help foster firms' growth and job creation. In the last decade, many countries of the region have taken steps to design reforms that promote the private sector. However, such reforms take time to bear fruit and there is evidence that the implementation of regulatory changes has been slow. In this context, the conclusions of this paper remain relevant for current policymaking. As new enterprise surveys get done, future work could analyze the impact of these reforms of the private sector,

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Annex A: Data sources

We use the 2013-14 World Bank Enterprise Surveys (WBES), which reflects firms' realities in the years 2009 to 2012. The sample includes 53 countries, 15 countries from Sub-Saharan Africa (SSA), 28 from Eastern Europe and Central Asia (ECA), five from South Asia (SAR), and five from the Middle East and North Africa region: Egypt, Jordan, Lebanon, Morocco and Tunisia. Fourteen countries in the sample are considered upper middle income, 19 lower middle income and nine low income countries.[10] A total of 32,845 firms were surveyed. The surveys provide firm-level data on firm performance (e.g. sales, employment and productivity growth), firm characteristics (e.g. size, age, ownership, etc.) and several measures of how the business environment affects firms (e.g. where they receive their finance from and how long it takes to obtain an operating license). The surveys are implemented using standard methodology, making the data comparable across countries.

The survey includes firms that are registered and have at least five employees, it therefore does not include informal firms, which represent a significant share of private sector activity in MENA and more generally other emerging economies.

We also rely on other cross-country datasets to complement the ES indicators on macro-economic environment and the business environment. More specifically we use structural indicators from the World Bank Doing Business dataset and we use macroeconomic data from IMF databases.

Table A1: Variables Description

Variable	Source	Definition
Annual employment growth	WBES	Annualized growth of permanent full-time workers expressed as a percentage. Annual employment growth is the change in full-time employment reported in the current fiscal year from a previous period.
Firm's age group	WBES	Firms are defined as "young" up to 5 years old, "mature" from 6 years to 15 years old and "older" from 16 years old.
Initial firm's size	WBES	Firms are defined as "small" if they have less than 20 permanent and temporary employees, "medium" if they have between 20 and 99 employees and "large" if they have 100 employees or more. The number of temporary workers is adjusted by the average number of months worked in a year. We take firms' size at the beginning of the period (2009) to avoid endogeneity problems with the dependent variable.
Firm's sector	WBES	Firms are classified by level of technological attainment: Non-manufacturing, low-tech manufacturing and high-tech manufacturing. The variable is constructed following Scarpetta and Tressel (2004) based on WBES data on 2-digit ISIC code.
Firm's innovation	WBES	Firms are classified by the level of innovation: non, weak and moderate or strong based on their answers to the WBES which asks if firms have innovated in the areas of: products or services, methods of production (logistics, delivery, distribution), supporting activities (maintenance, purchasing, accounting, computing), organizational structure and management practices.
Firm's ownership	WBES	Firms are classified as "Private, domestic" if there is more than 50 percent domestic private ownership, "Private, foreign", if there is more than 50 percent foreign private ownership and "Other" if the State owns more than 50 percent.
Firm's trade integration status	WBES	Takes the value 1 if the firm is fully integrated (exports and imports); 0 otherwise.

[10] For the purpose of this paper we use the regional and income classifications of the World Bank Group.

Share of temporary workers	WBES	Temporary workers as a share of total workers. The number of temporary workers is adjusted by the average number of months worked in a year (i.e. it represents the permanent equivalent of temporary workers).
MENA		Takes the value 1 for the Arab Spring countries in the sample (Egypt, Jordan, Lebanon, Morocco, Tunisia); 0 otherwise.
Fiscal balance	WEO	Fiscal balance is calculated as revenue minus total expenditure, taken as a share of nominal GDP in 2009
GDP per capital growth	WEO	The growth of GDP expressed in constant national currency per person in 2009. Data are derived by dividing constant price GDP by total population and then taking the percent change.
REER appreciation	INS	Real effective exchange rates measure a trade weighted average exchange rate against a basket of currencies. The variable takes the percent change of the REER in 2009.
Collateral need	WBES	Value of collateral needed for a loan or line of credit as a percentage of the loan value or the value of the line of credit. To avoid endogeneity with the dependent variable, for each firm, instead of taking the firm's value, we take the average value for the firms in the same region (screener region in WBES).
Credit line	WBES	Takes the value -1 if the firm has a credit line; -2 otherwise. To avoid endogeneity with the dependent variable, for each firm, instead of taking the firm's value, we take the average value for the firms in the same region (screener region in WBES).
Bribery depth	WBES	The depth of Bribery (% of public transactions where a gift or informal payment was requested) is the percentage of instances in which a firm was either expected or requested to provide a gift or informal payment during solicitations for public services, licenses or permits. To avoid endogeneity with the dependent variable, for each firm, instead of taking the firm's value, we take the average value for the firms in the same region (screener region in WBES).
Employment regulation (EPL)	Authors' calculations using World Bank data	Captures the extent of employment protection legislation using raw data from the World Bank's Ease of Doing Business database for labor market regulation for 2009. The creation of the index is further detailed in Pierre and Scarpetta (2004).
Ease of doing business	World Bank	Distance to frontier score in 2009. A higher score indicates better performance.
Corruption obstacle	WBES	Firms reporting corruption as a major or very severe obstacle. To avoid endogeneity with the dependent variable, for each firm, instead of taking the firm's value, we take the average value for the firms in the same region (screener region in WBES).
Access to finance obstacle	WBES	Firms reporting access to finance as a major or very severe obstacle. To avoid endogeneity with the dependent variable, for each firm, instead of taking the firm's value, we take the average value for the firms in the same region (screener region in WBES).
Access to electricity obstacle	WBES	Firms reporting access to electricity as a major or very severe obstacle. To avoid endogeneity with the dependent variable, for each firm, instead of taking the firm's value, we take the average value for the firms in the same region (screener region in WBES).

Annex B: Summary Statistics

Table B1: Summary of Variables Used in Objective Constraint Analysis

Constraint	Obs	Mean	Std. Dev	Min	Max
Electricity	32,845	0.317339	0.465448	0	1
Telecom	32,455	0.087044	0.281903	0	1
Customs regulation	32,842	0.121034	0.326172	0	1
Transport	32,845	0.142914	0.34999	0	1
Tax rates	32,844	0.284679	0.451268	0	1
Tax administration	32,843	0.178881	0.383259	0	1
Licenses	32,843	0.112383	0.315842	0	1
Political instability	32,844	0.327244	0.469214	0	1
Crime	32,455	0.112309	0.315752	0	1
Access to finance	32,769	0.229424	0.420469	0	1
Labor regulation	32,845	0.096027	0.294633	0	1
Labor skills	32,845	0.140021	0.347014	0	1
Informal competition	32,769	0.212396	0.40901	0	1
Land	32,845	0.165657	0.371778	0	1
Corruption	32,844	0.357874	0.479382	0	1
Courts	32,528	0.084389	0.277974	0	1

Table B2: Summary Statistics for Firms' Performance Regressions

	Obs	Mean	Std. Dev.	Min	Max
Annual employment growth	27,312	3.4	12.5	-42.9	63.6
Share of temporary workers	27,312	4.6	12.0	0.0	97.9
Fiscal balance	26,710	-6.1	3.2	-9.5	5.9
GDP per capita growth	26,710	2.0	5.8	-14.8	17.5
REER appreciation	26,710	1.4	6.9	-16.3	14.9
Collateral need (WBES)	26,309	214.9	71.0	0.0	600.0
Credit line (WBES)	26,309	-1.7	0.2	-2.0	-1.3
Bribery depth (WBES)	26,309	18.7	15.0	0.0	74.4
Employment regulation (EPL)	26,309	0.4	0.1	0.1	0.6
Ease of doing business (WB)	26,309	51.2	8.4	29.6	75.2
Corruption obstacle (survey)	26,710	0.4	0.2	0	0.9
Access to finance obstacle (survey)	26,710	0.2	0.1	0	1
Access to electricity obstacle(survey)	26,710	0.3	0.2	0	0.9

Annex C: Factors Associated with Objective Business Climate Constraints

VARIABLES	(1) Number of power outages	(2) Losses from outages as % of sales	(3) Payments due to security as % of sales	(4) Losses due to theft, robbery, vandalism or arson as a % of sales	(5) % of total sales spent on gifts	(6) % of management time spent on dealing with regulation	(7) % of working capital financed by financial institutions	(8) % of working capital financed externally
Firm age								
Mature firms (6-15 years)	1.415	-0.375	-0.265	**0.171***	**0.165***	**1.515***	0.838	-0.679
	(1.405)	(0.717)	(1.295)	(1.985)	(1.871)	(1.696)	(0.562)	(0.343)
Older (16+ years)	0.972	-0.457	-0.234	0.0917	**0.214****	1.969	1.306	0.698
	(0.727)	(0.661)	(1.183)	(1.196)	(2.538)	(1.586)	(0.567)	(0.280)
Trade integration								
Importer only	-2.434	**1.137****	**0.204***	**0.198*****	**0.360****	**5.550*****	**-4.706*****	**-5.105*****
	(1.296)	(2.255)	(1.971)	(3.204)	(2.259)	(3.759)	(5.143)	(5.034)
Exporter only	-0.898	-0.498	-0.137	-0.0565	0.587	**3.641*****	2.672	2.393
	(0.487)	(1.612)	(0.542)	(0.693)	(1.437)	(3.878)	(1.092)	(1.020)
Fully integrated	**-7.415*****	**-1.361*****	0.0587	0.170	0.0263	**11.88*****	**-4.173*****	**-4.357*****
	(6.354)	(4.159)	(0.314)	(1.320)	(0.210)	(5.337)	(3.448)	(2.758)
Ownership								
Private domestic	**-4.165*****	0.00647	**-0.353****	-0.0986	-0.284	1.945	**-7.365*****	-5.432
	(3.115)	(0.0141)	(2.133)	(1.153)	(0.640)	(0.851)	(5.462)	(1.655)
State-owned	**-5.374*****	**-1.376****	0.0327	**-0.263*****	0.337	**9.081****	**-6.532*****	6.147
	(3.126)	(2.539)	(0.0988)	(3.049)	(0.709)	(2.116)	(3.966)	(0.822)
Location								
Business city	2.818	-0.429	-0.0786	0.0316	-0.0124	0.711	-2.971	-3.631
	(0.477)	(0.658)	(0.395)	(0.216)	(0.0595)	(0.263)	(0.986)	(1.032)
Sector and technology advancement								
Low tech manufacturing	**4.873*****	**0.989*****	**-0.292***	-0.0388	**-0.190****	-1.118	**4.260*****	**2.453***
	(3.504)	(2.899)	(1.831)	(0.704)	(2.097)	(0.924)	(2.986)	(1.837)
Construction	**-7.421*****	**-1.558*****	-0.0507	**0.254***	**0.358***	**6.964*****	**-6.752*****	-4.509
	(12.03)	(3.130)	(0.163)	(2.008)	(1.799)	(2.915)	(3.483)	(1.024)
Wholesale and retail trade, repairs	**-6.163*****	**-1.684*****	-0.312	**0.254****	0.0300	**7.322*****	**-3.327***	-1.083
	(6.263)	(6.149)	(1.592)	(2.514)	(0.160)	(2.776)	(1.989)	(0.415)
Hotels and restaurants	**-4.142*****	**-1.375*****	-0.144	**0.536****	1.053	**7.227*****	**-10.62*****	**-10.83****
	(2.683)	(3.124)	(0.588)	(2.130)	(1.149)	(3.611)	(4.115)	(2.516)
Transport, storage and communication	**-4.947****	**-1.305****	-0.0879	**0.231***	0.410	**10.91*****	-2.815	-3.582
	(2.156)	(2.581)	(0.182)	(1.801)	(1.565)	(2.816)	(1.399)	(1.012)
Real estate, rent and business activities	**-7.944*****	**-2.157*****	-0.309	-0.0228	2.764	4.400	**-9.225****	-5.932
	(8.553)	(8.010)	(0.715)	(0.163)	(1.310)	(1.293)	(2.350)	(0.830)
Other services, incl. health and education	-5.222	**-2.623*****	**-1.257*****	-0.457	-0.0109	2.287	**-29.36*****	**-39.39*****
	(0.898)	(2.869)	(3.636)	(1.585)	(0.0254)	(0.599)	(7.588)	(7.665)
Other sectors	**14.04*****	**-3.876****	**-1.359*****	**-0.694*****	-0.199	-1.743	-6.020	**27.07*****
	(8.096)	(2.120)	(7.382)	(6.783)	(1.594)	(0.926)	(1.119)	(7.144)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

VARIABLES	Number of power outages	Losses from outages as % of sales	Payments due to security as % of sales	Losses due to theft, robbery, vandalism or arson as a % of sales	% of total sales spent on gifts	% of management time spent on dealing with regulation	% of working capital financed by financial institutions	% of working capital financed externally
Foreign ownership								
Partially or fully-owned by foreigners	**-1.355*** **	-0.334	**0.220***	0.0996	**0.628***	-0.375	-2.097	**-3.902** **
	(2.885)	(0.795)	(1.938)	(1.009)	(1.971)	(0.388)	(1.589)	(2.226)
Degree of product/service diversification								
Main product is less than 50% of sales	1.479	0.00700	0.00458	0.0860	-0.0160	1.720	-0.330	2.101
	(0.994)	(0.0216)	(0.0230)	(0.605)	(0.0811)	(0.873)	(0.200)	(0.655)
Main product is 50% to 94% of sales	1.169	0.314	0.108	0.0226	0.0942	0.756	-0.0869	1.767
	(0.988)	(1.405)	(0.957)	(0.349)	(0.495)	(0.629)	(0.0510)	(1.125)
Degree of product innovation								
Weak	-0.0891	0.139	-0.193	-0.0771	-0.146	-1.534	**1.335***	2.817
	(0.0676)	(0.632)	(1.243)	(0.957)	(0.677)	(1.509)	(1.934)	(1.550)
Moderate	**2.459** **	0.314	-0.120	0.00955	0.179	-0.397	-0.284	-2.117
	(2.641)	(0.852)	(0.558)	(0.0885)	(0.603)	(0.479)	(0.231)	(0.943)
Degree of process innovation								
Weak	**1.781** **	**0.858** **	0.0317	**0.108***	0.386	1.506	3.315	**6.303*** **
	(2.367)	(2.223)	(0.221)	(1.842)	(0.991)	(1.190)	(1.503)	(4.700)
Moderate	**4.932** **	**0.824*** **	0.320	0.132	-0.167	2.062	**12.32*** **	**12.77*** **
	(2.239)	(3.088)	(1.456)	(1.270)	(0.916)	(1.217)	(2.800)	(4.362)
Strong	**-3.871*** **	**-0.645** **	0.142	**0.490** **	**-0.455** **	**5.384*** **	2.234	**7.847*** **
	(3.389)	(2.426)	(0.493)	(2.122)	(2.017)	(2.961)	(1.335)	(3.227)
Firm size								
Micro (Less than 10 permanent employees)	-1.123	-0.110	-0.181	**0.214*** **	-0.210	1.324*	**-4.731*** **	**-6.005** **
	(1.519)	(0.366)	(0.830)	(3.234)	(0.829)	(1.748)	(4.502)	(2.527)
Small (10-19 permanent employees)	0.922	-0.145	-0.383	0.137	-0.0909	-0.173	**2.295** **	0.670
	(1.430)	(0.446)	(1.406)	(1.453)	(0.517)	(0.213)	(2.038)	(0.260)
Large (100+ permanent employees)	**4.728*** **	0.131	0.00168	-0.0259	**-0.245***	**-2.481** **	**6.053*** **	**3.681** **
	(2.727)	(0.458)	(0.00827)	(0.278)	(1.987)	(2.369)	(4.900)	(2.157)
Located in MENA region	**6.623***	**1.688***	-0.277	**0.361** **	**-0.828** **	-0.363	-7.130	-5.829
	(1.791)	(1.859)	(1.093)	(2.229)	(2.542)	(0.0506)	(1.431)	(0.976)
Interaction size/region								
Micro firm in MENA	**2.349***	0.507	-0.299	-0.218	0.260	**-3.192** **	2.832	**5.312***
	(1.863)	(1.192)	(1.024)	(1.010)	(1.003)	(2.277)	(1.532)	(1.689)
Medium firm in MENA	**-3.457*** **	-0.180	0.0878	-0.0629	0.0444	1.440	-3.148	-1.601
	(3.067)	(0.507)	(0.307)	(0.253)	(0.216)	(0.769)	(1.631)	(0.571)
Large firm in MENA	**-7.545*** **	-0.539	-0.0148	-0.0248	**1.121*** **	**7.132*** **	1.263	**7.156*** **
	(4.414)	(1.450)	(0.0561)	(0.150)	(2.729)	(3.210)	(0.630)	(3.972)

VARIABLES	(1) Number of power outages	(2) Losses from outages as % of sales	(3) Payments due to security as % of sales	(4) Losses due to theft, robbery, vandalism or arson as a % of sales	(5) % of total sales spent on gifts	(6) % of management time spent on dealing with regulation	(7) % of working capital financed by financial institutions	(8) % of working capital financed externally
Change in permanent workforce in previous 3 years								
Contracted employment	**-1.718****	-0.173	0.0483	0.0630	-0.288	**2.300****	-1.969	2.234
	(2.140)	(0.465)	(0.272)	(0.733)	(0.995)	(2.591)	(1.587)	(1.018)
Expanded employment	-0.694	0.232	0.0915	0.0603	**-0.511***	**-1.067***	-0.391	1.277
	(1.236)	(1.115)	(0.619)	(0.728)	(1.779)	(1.697)	(0.591)	(0.981)
MENA firm that contracted employment	-0.779	**2.837*****	-0.0226	0.163	0.261	-4.785	0.764	0.300
	(0.516)	(2.776)	(0.118)	(1.014)	(0.882)	(1.412)	(0.455)	(0.0747)
MENA firm that expanded employment	**-2.878****	**-1.610*****	**-0.348***	**-0.345****	**0.494***	-1.615	2.193	-1.614
	(2.671)	(5.103)	(1.761)	(2.124)	(1.703)	(0.296)	(0.669)	(0.680)
Constant	**6.891*****	**2.320*****	**1.738*****	-0.170	**0.464****	3.341	**17.88*****	**29.01*****
	(3.285)	(3.027)	(4.445)	(1.307)	(2.083)	(1.558)	(6.521)	(8.826)
Observations	22,073	21,132	21,472	21,908	18,658	20,639	20,909	20,909
R-squared	0.097	0.077	0.008	0.008	0.035	0.068	0.105	0.056
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
df	31	32	32	32	31	32	32	32
Adj. R2	0.0955	0.0758	0.00608	0.00672	0.0332	0.0668	0.104	0.0547

Robust t-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1; omitted categories: small (10-19 permanent employees), not integrated at all, young less than 6 years, domestic firms, private domestic ownership, no change in permanent employment, high-tech manufacturing, no foreign technology, no innovation, single-product.

Annex D: Factors Associated with Employment Growth

Table D1. Composition of Sample, MENA vs. Rest of World
(Percent of firms in sample)

	MENA	Others
Age of Firms		
Young	9%	9%
Mature	34%	43%
Older	57%	48%
Initial Size of Firms		
Small	40%	50%
Medium	38%	35%
Large	22%	15%
State of Technological Advancement		
Non-manufacturing	37%	40%
Low-tech manufacturing	50%	42%
High-tech manufacturing	13%	18%
Level of Firm Innovation		
None	73%	50%
Weak	19%	22%
Moderate	8%	28%
Ownership of Firms		
Private, domestic	93%	93%
Private, foreign	6%	4%
Public and mixed	1%	3%
Trade Integration		
Exporting and Importing	15%	9%
Firms' Employees Status		
Temporary workers	4%	5%

Table D2. Baseline regressions and specifications with macroeconomic variables.

T1 VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Firms' characteristics						
Age : Mature	**-2.691*** **	**-2.272*** **	**-2.749*** **	**-2.765*** **	**-2.542*** **	**-2.591*** **
	[0.879]	[0.795]	[0.884]	[0.885]	[0.905]	[0.928]
Age : Older	**-4.773*** **	**-4.256*** **	**-4.707*** **	**-4.723*** **	**-4.442*** **	**-4.578*** **
	[1.053]	[0.947]	[1.041]	[1.043]	[1.033]	[1.082]
Size : Medium	**-2.947*** **	**-2.877*** **	**-2.815*** **	**-2.590*** **	**-2.868*** **	**-2.880*** **
	[0.684]	[0.532]	[0.589]	[0.585]	[0.530]	[0.530]
Size : Large	**-3.143*** **	**-3.076*** **	**-2.906*** **	**-2.978*** **	**-3.029*** **	**-3.042*** **
	[0.536]	[0.418]	[0.445]	[0.518]	[0.413]	[0.412]
Sector : Low tech. Manufacturing	0.180	-0.097	0.194	0.191	0.077	0.246
	[0.385]	[0.247]	[0.343]	[0.345]	[0.377]	[0.379]
Sector : High tech. Manufacturing	**0.731***	0.260	0.596	0.593	0.314	0.476
	[0.367]	[0.458]	[0.439]	[0.442]	[0.524]	[0.547]
Innovation : Weak	**1.193*** **	**0.744*** **	**0.960*** **	**0.966*** **	**0.784*** **	**0.719*** **
	[0.346]	[0.229]	[0.264]	[0.263]	[0.243]	[0.243]
Innovation : Moderate to strong	**2.423*** **	**1.733*** **	**1.945*** **	**1.938*** **	**1.690*** **	**1.574*** **
	[0.814]	[0.529]	[0.561]	[0.563]	[0.538]	[0.496]
Trade integration	**2.225*** **	**2.328*** **	**2.428*** **	**2.424*** **	**2.860*** **	**2.588*** **
	[0.600]	[0.300]	[0.541]	[0.536]	[0.479]	[0.421]
Ownership : Foreign private	0.425	0.664	0.514	0.506	0.455	0.588
	[0.564]	[0.443]	[0.513]	[0.517]	[0.565]	[0.524]
Ownership : Public and mixed	0.682	1.005	0.476	0.470	1.253	**1.236***
	[0.775]	[0.864]	[0.721]	[0.721]	[0.752]	[0.731]
Share of temporary workers	**-0.021** **	**-0.032*** **	**-0.022*** **	**-0.022*** **	**-0.030*** **	**-0.032*** **
	[0.009]	[0.006]	[0.008]	[0.008]	[0.007]	[0.007]
MENA			**-3.048***	-2.489	**-2.756** **	-0.000
			[1.696]	[1.801]	[1.324]	[2.132]
MENA * Medium firm				**-1.580** **		
				[0.606]		
MENA * Large firm				0.179		
				[0.815]		
Macro variables						
Fiscal balance					-0.048	-0.079
					[0.076]	[0.071]
Interaction with MENA						0.006
						[0.264]
GDP per capita growth					**0.153*** **	**0.104** **
					[0.057]	[0.046]
Interaction with MENA						0.079
						[0.103]
REER appreciation					-0.053	0.038
					[0.061]	[0.047]
Interaction with MENA						**-0.440*** **
						[0.068]
Constant	**7.219*** **	**9.588*** **	**7.729*** **	**7.680*** **	**7.101*** **	**7.049*** **
	[0.930]	[0.704]	[0.827]	[0.844]	[1.030]	[1.047]
Observations	27,312	27,312	27,312	27,312	26,710	26,710

R-squared	0.036	0.072	0.043	0.044	0.046	0.053

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

(2) has been estimated with country fixed effects.

Table D3. Regressions with structural variables

T2 VARIABLES	(1)	(2)	(3)	(4)	(5)
Firms' characteristics					
Age: Mature	**-2.617****	**-2.606****	**-2.665*****	**-2.549*****	**-2.535*****
	[0.976]	[0.974]	[0.991]	[0.897]	[0.891]
Age: Older	**-4.586*****	**-4.535*****	**-4.544*****	**-4.506*****	**-4.448*****
	[1.127]	[1.120]	[1.118]	[1.097]	[1.084]
Size: Medium	**-2.802*****	**-2.717*****	**-2.736*****	**-2.759*****	**-2.738*****
	[0.568]	[0.544]	[0.525]	[0.512]	[0.503]
Size: Large	**-2.967*****	**-2.841*****	**-2.924*****	**-2.917*****	**-2.922*****
	[0.490]	[0.443]	[0.418]	[0.389]	[0.388]
Sector: Low tech. manufacturing	0.109				
	[0.315]				
Sector: High tech. manufacturing	0.434				
	[0.466]				
Innovation: Weak	**0.735*****	**0.751*****	**0.788*****	**0.803*****	**0.840*****
	[0.257]	[0.261]	[0.262]	[0.252]	[0.244]
Innovation: Moderate to strong	**1.635*****	**1.690*****	**1.749*****	**1.725*****	**1.750*****
	[0.440]	[0.453]	[0.450]	[0.428]	[0.437]
Trade integration	**2.639*****	**2.738*****	**2.729*****	**2.621*****	**2.591*****
	[0.402]	[0.481]	[0.507]	[0.439]	[0.424]
Ownership: Foreign private	0.533				
	[0.544]				
Ownership: Public and mixed	**1.664***				
	[0.874]				
Share of temporary workers	**-0.030*****	**-0.030*****	**-0.030*****	**-0.036*****	**-0.038*****
	[0.007]	[0.007]	[0.007]	[0.007]	[0.007]
MENA	-2.152	**-2.364***	4.976	0.735	0.884
	[1.291]	[1.329]	[26.401]	[1.354]	[2.351]
Macro variables					
Fiscal balance	-0.107				
	[0.083]				
GDP per capita growth	**0.208*****	**0.208*****	**0.134****	**0.129*****	**0.130*****
	[0.073]	[0.072]	[0.065]	[0.043]	[0.044]
Interaction with MENA			0.041	0.026	0.424
			[0.233]	[0.164]	[0.310]
REER appreciation	-0.052	-0.054	0.035	0.024	0.023
	[0.057]	[0.058]	[0.054]	[0.046]	[0.044]
Interaction with MENA			-0.412	**-0.446*****	**-0.328****
			[0.394]	[0.083]	[0.122]
Structural variables (objective constraints)					
Collateral need (survey)	-0.004	-0.003	-0.001		
	[0.004]	[0.005]	[0.006]		
Interaction with MENA			**-0.024****		
			[0.010]		
Credit line (survey)	2.005	1.841	-0.636		
	[1.405]	[1.352]	[1.004]		
Interaction with MENA			1.334		
			[1.637]		
Bribery depth (survey)	0.010	0.006	-0.011		

	[0.022]	[0.021]	[0.014]		
Interaction with MENA			0.114		
			[0.089]		
Employment regulation (EPL)	-4.150	-3.074	-2.730		
	[2.914]	[2.571]	[2.655]		
Interaction with MENA			1.870		
			[29.005]		
Ease of doing business (WB)	0.017	0.009	-0.020		
	[0.047]	[0.046]	[0.047]		
Interaction with MENA			-0.007		
			[0.675]		
Structural variables (perception-based constraints)					
Corruption obstacle (survey)				-2.643	**-3.150***
				[1.749]	[1.581]
Interaction with MENA					3.227
					[2.465]
Access to finance obstacle (survey)				**-3.172***	**-3.172***
				[1.746]	[1.811]
Interaction with MENA					-1.506
					[5.103]
Access to electricity obstacle (survey)				**3.697****	**4.500*****
				[1.552]	[1.483]
Interaction with MENA					**-10.120****
					[4.315]
Constant	**11.471*****	**11.819*****	**9.027****	**8.044*****	**7.931*****
	[3.508]	[3.469]	[3.705]	[0.835]	[0.802]
Observations	26,309	26,309	26,309	26,710	26,710
R-squared	0.048	0.047	0.055	0.056	0.057

Robust standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

To gain degrees of liberty in the regressions including structural variables, especially when interacted with MENA, we drop the firms' characteristics and macroeconomic variables that have been consistently non-significative in previous estimations. To ensure that the results remain robust to the change in specification, wes estimated the "baseline" structural regression with and without the non-significative variables. Results are shown in (1) and (2) and as expected the results are not affected when dropping the variables.