What is the Cost of Political Instability in Tunisia? Evidence from 592 Private Firms

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Abstract
Using detailed firm-level data covering 592 firms in the private sector in Tunisia covering the period 2009-2012, this paper (i) examines the relationship between firm characteristics and their perception of the effect of political instability on their business operations, and (ii) tests whether political instability has had a negative effect on firm performance. Using ordered and binary probit/logit models, we find that (i) larger-sized firms are more likely to report political instability as a sever obstacle to their operations. Using OLS and an endogenous treatment linear regression models, we find that (ii) the perception of political instability is negatively associated with firm performance, and after correcting for endogeneity it can even have a negative causal effect on firms' sales and employment growth, all else held constant. Results are largely robust to different specifications.

Keywords: Political stability, treatment effects, Tunisia, World Bank Enterprise Surveys, firm performance, MENA Enterprise Surveys

JEL Classification Codes: L25

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I. INTRODUCTION

Tunisia has completed a difficult political transition since December 2010. The Jasmine revolution was triggered in December 2010 by widespread protests against lack of voice and opportunity. Less than 6 years later, the country is now governed by a new constitution (January 2014), and has witnessed free and fair legislative (October 2014) and presidential (December 2014) elections. Recent political and economic developments led to the agreement of the "Pact of Carthage" in July 2016 and the formation of a new government of national unity in August 2016.

Building on successful political progress, the Tunisian government is now in the midst of an ambitious economic transition. The Tunisian economic program aims at achieving high and sustainable economic growth, with a high job-content, driven by a vibrant and competitive private sector. In this context, the government has the crucial role of creating a supportive and dynamic business environment, that fosters competition and transparency, for the private sector to be able to play its role as an engine for growth and make a sufficient dent in the country's unemployment rate.

Recently, the EBRD/EIB/WB conducted a joint MENA Enterprise Survey (MENA ES) to better understand the business environment in the Middle East and North Africa region.[1] Countries covered by the MENA ES included: Djibouti, Egypt, Jordan, Lebanon, Morocco, Tunisia, the West Bank and Gaza and Yemen. The survey covered the period 2009-2012 and was conducted in 2013-2014 across countries of the region, covering issues such as firms' experiences with a broad range of dimensions of the business environment in which they operate, as well as information on induvial firm characteristics. EBRD/EIB/WB (2016) summarizes the country responses, while EBRD/EIB/WB (2015) outlines the survey methodology. In this study, we focus on the responses of 592 private firms in the manufacturing and services sectors in Tunisia to be able to better understand the business environment in which they operate.

In Tunisia, political instability has been overwhelmingly identified as the number one constraint to business by the surveyed firms. In the questionnaire, individual firms were asked to what degree do different business dimensions represent an obstacle to their operations. Out of a menu of options, around half of the interviewed firms cited political instability as the top obstacle to their business operations. This was followed, although to a lesser extent, by informality, an inadequately educated labor force, access to finance, and corruption.

In this context, the objective of this study is twofold. First, is to examine the relationship between firm perception of the effect of political instability and firm characteristics. Second,

[1] The full questionnaire, sampling methods, and data are accessible at http://ebrd-beeps.com/data/mena-es-2013-2015/

is to test whether political instability has had a negative effect on firm performance over the period under consideration.

On the first objective, results suggest that export-oriented and smaller-sized firms are more likely to report political instability as a sever obstacle to their operations. Empirical results indicated that these firms are more likely to report political instability as a severer obstacle, as compared to domestic-oriented and larger-sized firms. This result holds under different econometric estimation techniques (ordered logit/probit vs binary logit/probit), as well as other robustness checks such as changing model specifications and inclusion of country fixed dummies.

On the second objective of this study, results suggest that political instability can have a negative and statistically significant effect on firm performance. We use two econometric techniques that take into account the survey properties of the sample. We start by using OLS and find that perception of political instability is associated with lower firm performance, all else equal. We then use treatment effect models to obtain a causal interpretation of the results and correct for potential endogeneity. Specifically, using an endogenous treatment-regression model that allows the estimation of a linear regression which includes an endogenous binary treatment variable, we confirm our earlier findings and report a negative and statistically significant causal effect. Results hold against alternative specifications.

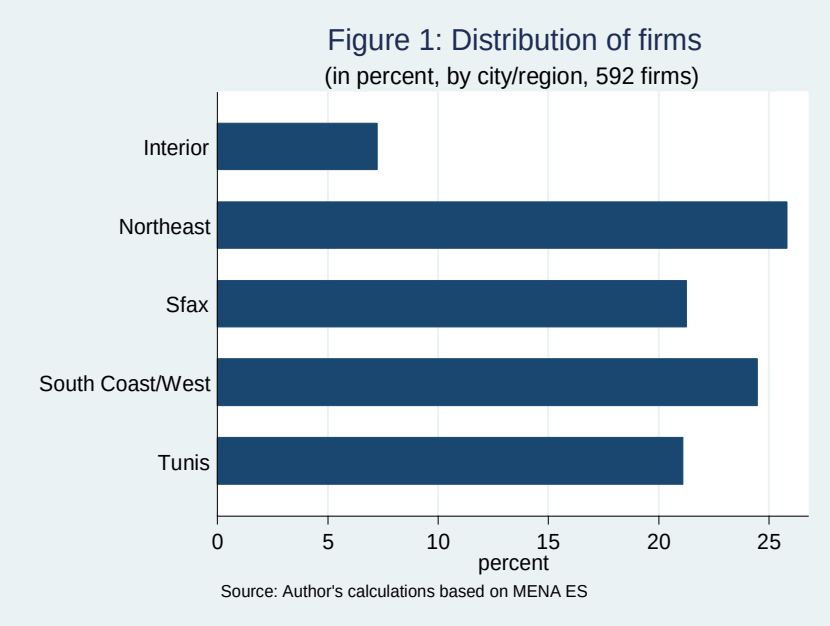
The remainder of this study is organized as follows. Section II gives an initial look at the data. Section III presents empirical methodology and results. Section IV concludes.

II. AN INITIAL LOOK AT THE DATA

The MENA ES covers a representative sample of formal private sector firms in Tunisia. According to EBRD/EIB/WB (2015), private firms need to satisfy certain criteria to be included in the survey. Firms need to be formally registered, employ five or more employees,[2] and operate in the manufacturing or services sectors.[3] Firms with 100 percent state ownership are excluded. Firms are chosen through a random sampling method, stratified by location, size and sector of activity. This led to a sample of 592 private firms in Tunisia, broken down as follows: Tunis (125 firms), South Coast/West (145), Sfax (126), Northeast (153), and Interior (43). Figure 1 groups all firms by region.

[2] Firm size is defined as small (5-19 employees), medium (20-99 employees), and large (more than 99 employees).

[3] Agriculture, fishing and extractive industries, utilities and some services sectors, (such as financial services, education and healthcare) are not included in the survey.



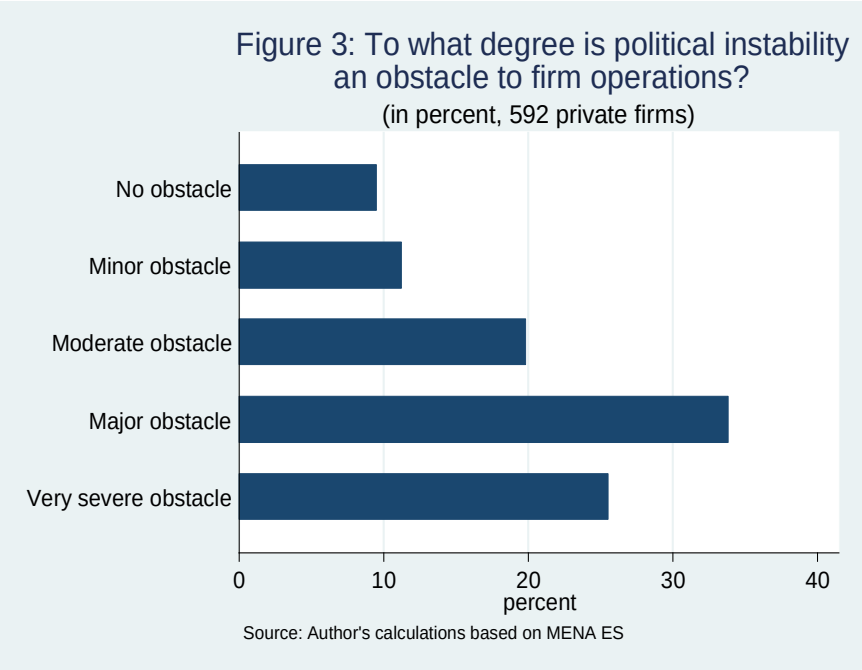
Obstacles to firms' operations

Political instability is reported as the top obstacle to firm operations in almost half of the surveyed firms. In the survey questionnaire, firms were asked *What is the biggest obstacle affecting the operation of this establishment?*[4] Results suggest that almost 1 out of every 2 of the surveyed firms (48 percent) cited political instability as the top obstacle affecting their operations (Figure 2). Practices of competitors in the informal sector came in second place with 13 percent, followed by an inadequately educated labor force (10 percent), access to finance (10 percent), and corruption (4 percent). The choice of political instability as top obstacle is common for all cities/regions, ranging from a high of 61 percent in Tunis to a low of 36 in Sfax. Business obstacles, other than political instability, differed slightly across cities/regions including in some instances dimensions such as regulations and tax rates.

[4] This is question M.1. in the survey questionnaire.

Most surveyed firms also believe political instability is a "very severe obstacle" to their business operations. Focusing on political instability, the firms' top choice as a business obstacle, firms were also asked: *To what degree is political instability an obstacle to the current operations of this establishment?*[5] Around 34 percent of firms cited political instability as a "major obstacle", followed by "very severe obstacle" by about 26 percent of firms (Figure 3). This result holds at the regional level as well, except for the Northeast region where more firms cited political instability as a very sever obstacle (33 percent) rather than a major obstacle (30 percent).

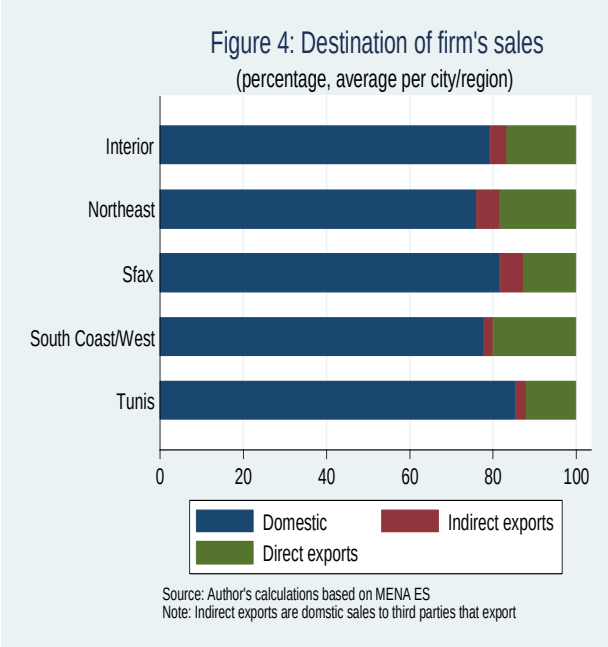
[5] This is question J.30e in the survey questionnaire.

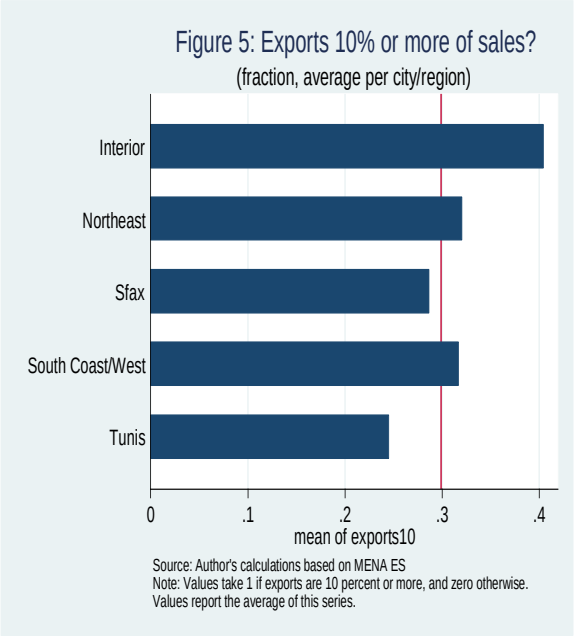


Firm characteristics

Regarding the destination of firm sales, most are directed toward the local market. Firms were asked *What percentage of this establishment's sales were national sales? Indirect exports? Direct exports?*[6] Results, by region, are presented in Figures 4 and 5. One can see that most sales are directed toward the domestic market, especially in Tunis (around 85 percent), whereas this percentage is smallest in the Interior region (79 percent). On average for Tunisia, 80 percent of sales are directed toward the local market. Focusing on firms where direct exports represent 10 percent or more of their total sales (Figure 5), we find that Tunis has the lowest average (24 percent), while the Interior region has the highest (40 percent). The average for Tunisian firms as a whole is around 30 percent.

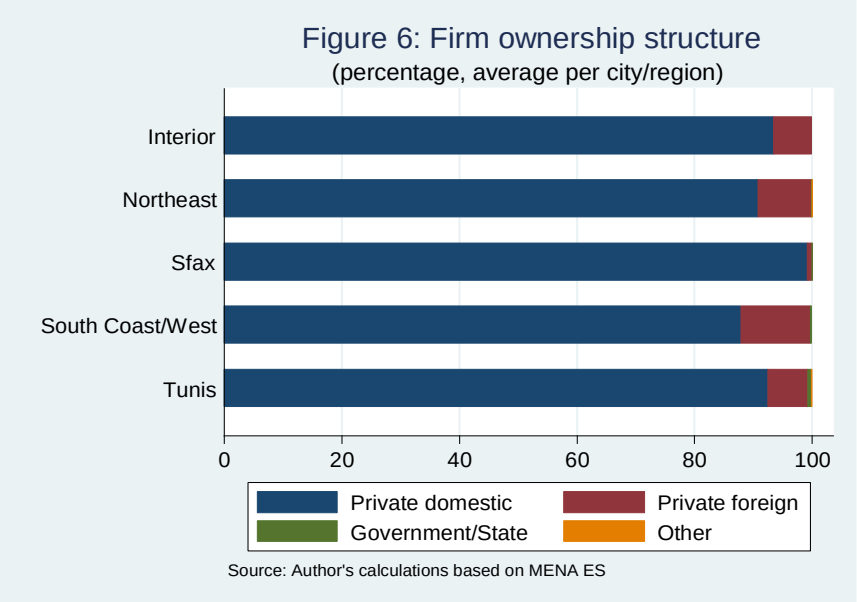
[6] This is question D.3. in the survey questionnaire.





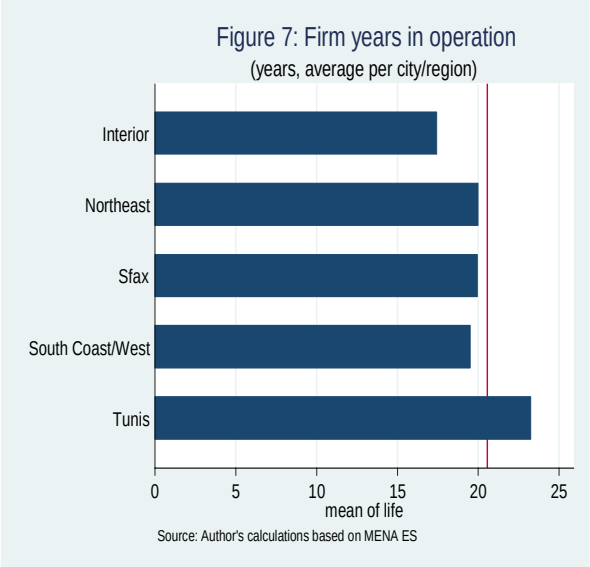
Regarding the structure of firm ownership, the vast majority of surveyed firms are domestically owned. In the survey questionnaire, firms were asked *What percentage of this firm is owned by private domestic? Private foreign? Government/state? Other?*[7] Results suggest that the vast majority of firms are domestically owned, reaching a high of 99 percent of surveyed firms in Sfax (Figure 6). The average for all Tunisian firms is 92 percent.

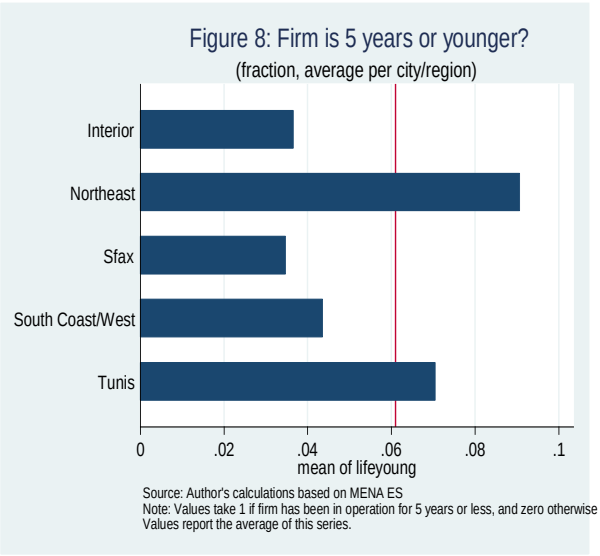
[7] This is question B.2. in the survey questionnaire.



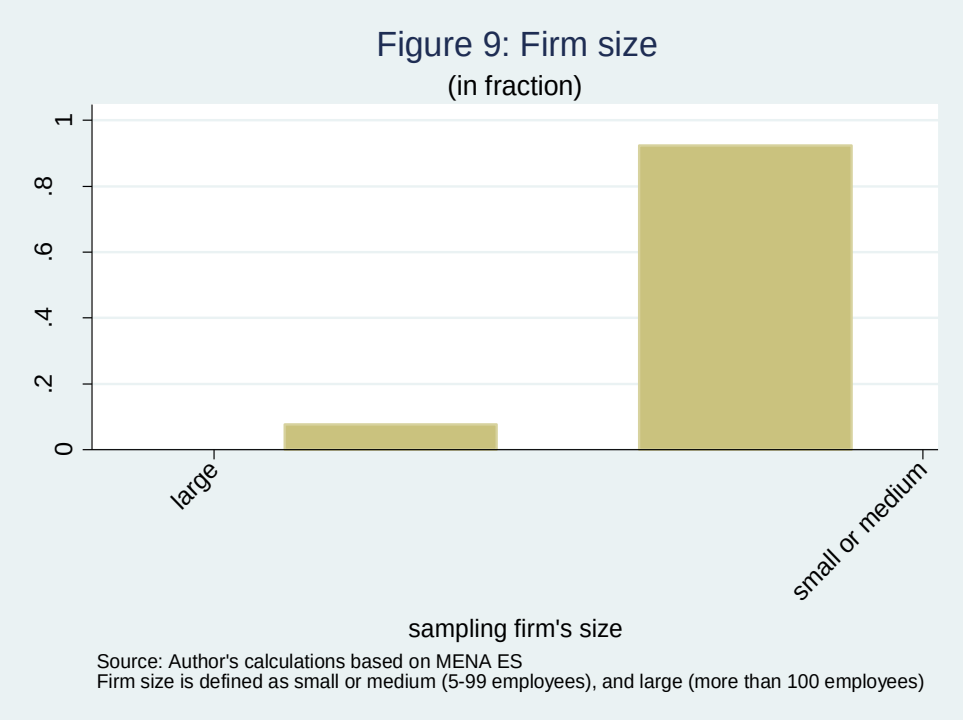
Regarding firm age, the average Tunisian firm surveyed has around 21 years of operations. Firms were asked: *In what year did this establishment begin operations?*[8] On average for Tunisian firms, a typical firm reported around 21 years of operations, ranging from an average low of 17 years in the Interior region to a high of 23 years in Tunis (Figure 7). Focusing on young firms with 5 years or less of operations, survey results suggest that these are mostly concentrated in the Northeast region and Tunis (Figure 8).

[8] This is question B.5. in the survey questionnaire.





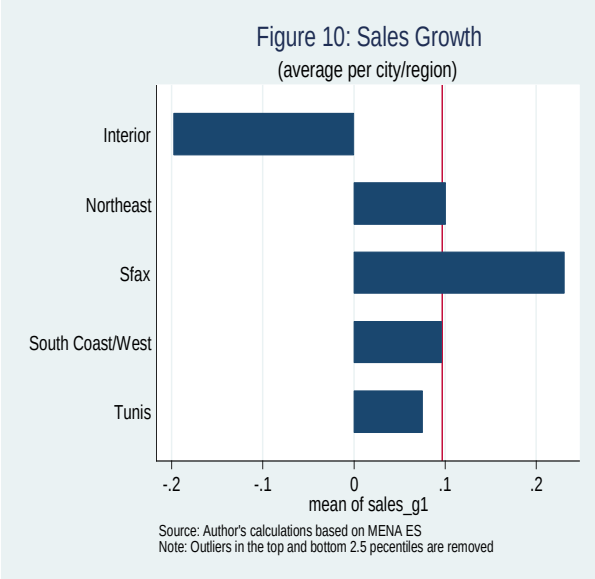
Regarding firm size, most interviewed firms are small or medium-sized. In the survey questionnaire, firms were asked: *What is the firm's size?*[9] Firms could choose between "small or medium" or "large". On average for the whole sample, around 92 percent of firms reported small or medium, while the remaining 8 percent reported large (Figure 9). In Tunis, the capital city, these ratios were almost exactly the same, while they differed only slightly for other regions.

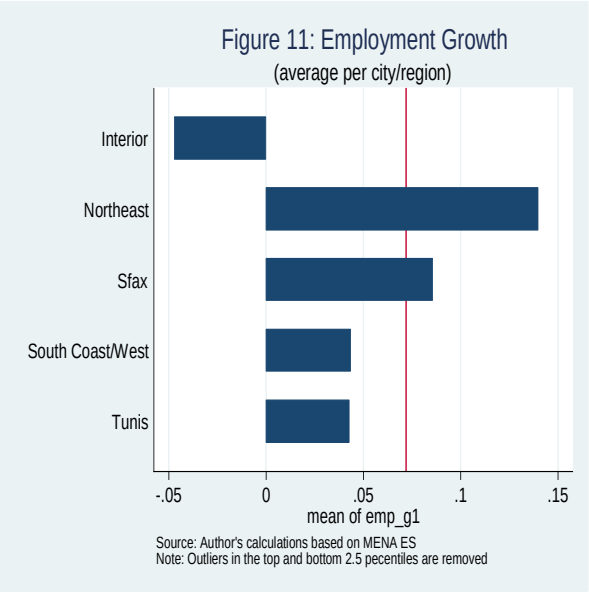


[9] This is question A.6 in the survey questionnaire. Firm size is defined as small or medium (5-99 employees) or large (more than 100 employees)

Firm performance

Performance, in terms of sales and employment growth over 2009-2012, varied across surveyed firms. In the survey questionnaire, firms were asked the following question on the value of their sales: *What were the establishment's total annual sales last fiscal year (2012)?*[10] *And 3 fiscal years ago (2009)?*[11] Results are presented in Figure 10. They were also asked the following question on the number of their employees: *Number of permanent full time employees at end of last fiscal year (2012)?*[12] *At end of 3 fiscal years ago (2009)?*[13] Results are reported in Figure 11. The Interior region reported the worst performance, both in terms of sales growth (-19 percent) and employment growth (-5 percent) over the 2009-2012 period. All other regions reported positive growth in both dimensions, although South Coast/West and Tunis fared slightly worse than Sfax and Northeast regions. For the country as a whole, sales and employment growth averaged around 10 percent and 7 percent, respectively.[14]





[10] This is question D.2. in the survey questionnaire.
[11] This is question N.3. in the survey questionnaire.
[12] This is question L.1. in the survey questionnaire.
[13] This is question L.2. in the survey questionnaire.
[14] Sales and employment growth variables in what follows removes outliers in the top and bottom 2.5 percentiles. of EBRD/EIB/WB (2016) follow a similar idea on their estimations for the MENA countries.

III. EMPIRICAL METHODOLOGY AND RESULTS

A. Political Instability and Firm Characteristics

In this section, we estimate both an ordered and a binary logit/probit model to study the determinants of the severity of political instability as a business obstacle. Firms were asked: *To what degree is political instability an obstacle to their current operations?* Responses ranged from "No obstacle" (taking a value of 0) to "Very severe obstacle" (a value of 4). In what follows, the dependent variable is responses to the question as in the following specification:

$$Political\ Instability_{ist} = f(X_{ist})$$

where the dependent variable *Political instability*$_{ist}$ of firm *i* in sector *s* at time *t* is a function of X_{ist} a set of control variables representing firm characteristics. The variable of interest *Political instability*$_{ist}$ would range from 0 to 4 in the ordered logit/probit, while it would be a binary 0 1 dummy variable in the binary logit/probit as explained below.

The Ordered Logit/Probit Evidence

We start with an ordered logit/probit model to estimate the relationship between political instability, the major constraint to business in Tunisia, and firm characteristics. The dependent variable in the ordered logit/probit is the ordinal responses to the above question[15], and independent variables are firm characteristics such as firm age, export status, size, ownership structure, and manager experience and education levels.[16] Estimation of the ordered logit (models (1) and (2)) and the ordered probit (models (3) and (4)) model parameters for survey data is done by maximum pseudo-likelihood.

[15] An ordinal variable is a variable that is categorical and ordered.

[16] This follows a specification similar to that of EBRD/EIB/WB (2016) for all MENA countries.

Table 1: Ordered Logit/Probit

VARIABLES	(1) Ordered Logit	(2) Ordered Logit	(3) Ordered Probit	(4) Ordered Probit
Life of firm, in years	0.004	0.006	0.003	0.003
	(0.009)	(0.010)	(0.005)	(0.005)
Young firm (Y/N)	-0.000	0.015	0.049	0.040
	(0.432)	(0.424)	(0.235)	(0.231)
Foreign ownership (Y/N)	0.505	0.457	0.197	0.136
	(0.637)	(0.682)	(0.339)	(0.357)
Exports more than 10% of sales (Y/N)	0.470*	0.461*	0.260*	0.247*
	(0.242)	(0.252)	(0.141)	(0.144)
Size	0.645**	0.730***	0.367**	0.417***
	(0.257)	(0.277)	(0.150)	(0.157)
Firm part of larger firm (Y/N)	0.189	-0.046	0.125	0.007
	(0.491)	(0.498)	(0.281)	(0.271)
Manager experience, in years	-0.022*	-0.017	-0.013*	-0.011
	(0.012)	(0.012)	(0.007)	(0.006)
Manager education level	-0.053	-0.022	-0.049	-0.030
	(0.204)	(0.206)	(0.114)	(0.115)
Observations	588	588	588	588
City/Region FE	No	Yes	No	Yes

Standard errors in parentheses. Estimation is done using survey weights. Constant and dummies not reported.
*** p<0.01, ** p<0.05, * p<0.1

Export-oriented and smaller firms are more likely to report political instability as a severer obstacle. Coefficients attached to firms with exports representing 10 percent or more of sales, and smaller-sized firms[17] are positive and statistically significant. These results hold whether we include city/region fixed effects or no. Export-oriented firms, those where exports represent 10 percent or more of their total sales, can be more vulnerable to instability leading to less efficient business procedures or increased red tape. Larger firms may be better equipped to withstand disturbances from political instability, and therefore could perceive political instability as not so severe a constraint compared to smaller firms. Results, in general, are similar if we use the ordered logit or the ordered probit, and are robust to alternate specifications.[18]

The Binary Logit/Probit Evidence

As a robustness check, we re-do the above exercise using a binary logit/probit model. Specifically, we suppress the dependent variable into a simpler binary 0 or 1 indicator. The

[17] The size variable is defined as "large" taking a value of 3 or "small/medium" taking a value of 4. This is in response to question A.6 in the survey questionnaire.

[18] As robustness checks, we replace the 10 percent exports dummy (Y/N) with the ordered exports variable, as well as foreign ownership dummy (Y/N) with the ordered foreign ownership variable. Results are largely unchanged.

new dependent variable takes the value of 1 if responses are "major constraint" or "very severe constraint", while it takes a value of 0 if the response is "no obstacle", "minor obstacle" or "moderate obstacle".[19] [20]Results are reported in table (2).

Table 2: Binary Probit/Logit

VARIABLES	(1) Logit	(2) Logit	(3) Probit	(4) Probit
Life of firm, in years	-0.010	-0.010	-0.006	-0.006
	(0.010)	(0.010)	(0.006)	(0.006)
Young firm (Y/N)	-0.292	-0.312	-0.177	-0.188
	(0.533)	(0.541)	(0.331)	(0.333)
Foreign ownership (Y/N)	0.105	0.043	0.053	0.016
	(0.468)	(0.493)	(0.284)	(0.295)
Exports more than 10% of sales (Y/N)	0.565**	0.562**	0.346**	0.339**
	(0.275)	(0.278)	(0.169)	(0.168)
Size	0.512*	0.599*	0.312*	0.363*
	(0.296)	(0.315)	(0.182)	(0.187)
Firm part of larger firm (Y/N)	0.041	-0.137	0.019	-0.078
	(0.455)	(0.462)	(0.284)	(0.283)
Manager experience, in years	-0.015	-0.013	-0.009	-0.008
	(0.011)	(0.011)	(0.007)	(0.007)
Manager education level	0.071	0.091	0.039	0.057
	(0.221)	(0.222)	(0.134)	(0.133)
Observations	588	588	588	588
City/Region FE	No	Yes	No	Yes

Standard errors in parentheses. Estimation is done using survey weights. Constant and dummies not reported.
*** p<0.01, ** p<0.05, * p<0.1

Results using the binary logit/probit model are similar to those using the ordered logit/probit model. Specifically, export-oriented and smaller firms are more likely to report political instability as a severer obstacle to their business operations. These results hold whether we include city/region fixed effects or no.

[19] Kuntchev et al (2014) perform a similar analysis to study the relationship between access to finance in SMEs and firm characteristics in more than 100 countries.

[20] Results are largely similar if we define the new binary variable as taking the value of 1 if responses also include "moderate obstacle", while taking the value of 0 for "no" and "minor" obstacles only.

B. Political Instability and Firm Performance

Does political instability affect firm performance? We answer this question using two econometric approaches; namely OLS and an endogenous treatment effects approach. In what follows, the dependent variable is firm performance as in the following specification:

$$Y_{ist} = f(X_{ist}, Political\ Instability)$$

where the dependent variable Y_{ist} is a measure of firm performance (sales and employment growth between 2009-2012) of firm *i* in sector *s* at time *t*. Independent variables include X_{ist} a set of control variables representing firm characteristics. Firms were asked: *To what degree is political instability an obstacle to the current operations of this establishment?*[21] Our variable of interest *Political instability*$_{ist}$ is a dummy variable that takes the value of one if the firm believes political instability to be a constraint (responses "major" and "very severe" obstacle), and zero (responses "no", "minor" and "moderate") otherwise. This is the same binary indicator we used in the previous section in the probit/logit model.

The OLS Regression

The OLS model specifies measures of firm performance as a function of political instability and a set of controls representing firm characteristics. Results are in reported in Table (3), with the dependent variable being either sales growth or employment growth, with and without country dummies.

[21] This is question J.30e in the survey questionnaire.

Table 3: OLS

	Sales growth		Employment growth	
	(1)	(2)	(3)	(4)
VARIABLES	OLS	OLS	OLS	OLS
Political Instability	-0.221***	-0.189***	-0.092**	-0.084*
	(0.061)	(0.061)	(0.042)	(0.044)
Life of firm, in years	-0.002	-0.002	-0.005**	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)
Young firm (Y/N)	0.001	0.017	0.156	0.143
	(0.246)	(0.250)	(0.284)	(0.274)
Foreign ownership (Y/N)	-0.043	-0.035	-0.089	-0.084
	(0.086)	(0.087)	(0.073)	(0.077)
Exports more than 10% of sales (Y/N)	0.180**	0.184**	0.058	0.060
	(0.076)	(0.075)	(0.048)	(0.048)
Size	-0.120	-0.132*	-0.143**	-0.139**
	(0.078)	(0.077)	(0.066)	(0.067)
Firm part of larger firm (Y/N)	0.028	0.056	0.016	0.014
	(0.057)	(0.065)	(0.043)	(0.046)
Manager experience, in years	-0.002	-0.002	-0.001	-0.001
	(0.003)	(0.002)	(0.002)	(0.002)
Manager education level	-0.029	-0.036	-0.026	-0.015
	(0.052)	(0.050)	(0.028)	(0.030)
Observations	515	515	532	532
R-squared	0.080	0.103	0.084	0.101
City/Region FE	No	Yes	No	Yes

Robust standard errors in parentheses. Estimation is done using survey weights. Constant and city dummies not reported.

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

Results suggest that political instability is negatively associated with firm performance. This is evident from the coefficient attached to the political instability dummy variable in all four equation reported in Table (3). Equations (1) and (2) show sales growth as the dependent variable, while equations (3) and (4) show employment growth as the dependent variable. This result holds whether we include country fixed dummies (equations 2 and 4) or no (equations 1 and 3), and is robust to alternative specifications (where we replace the 10 percent exports dummy (Y/N) with the ordered exports variable, as well as foreign ownership dummy (Y/N) with the ordered foreign ownership variable).

Better firm performance is associated with export-oriented, bigger and younger firms. Other results from Table (3) suggest that higher sales growth is associated with firms that are export-oriented and bigger in size. Moreover, higher employment growth is associated with younger

and bigger firms. Other firm characteristics such as manager education[22], manager experience, and ownership structure do not seem to be associated with better firm performance.

The Endogenous Treatment Regression

Correlation does not imply causation. Although the OLS results established a negative association between political instability and firm performance, this does not necessarily imply a *causal* effect of political instability as a business constraint on firm performance. Moreover, the perception of political instability can be endogenous to firm performance. As a result of this endogeneity problem, OLS estimates could suffer from a selection bias problem. We thus use *an endogenous treatment-regression model* that allows the estimation of a linear regression which includes an endogenous binary treatment variable. Put simply, the model – which originates from the program evaluation literature – stipulates that if an unobserved variable affects both the treatment and the outcome, then we have an endogeneity problem. In our context, our objective is to study the effect of political instability on firm performance. But suppose that a third variable (for instance, political connections) affects both the treatment (perception of political stability) and the outcome (firm performance), then we have an endogeneity problem.[23]

Treatment-effects estimators extract experimental-style causal effects from observational data. In simple terms, the idea is that we want to create an experimental environment using non-experimental data to be able to have a causal interpretation of the results. To do this in our context, each firm's probability to receive a binary treatment is estimated (with a probit or logit) as a function of observables (firms' characteristics). Firms with similar probabilities are matched. When firms have similar probabilities, their assignment to the treated group is largely random with respect to the relevant covariates, and thus mimics a controlled experiment, allowing identification of causal effects. Specifically, the estimator compares between treated (firms who perceive political instability as a business constraint) and control (firms who do not perceive political instability as a business constraint) units, and measures the average treatment effect on the outcome (firm performance), conditional on a set of observables (firm characteristics).

Estimation is done by MLE**.** Heckman (1976, 1978) introduces the model, and Maddala (1983) derives the maximum likelihood (MLE) estimator. Cameron and Trivedi (2005) and Wooldridge (2010) later introduced the endogenous treatment-effects model. To the best of our knowledge, there exists no study that tests the *causal* effect of political instability on individual firm performance in Tunisia. A number of studies examine the correlation between firm performance and the business environment, especially in developing countries. For the MENA countries, Kinda (2015) uses panel methods to study how the investment climate is associated with firm technical efficiency in 22 countries. Using the World Bank Enterprise

[22] The manager education level is in response to the question: *What is the highest level of education completed by the Top Manager?* This is question MNAB.7b. in the survey questionnaire. Responses range from "university degree or higher" with value 1 to "incomplete primary school" with value 5. Thus, higher values of this indicator indicate lower level of education.

[23] Similarly, suppose we wish to know the effect of a job training program on employment, and suppose that a third variable (for instance, motivation) affects both the treatment (participation in job program) and the outcome (employment). We have an endogeneity problem since we cannot observe motivation.

Survey (WBES) and a sample of MENA countries, Desai and Olofsgard (2011) present evidence that politically connected firms benefit from easier access to credit, while Bhattacharya and Wolde (2010) show that transport and customs constraints are associated with lower trade performance.

Results are presented in table (4) for both sales and employment growth. In each of these regressions, models (1) does not include city fixed effects, while model (2) include them.

Table 4: Endogenous Treatment Regression: Firm Performance

	Sales growth		Employment growth	
	(1)	(2)	(1)	(2)
VARIABLES	MLE	MLE	MLE	MLE
Political Instability	-0.151	-0.850***	-0.420***	-0.424***
	(0.179)	(0.171)	(0.110)	(0.111)
Life of firm, in years	-0.002	-0.004	-0.006***	-0.006***
	(0.002)	(0.003)	(0.002)	(0.002)
Young firm (Y/N)	0.018	-0.143	0.085	0.078
	(0.244)	(0.317)	(0.270)	(0.263)
Foreign ownership (Y/N)	-0.042	-0.048	-0.092	-0.091
	(0.082)	(0.141)	(0.075)	(0.077)
Exports more than 10% of sales (Y/N)	0.169**	0.283***	0.034	0.036
	(0.080)	(0.082)	(0.046)	(0.044)
Size	-0.125	-0.091	-0.123**	-0.113*
	(0.079)	(0.086)	(0.060)	(0.058)
Firm part of larger firm (Y/N)	0.033	0.010	0.001	-0.006
	(0.058)	(0.090)	(0.061)	(0.064)
Manager experience, in years	-0.002	-0.003	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Manager education level	-0.030	-0.024	-0.012	-0.000
	(0.053)	(0.055)	(0.034)	(0.038)
Observations	544	544	542	542
rho	-0.089	0.717	0.224	0.237
LR test for independent equations	244.52***	1023.57***	25.41***	226.50***
Log likelihood	-5919.005	-5887.1335	-534.88225	-506.09348
AIC	11878.01	11856.27	1107.765	1058.187
BIC	12002.58	12111.63	1189.375	1156.978
City/Region FE	NO	YES	NO	YES

Estimation is done using survey weights. Constant and city dummies not reported.
Survey weights are not used to estimate the LR test for independent equations, Akaike's Information Criteria (AIC) and Bayesian Information Criteria (BIC).
*** p<0.01, ** p<0.05, * p<0.1
MLE: Estimator using Maximum Likelihood Estimation, with linearized standard errors in parentheses.

Regarding the sales growth equation, results suggest that political instability has a negative *causal* effect. In models (1) and (2), and focusing on the variable of interest, we find that the coefficient attached to political instability is negative and statistically significant. This gives us confidence in interpreting the results as casual effects, after controlling for endogeneity. Moreover, results of other coefficients from Table (3) using OLS are very similar to those of Table (4) using the endogenous treatment model.

Endogeneity has effects on the estimation. In the MLE models, the likelihood-ratio test (LR test for independent equations) indicates that we can reject the null hypothesis of no correlation between the treatment-assignment and outcome errors. Furthermore, in model (2) for example, the estimated correlation between the treatment-assignment errors and the outcome errors, ρ, is 0.717, indicating that unobservables that raise firm performance tend to occur with unobservables that raise the perception of effect of political instability on firm operations. Model (2) is our preferred model as it has a lower -LogLikelihood and a lower AIC, although model (1) has a lower BIC.

Regarding the employment growth equation, results suggest that political instability also has a negative and statistically significant *causal* effect. The coefficient attached to the variable of interest is negative and significant in models (3) and (4), although model (4) is our preferred model as it has a lower -LogLikelihood, AIC, and BIC. Moreover, correcting for the endogeneity problem does not change our earlier OLS results, as other variables representing firm characteristics retain their sign and statistical significate.

Overall, one can conclude that firms' perception of political instability has had a negative and statistically significant effect on firm performance (sales and employment growth) in Tunisia. Using OLS regressions, empirical results suggest a negative and statistically significant *association* between the variables of interest, while using an endogenous treatment regression model, we find a negative *causal* effect on firm performance.

IV. CONCLUSION

This paper aimed at understanding the relationship between firm perception of the effect of political instability on their operations and their characteristics and performance. Specifically, using firm-level data from an EBRD/EIB/WB joint survey, conducted in 2013-2014 and covering the period 2009-2012, and covering 592 private firms in Tunisia, we (i) examine the relationship between different firm characteristics and their perception of the effect of political instability on their operations, and (ii) test whether political instability has had a negative effect on firm performance; namely the firms' sales and employment growth.

On firm characteristics, results suggest that export-oriented and smaller-sized firms are more likely to report political instability as a sever obstacle. Results indicated that these firms are more likely to report political instability as a severer obstacle, as compared to domestic-oriented and larger-sized firms. This result holds under different robustness checks.

On firm performance, results suggest that political instability can have a negative and statistically significant effect on firm sales and employment growth. Using OLS regressions, we find that the firm's perception of political instability has been associated with lower firm

sales and employment growth. Moreover, results suggest that better firm performance is associated with certain firm characteristics such as export-orientation and firm age. Correcting for endogeneity, we use an endogenous treatment effect model and find that political instability has even had a negative and *causal* effect on firm performance; both sales and employment growth.

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