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PATRONS OR CLIENTS? MEASURING AND EXPERIMENTALLY EVALUATING POLITICAL CONNECTIONS OF FIRMS IN MOROCCO AND JORDAN

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Abstract

I use an original survey of firm employees in Morocco and Jordan to construct an index of political-connectedness that collapses several possible indicators of connectedness down to a single latent dimension. To do so, I employ item-response theory on a subset of questions from the survey for which I have a prior theoretical reason to believe that these factors should either be caused by or cause political-connectedness. With this index, I can better under-stand political-connectedness as a continuous measure that reflects the broad range of political interactions firms may have rather than as a dichotomous measure of connected versus non-connected firms. I also employ an experimental design embedded in the survey that simulated a hypothetical interaction between the firm and a party offering political benefits in exchange for resources in order to understand if this measure of political connectedness can predict political activity across domains. I show that politically-connected firms are able to exchange political loyalty to regimes for lighter regulatory burdens and access to protected markets that insulate them from competition.

ملخص

في هذه الورقة أنا أستخدم مسحًا أصليًا لموظفي شركات في المغرب والأردن لإيجاد مؤشر للتواصل السياسي يختصر العديد من المؤشرات المحتملة لترابطات وصولًا إلى بُعد كامن واحد. للقيام بذلك ، أطبق نظرية استجابة العناصر على مجموعة فرعية من الأسئلة من الاستطلاع أعتقد مسبقا أن هذه العوامل يجب أن تكون إما بسبب هذا الترابط السياسي أو تتسبب فيه. من خلال هذا المؤشر ، يمكنني أن أفهم بشكل أفضل الترابط السياسي كمقياس مستمر يعكس النطاق الواسع للتفاعلات السياسية التي قد تمتلكها الشركات وليس كمقياس ثنائي التفرع للشركات المترابطة مقابل الشركات غير المترابطة. كما أستخدم أيضًا تصميمًا تجريبيًا يتضمنه الاستبيان وهو يحاكي التفاعل الافتراضي بين الشركة والطرف الذي يقدم منافع سياسية في مقابل الموارد لفهم ما إذا كان هذا المقياس للترابط السياسي يمكن أن يتنبأ بالنشاط السياسي عبر المجالات المختلفة. ومن ثمة أبين أن الشركات ذات الصلة بالسياسات قادرة على تبادل الولاء السياسي للأنظمة بالحصول على أعباء تنظيمية أخف وطريقة لدخول الأسواق المحمية حيث تكون معزولة عن المنافسة.

While considerable work has been done on the economic implications of political connections for firms, we still know relatively little about how the range of behaviors that a politically-connected firm may undertake relate to the underlying concept of political connectedness. This paper presents a study of firm employee perceptions of their companies' political and economic activities to help us understand how existing levels of political connections relate to observable behavior that we tend to label as corruption. By doing so, I want to create a new continuous measure that can help us test more nuanced propositions, such as whether politically-connected firms tend to be those firms that pay a lot in bribes and hence need to spend money to defend their position, or whether firms without connections spend more on bribes to obtain those positions. In other words, in the tightly-woven networks between firms and states in developing countries, are firms the clients or the patrons? To test this theory, I employ both statistical measurement models and a survey experiment to help us discover whether the factors that most strongly relate to firm political connectedness also have positive relationships with indicators for bribery, corruption and perceptions of national-level political institutions while accounting for measurement uncertainty and potential endogeneity.

My data in this study come from a sample of 1,621 employees in Jordan and Morocco that were recruited using Facebook advertisements. This form of respondent recruitment helps ensure that the data in the survey can be securely and anonymously collected. As a result, I have a unique opportunity to ask more detailed questions about firm political behavior than have been asked in the literature to date. My research strategy is to trade off in terms of the specificity of economic data that we can collect on firms by focusing instead on employee perceptions of their own firms. These perceptions are useful for studying social phenomena like the political connectedness of the firm, which is difficult to capture in purely economic data. By trying to measure the social dimensions of political connectedness directly, I can then use economic covariates at the firm level to differentiate between demand and supply factors in terms of important firm behaviors like bribery and political donations.

To delve into the details of how political connections work, I also try to define the concept more precisely. I argue that political-connectedness is a form of social status based on personal exchange between elites at different levels in a hierarchy; in other words, political connections are a subset of a larger category of social relationships known as clientelism (Scott 1972; Stokes 2011; Wantchekon 2003). These connections constitute a resource to the firm that the firm can use to enforce its property rights in situations in which such enforcement is only available to those with credible threats against bureaucrats (Markus 2015; Haber, Razo, and Maurer 2003). As a result, I expect that these connections improve the economic performance of the firm, as has been the dominant theme in the literature (Faccio 2006; Fisman 2001).

Given this definition of political connectedness, the question I am particularly interested in addressing is whether the payment of bribes is a signal that a firm is in a clientelistic relationship, or that the relationship confers status on the firm so that they do not need to pay bribes or wade through red tape. It has been difficult to answer this question with existing data because most studies rely on a proxy of political-connectedness in which the actual interactions between firms and states are assumed but never observed. By fielding a confidential and anonymous survey of firm employees, I am able to peer into this black box and examine the nature of firm political connectedness with more detail and precision. Political connections are social phenomena, and as such there is more that can be learned about them from peoples' perceptions than solely from observable firm indicators such as board members.

This conceptualization of political-connectedness helps to uncover the role that politically-connected businesspeople play in countries with weak state institutions. Rather than being able to compete in a relatively neutral market, the unequal distribution of political connections puts emphasis on firms' political affiliation in addition to their market strategies. This research shows that firms that do not have to pay bribes in order to induce cooperation from government officials have to engage in partisan activities, such as ordering employees to vote. Furthermore, there is sug-

gestive evidence that firms' need to abide by norms of secularism in both of the countries studied where Islamist political parties are prominent.

The primary contributions of this paper are two-fold. First, I present a new continuous measure of political connectedness that employs statistical measurement theory to collapse multi-dimensional indicators to a single latent score, permitting a more robust and theoretically-justified measure of political connections than has been employed to date. Furthermore, I address potential non-ignorable non-response in the survey by modeling the answers to sensitive questions as a selection process to ensure that the political-connectedness score takes into account the uncertainty contained in missing survey data. Second, I contribute to our empirical understanding of politically-connected firms in two Middle Eastern monarchies, Morocco and Jordan, and show that political connections can be thought of as a type of firm resource, although the exact nature of this resource is contextual to a firm's situation vis-a-vis the state.

1   Firms as Patrons and Clients

Clientelism can be a difficult phenomenon to analyze because it is not always clear who is the more important part of the relationship, i.e., the patron or the client. On the one hand, clients are often in a dependent position and are required to render services for the patron, but at the same time patrons have obligations towards their clients (Stokes 2011). In the context of politically-connected firms, the services received can be thought of as a form of protection for the firm from the arbitrariness of the enforcement of property rights (Haber, Razo, and Maurer 2003; Markus 2015; Markus and Charnysh 2017). As such, these connections should increase the economic performance of the firm, as has been documented on numerous occasions using various measures of firm political connection (Fisman 2001; Faccio 2006; Claessens, Feijen, and Laeven 2008; Malesky and Taussig 2009; Diwan, Keefer, and Schiffbauer 2015; Rijkers, Freund, and Nucifora

2014; Rijkers, Baghdadi, and Raballand 2015; Earle and Gehlbach 2015; Herzog, Munir, and Kattuman 2013; Saeed, Belghitar, and Clark 2015; Domadenik, Prašnikar, and Svejnar 2016).

All of these papers share a common binary distinction between connected and non-connected firms. This dominant method of measuring firm political connectedness follows Faccio (2006), who first proposed that direct involvement of political elites in the management of a firm, such as by sitting on a board, constitutes a clear political connection. This official link amounts to evidence of a concrete relationship between the firm and the regime in which the two have begun to merge through a process that Haber, Razo, and Maurer (2003) describe as "vertical political integration" (VPI). As the lines between the firm and the regime begin to blur, the firm also obtains a credible commitment from the regime to protection of the firm's property rights. This kind of system can also be understood as a closed access order in which personalist relationships define the distribution of power (North, Wallis, and Weingast 2009). Without clearly defined institutional rules governing property rights, enforcement is a function of a firm's personalized roles in the political system.

Nonetheless, while it is clear that these political connections will benefit the firm, it is unclear what cost firms must pay to maintain these connections. Studies of politically-connected firms in advanced industrial countries often use payments to lobbyists as a way to measure political connectedness by assuming that those firms that pay the most also receive the most. For example, Blau, Brough, and Thomas (2013) find that banks that employed former government employees received more bailout funds for each lobbying dollar spent than firms without former government employees. This reality–that firms might have both personal connections to bureaucrats and pay funds in addition–is a dilemma that existing theory is unable to address. We want to examine this problem by looking more closely at how firms utilize political connections in terms of existing relationships and whether these existing assets complement or substitute for bribe payments.

The question relates back to the foundational concept of clientelism: are clients relatively privileged in having access to the patron, or are they under-privileged by being forced to maintain these

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relationships? One of the assumptions of the politically-connected firm literature is that firms have limited opportunities to obtain these kinds of connections because of their personal nature, and hence they can be conceived of as a form of rent (Choi and Thum 2009). Yet if firms have to spend funds in bribes or in other political activities in order to defend these relationships, then it might be the case that the value of the rent is dissipated. Furthermore, if bribes and connections are substitutes, then firms that do not have these connections may be able to provide side payments that are cheaper than the cost of maintaining political relationships.

The primary existing work on this question comes from Desai and Olofsgard (2011) who find that firms surveyed in the World Bank Enterprise Surveys pay fewer bribes if they have greater influence over the political system, and Chong and Gradstein (2010) who use the same dataset and find that larger firms tend to be those that obtain political connections. While these papers provide initial evidence that firms can indeed trade off their connections for bribery payments, their analysis is limited by the fact that their proxy for political connectedness is more indirect (as it is a measure of influence over government policies), and they are also limited by the fact that there is substantial missing data in many of the key questions in the survey (Desai and Olofsgard 2011, 152). Nonetheless, these studies do inform our prior that we should expect larger and more connected firms to pay fewer bribes as they can use connections as substitutes for outside payments.

In addition to the question of bribery, I am also interested in other forms of political firm be- havior. Based on what we know about politically-connected firms, I argue that these firms should be less likely to give funds to parties during elections as these kinds of payments constitute a quid pro quo that political connections are designed to prevent. Conversely, I argue that these firms should be more likely to instruct their employees to vote for a specific candidate because existing patron-client relationships demand that they express their allegiance to the patron during elections. By considering these two additional outcomes beyond bribery, I am able to capture additional di- mensions of this relationship and probe further the question of how and to what extent political

connections impose constraints and provide benefits to politically-connected firms.

In summary, I consider the following hypotheses:

Hypothesis 1: Firms with higher levels of political connections should be more likely to believe that bribery is less of an obstacle to their business.

Hypothesis 2: Firms with higher levels of political connections should be more likely to tell their employees to vote for specific candidates.

Hypothesis 3: Firms with higher levels of political connections should be less likely to give funds to political parties.

2 Data

The data for my study come from an original online survey of firm employees in Morocco and Jordan. Both countries are known for having politically-connected firms, although the nature of these connections is specific to their own political environment. However, one advantage of using both of these countries is that they share certain institutions in common, in particular the institution of the monarchy. In addition, both of these countries are stable dictatorships, which helps with being able to test theories about the value of political connections as there is relatively little turnover in elites.

The respondents in the survey were recruited by using Facebook advertisements targeted at business employees in these countries. A list of keywords was assembled including various job terms, such as "manager" and "CEO", that Facebook's targeting algorithm used to find place ads. The algorithm was also fine-tuned by sending completion rates from the online survey in Qualtrics back to Facebook so that the algorithm could further determine what kind of respondents were most likely to engage with the survey material.

To encourage responses, advertisements were designed to appeal to a professional audience. In addition, respondents were given individual incentives to participate by sending mobile cell phone credit if they completed the survey. Respondents who reported that they were managers or worked at larger firms were offered more incentives to participate than respondents who worked at very small and informal establishments, which tend to comprise a large share of the labor force in these countries. In general the incentives proved effective as can be seen in Figure 1, which shows the distribution of respondents across firm size and by respondent type (either manager or employee). The sample represents all firm sizes, and while there are more employees than managers, even in large firms there are a considerable number of managers in the sample.

Figure 1: Distribution of Respondents
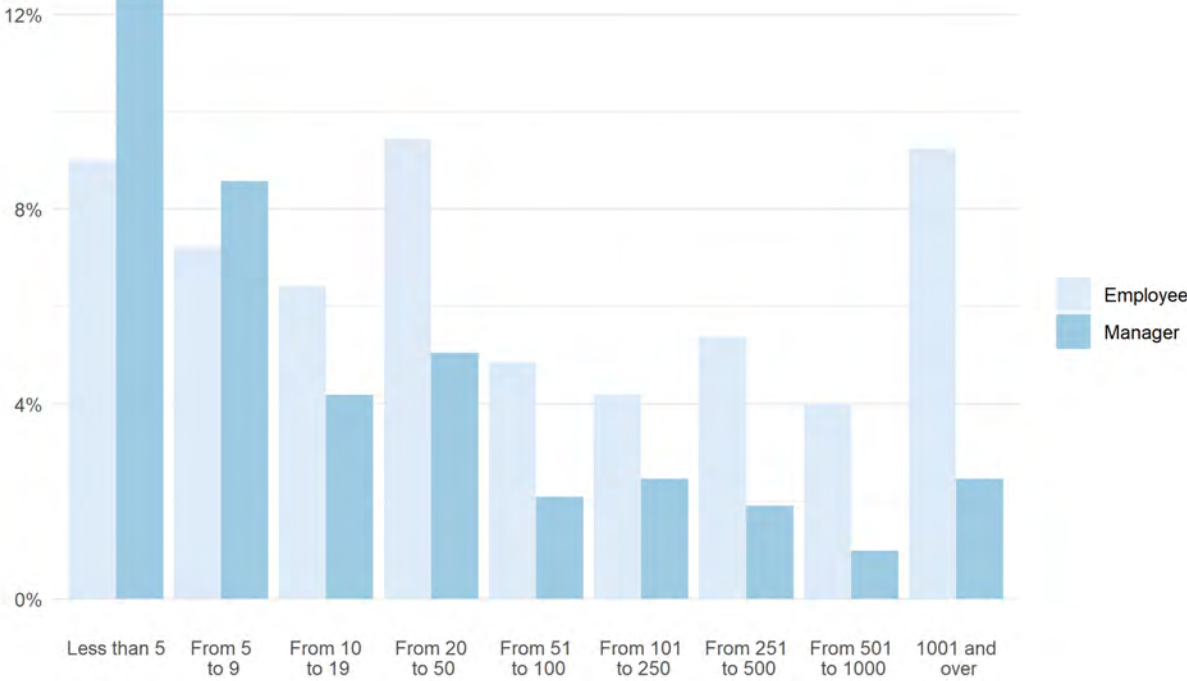
The resulting sample can be understood as a probability-proportional-to-size sample of firms. In other words, larger firms will have a greater probability of being represented in the sample relative to smaller firms, as can be seen in Figure 1. Because the aim of this study is to understand firms

with valued political connections to regimes, this bias in the sample is preferable than a simple random sample of all firms in the country. Furthermore, online data collection methods have the considerable advantage of having equal probabilities of reaching firms located in rural areas and unregistered firms, which is a particular problem in Egypt (Gatti et al. 2014, 128-129). As such, even though Facebook ad targeting induces a new form of potential bias as not all firms may be equally represented, it also overcomes other well-known biases in firm surveys. In general, it can be difficult to know what a true random sample of firms is in the region as high quality information on the firm census is not always available.

As such, rather than attempt to compare this sample to traditional firm surveys, we consider it to be better understood as a sample from an entirely different population, that of firm employees. This population should be informative of firm behavior in the aggregate, but the fact that individual employees are answering the survey, rather than entire firms, will 1) limit the data that can be collected and 2) induce additional measurement error. Employees may not have access to the data necessary to answer complicated questions about firm performance, investment and employment over time. However, this survey format is ideally designed to answer questions which a traditional firm survey is rarely able to collect, namely, firm political behavior and political relationships.

3   Methods

The first issue I must address in the testing of these hypotheses is how to measure firms that are politically-connected. I adopt a different strategy than that used in the literature to date because I incorporate a measurement model, item-response theory (Takane and Leeuw 1986; Park 2011; Mislevy 2016), to create an index of political-connectedness. This method enables me to incorporate multiple indicators and also to understand the relationship between these indicators to the underlying latent trait I am trying to measure. By creating an index, I can test hypotheses without

having to choose only one indicator.

The total set of indicators comes from the survey I described in the previous section. To identify political-connectedness as a latent trait, I include twenty questions in the index that asked the respondent to report on their firm's economic and political activity, including reliance on the state as a consumer of the firm's products, level of competition from other firms, number of inspections faced by the firm, the relative difficulty of managing government regulation, firm profit margins, firm incorporation type and firm size in terms of employees. I expect based on the literature that political-connectedness should comprise all these attributes as these firms should be larger, more profitable, less inclined to be harassed by government regulators and more likely to have lucrative deals with the state. However, rather than treating each indicator in turn or only choosing one, I collapse these indicators down to a single latent dimension by stipulating that each of these indicators load on the latent dimension in the direction specified. The relationship between each survey question and the latent scale is specified in Table 1.

Table 1: Survey Index Questions

Variable Label	Variable Type	Unique Values	Range	Constraint
Government Regulations=Problem	Binary	2	No=0, Yes=1	Negative
Is Conglomerate	Binary	2	No=0, Yes=1	Positive
Last Year Performance	Ordinal	9	>20% Loss to >20% Profit	Positive
% Income Bribes	Ordinal	7	0% to More than 30%	Free
Increase Bribes Arab Spring	Ordinal	5	Large Decrease to Large Increase	Free
Ranking of Royal Court	Poisson	12	1 to 12	Free
Gave Funds to Parties	Binary	2	No=0, Yes=1	Free
Distributed Campaign Info	Binary	2	No=0, Yes=1	Free
Employee Vote Coercion	Binary	2	No=0, Yes=1	Free
Held Party Rally	Binary	2	No=0, Yes=1	Free
Firm Paid Zakat	Binary	2	No=0, Yes=1	Free
Level of Competition	Ordinal	5	Very Low to Very High	Negative
Firm Has Islamic Loans	Binary	2	No=0, Yes=1	Free
No. Times Firm Inspected	Poisson	100	0 to 100	Positive
Rank SOE as Customer	Ordinal	6	1 to 6	Negative
Rank State Agencies as Customer	Ordinal	6	1 to 6	Negative
Rank SOE as Supplier	Ordinal	6	1 to 6	Negative
Rank State Agencies as Supplier	Ordinal	6	1 to 6	Negative
Firm is Unregistered	Binary	2	0 = Registered, 1 = Unregistered	Negative
Firm Size	Ordinal	9	Less than 5 to 1001 and over	Positive

In terms of item-response theory, the survey questions are called items, and the employees are the raters or persons. I use the ideal point variant of item-response theory (Clinton, Jackman, and

Rivers 2004; Kubinec 2017a) so that we can interpret the latent scale as representing the ideal point of a respondent relative to their firm's political connections. The model assumes, essentially, that a question that indicates relatively little political connectedness will be answered by employees in firms with less political connectedness, and vice versa. However, we need to have some certainty that the latent variable I identify is in fact political connectedness and not some other trait like competitiveness. To do so, I stipulate for a subset of variables whether higher responses on each variable indicate higher or lower latent scores based on Table 1.

Given a response Y_{ij} that is indexed by i respondents and j survey questions, I can define the item-response theory model in terms of latent parameters α_i, β_j, and γ_j:

$$Y_{ij} = \gamma_j \alpha_i - \beta_j \tag{1}$$

Each α_i represents an estimate of each respondent's political connectedness along the latent scale. A higher value of α_i would indicate that a firm has more political connectedness. γ_j and β_j are parameters that indicate the survey question's position in the same latent scale. Of particular interest is γ_j, which is usually referred to as a discrimination parameter. The sign of γ_j will tell us how the question relates to the latent trait. For example, if γ_j is negative, it would tell us that higher responses on a survey question are associated with more political connectedness, and vice versa for a positive γ_j. On the other hand, the absolute magnitude of γ_j will tell us how strongly this question predicts the latent trait. As such, I can use the α_i estimates as the index of political connectedness and γ_j as helpful auxiliary information for learning how each survey question relates to the latent scale and its strength as a predictor of political connectedness.

Because the outcome Y_{ij} is distributed differently depending on the survey question, I allow for different likelihoods to be used for different outcomes. For binary questions I use a logit regression (Bernoulli distribution), for categorical variables an ordered logit model, and for positive variables

like the number of times a firm is inspected I used a Poisson regression. The different likelihoods are then multiplied together to create one joint model in a manner similar to Kropko (2013).

By fixing the polarity (i.e., direction of relationship to the latent scale) of some of the γ_j of survey questions mentioned in the previous paragraph, I can identify the latent scale by ensuring that those firms with positive values on those indicators also receive higher measurements on the latent scale. For example, by constraining the number of times that a firm is inspected by regulators to load positively ($\gamma_j > 0$), I ensure that firms with more inspections also have more political connections. However, I do not need to make any assumptions about how strongly these factors predict connectedness, nor do I need to be concerned about correlation between indicators. The confidence intervals produced by our index will give me the uncertainty in the latent trait so that I can statistically distinguish between firms in terms of their connectedness while taking into account the multi-dimensionality inherent in the concept. For those questions of which I am uncertain about the direction of their relationship with political connectedness, I leave the discrimination unconstrained or free.

This latent trait comprises my primary measure for my main independent variable, political connectedness. I can also use the same item-response theory specification to see if other factors that we proposed, such as bribery, load in the same direction as the indicators for political connect-edness by examining the sign of γ_j for that question. By doing so I can directly test Hypothesis 1 which asks whether firms that do not believe bribery is an obstacle to doing business also tend to be politically-connected firms by seeing if that question also loads in the same direction as the other indicators. This method is similar conceptually to running a multiple regression with each indicator as a control variable, except that I am asking whether each indicators are all related to the same latent trait rather than trying to predict one of the indicators.

In addition, I use an implementation of item-response theory that also enables me to handle non-ignorable missingness. It is very important to be able to incorporate missing data because

some of these questions, such as reporting whether a respondent's firm has to pay bribes, can be considered sensitive. In particular, I am concerned that respondents at firms that pay a lot of bribes may not want to answer that survey question, which would artificially lower their connectedness score and result in right-censoring our latent variable. To deal with this issue, I employ the method of Kubinec (2017a) to account for strategic self-selection of respondents into answering questions that is a function of the respondent's firm's political connected-ness score. In other words, if the willingness of a respondent to answer a question likely depends on whether or not that firm is highly politically-connected, the model will take into account that type of self-censorship and adjust the estimates accordingly.

However, to test Hypotheses 2 and 3 that deal with political firm behavior, I must address another central problem in the collection of this kind of data: the inability to address a difficult selection problem in the analysis of politically-connected firms. If I ask employees to report on their firm's past political behavior, it is difficult to know whether that behavior is endogenous to a firm's political connections or a cause of them. Or to reiterate our earlier point, it can be difficult to know whether firms pay bribes and take other actions to defend their existing political connections, or whether they are paying bribes because they lack political connections.

For example, if I ask firm employees whether or not their companies receive requests from political parties for campaign funds, any positive responses could be indicators of the firms being targeted by political parties because of their political connections and/or the firm's size and profitability. In other words, it may be hard to identify the effect of political connections independently of other variables on bribery and campaign finance because political connections (or their lack) may explain why firms are in the position to receive requests in the first place. For example, I cannot know whether firm size or firm political connections is the identified variable as political connections could be the reason that a firm grew to a large size and larger firms could be more likely to form political connections (Chong and Gradstein 2010; Ge et al. 2017).

Given these difficult endogenous relationships between core variables in this analysis, I incorporate a conjoint survey experiment design modeled on Hainmueller, Hopkins, and Yamamoto (2014) and Kubinec (2017b) that allows us to randomize a set of hypothetical situations in which a political party contacts the respondent's firm and makes a request of the firm. While a hypothetical treatment is less effective than actually randomizing party appeals to firms, randomization of treatments enables us to test hypotheses about the effects of variables on firm political status in a way that we can assume is causally-identified. In other words, by creating situations in which firms must respond to political offers, I can overcome a critical endogeneity problem by manipulating the type of offer a firm would receive.

Our hypothetical situation is based on the following vignette that each firm employee receives:

> A member of a political party calls your CEOs office. The representative says that the party is in need of funding for their upcoming electoral campaign for the parliament. How likely do you think it is that your CEO would provide funding to each of these parties because of this appeal?

Then we randomize two possible offers that the party can make to the firm:

> Offer 1: The party will ensure that [ACTOR1] [APPEAL1].
> Offer 2: The party will ensure that [ACTOR2] [APPEAL2].

The offer includes two elements that are randomized: the first is a set of government institutions (the actors) from which a firm could receive rents. The second is the rent itself, which we label as the appeal. The full list of possible government institutions and rents are shown in Table 2.

The respondent is then asked to score each of these offers from the party on a scale of 1 to 10, with 1 meaning that the respondent's boss would take the offer and 10 meaning that the respondent's boss would refuse the offer. The respondent is asked to score each offer along three questions:

Table 2: Treatment Profiles for Conjoint Survey Experiment

Number	Types of agencies	Types of benefits
1	military	does not try to take control of your firm
2	Ministry of Interior	does not try to take your firm's profits
3	prime minister	helps your company secure permits from regulators to do business
4	Ministry of Justice	helps your company secure contracts to supply goods
5	parliament	helps your company export its goods & services
6	municipality	helps your company import necessary materials
7	government	will implement reforms that encourage economic growth and lower unemployment.

1 Note: Reproduced from survey pre-registration.

How likely do you think it is that your CEO would provide funding to each of these

parties because of this appeal?

How likely do you think it is that your CEO would instruct employees in your firm

to vote for this party because of this appeal?

How likely do you think it is that your CEO would use your company's resources

to hold rallies or distribute advertisements for this party because of this appeal?

By so doing, I can create a simulation of firm political behavior to capture how firms would react to these different offers of rents. Crucially, I can test for whether firms tend to respond more to different types of rents and also whether these rents come from different institutions. The use of these three different questions then becomes the way in which we can test Hypotheses 2 and 3 by examining whether politically-connected firms tend to be more likely than non-politically-connected firms to order employees to vote than to give funds to these parties.

In order to test using the experimental data, I employ a Bayesian errors-in-variables model incorporating the latent political connectedness traits α_i that I described previously. Given that I have three outcomes, i.e., whether the CEO gives funds, instructs employees how to vote, or holds a rally, I now have a multivariate outcome **Y** with three vectors, one for each outcome. I can then model **Y** using the multivariate Normal distribution:

$$Y \sim MVN(\mu'\beta, \Sigma) \tag{2}$$

$$X \sim N(\bar{\alpha}_i, SD(\alpha_i)) \tag{3}$$

Each component of μ is the vector X, which stands in for the political connectedness score α_i by modeling the score as a Normal distribution centered at the score and with the standard deviation (error) of the score. Through this device I can run an errors-in-variables model where the errors

are directly estimated from the observed uncertainty in the latent score α_i. As a result, the vector β represents a coefficient for the effect of α_i on each outcome in **Y**. In other words, β indicates how strongly the political connectedness scale predicts responsiveness to party appeals on the scale of 1 to 10. Σ is a positive semi-definite covariance matrix to allow the outcomes to be correlated with each other given that they represent answers from the same respondent and firm.
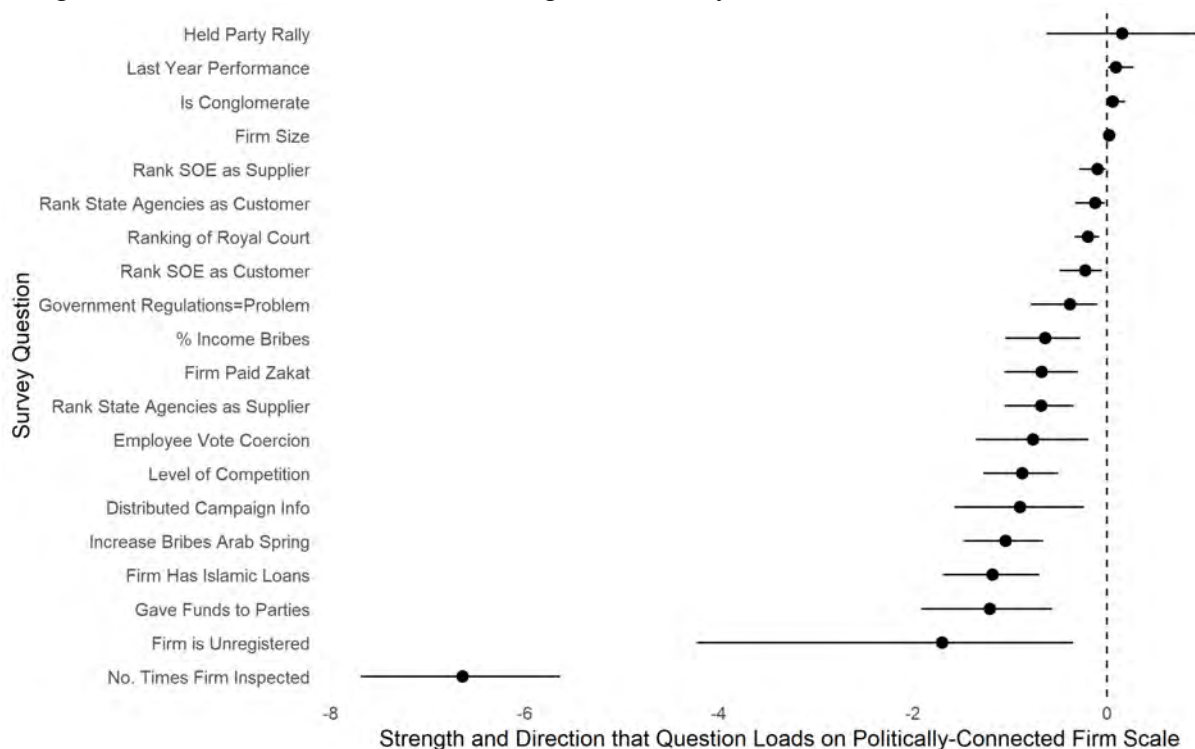
I estimate both the political connectedness item-response theory model and the multivariate errors-in-variables model using the Stan Markov-Chain Monte Carlo framework (Stan Development Team 2016). By doing so I can obtain the full posterior estimates of the parameters and all associated uncertainty in both the latent variable and in the latent regression. To account for missing data in the latent regression, I first create five imputed datasets via random forests models (Stekhoven and Bühlmann 2012) and then run each dataset through the model. We then stack the resulting posterior distributions of the parameters from each dataset to marginalize over imputation uncertainty.

4 Results

The main results for the IRT theory model are shown in Figure 2. In this plot I show the high-posterior density intervals (90%-10%) for the discrimination parameters in the IRT equation. These parameters can be interpreted similarly to factor loadings in that they show how the question loads against the latent scale. Because I constrained some of the question discrimination parameters γ_j, only some of the questions were able to place themselves on the index. However, what is immediately noticeable is that all of the questions which had unconstrained discrimination γ_j load on the negative side of the scale, with the important exception of holding party rallies on behalf of the firm, which is modestly positive.

To show that this latent dimension is in fact political-connectedness, I need to be able to connect

Figure 2: Discrimination (Factor Loadings) For Survey Questions on Political-Connectedness

Note: Point estimates are the median of the posterior values, and the intervals represent the 90% and 10% quantiles of the posterior distribution of the parameters.

the estimated parameters with the prior theory about political-connected firms that we mentioned earlier. As can be seen in the x axis labels, I am interpreting more negative discrimination parameters as indicating less political connectedness while more positive discrimination parameters indicate more connectedness. However, that does not mean that all of the factors on the left-hand side of the scale equally predict connectedness because these parameters' interpretation depends on the question.

For example, the variable No. of Times Firm Inspected, which represents the number of times that a firm was inspected by government employees, is strongly negative. That means that as the number of times that a firm receives inspections increases, the more likely that that firm has fewer political connections. However, for other variables the relationship is inverted. For example, the Rank of State Agencies as Supplier represents a 1 to 6 indicator for state agencies as a supplier

to the firm relative to other possible suppliers, such as private firms. Technically, as the rankings increase, the supplier is less important, so the negative discrimination parameter indicates that firms with less reliance on state agencies as suppliers of intermediate goods and services are also less likely to be politically-connected.

However, what can be interpreted unambiguously is the absolute size of the coefficient. Parameters with larger values indicate that they discriminate more strongly on the latent scale. For that reason, No. Times Firm Inspected clearly has the strongest discrimination with an absolute value of almost 7. This coefficient indicates that firms with more inspections are much less likely to be less politically connected. Given that there is a significant range on this variable (0 to 100, SD=18), it also indicates that there are clear differences between firms that receive a lot of inspections and those that do not. Given that this variable is also one of those that we believed based on prior information to be predictive of political connectedness, the fact that this is the question with the highest discrimination is a good sign that the underlying latent scale we identified is in fact political connectedness, especially in terms of connections that help firms escape regulatory obstacles.

Furthermore, the second-highest discrimination comes from a question that asked firms to report their company's legal form. While this estimate is not very precise, on average unregistered domestic firms tended to have very low political connections as is indicated by the large negative discrimination coefficient. The fact that both the number of inspections a firm faces and the ability of a firm to incorporate are both strongly related to lower political connections is strong validation of the scale. It is unlikely that a firm that is unable to incorporate itself would have strong connections to bureaucrats or politicians.

It is also interesting to note what factors do not seem to predict connectedness very strongly. Firm size is positively but weakly related to connectedness, and a firm's dependence on the state as a consumer or supplier also has a weak relationship to the latent score. That does not mean that

these factors do not predict connections at all, but rather that in comparison to other variables in the survey they discriminate less strongly. It is interesting, however, to note that prior studies have found a relationship between large firms and political connections. I believe based on my survey that this finding could be an artifact of the measurement strategy focusing on corporate boards. Only large firms tend to have corporate boards that are listed in firm databases, which may explain why my study, which in theory is able to access any firm in the country, finds a much less strong relationship between firm size and connections.

The exact values of the top five discrimination parameters are shown in Table 3. What is most noticeable at first glance is again how large the discrimination is for the number of times that a firm has been inspected by government employees: the absolute value of that coefficient is more than twice as large as the next-highest discrimination. It is also interesting to note these questions, including giving funds to parties, having Islamic loans, and perceptions of increasing bribery since the Arab Spring, include both factors that are behaviors such as political activity and factors that are firm attributes such as the firm loan portfolio. The bribery question also brings in some dimension of temporality because it implies that those firms that are experienced more bribe requests are also those that would appear to have fewer political connections, possibly implying that these firms have fallen out of favor politically since the Arab Spring.

Taken together, the discrimination parameters in Table 3 suggest that there is a certain profile for those firms without access to political connections: they tend to be more Islamist, provide more funding to parties, and are targets for both bribery and regulatory oversight. The Islamist dimension is peculiar and it also signifies that there is something more than simple corruption involved in a firm becoming politically-connected. Islamism is known to be a political foe of the ruling regimes in Jordan and Morocco, so displaying strong Islamist sympathies is a way for firms to lose their chance at political connections. Given that it is very unlikely that a firm's Islamist sympathies would be endogenous to political connections, it would seem that what is happening

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Question No.	Wording	Answers	Discrimination (Median)
Q33_1	How many total times was your business inspected in 2016?	0 to 100	-7.69
Q14	Which of the following best describes your company's legal form?	Unregistered domestic company	-4.23
Q52_2	In the most recent parliamentary elections, did you firm undertake any of the following activities?	Contributed funds to campaigns	-1.91
Q26	Does your firm have any Islamic loans	Yes/No	-1.69
Q38	Would you say that [the percentage of firm income paid as bribes] has increased or decreased since the Arab Spring?	Large Decrease to Large Increase	-1.48

Table 3: Top 5 Discrimination Parameters in Absolute Value from IRT Connectedness Index Model

in these countries is that the regime is more willing to grant special privileges and concessions to those who are more secular and hence less threatening to the regime. This finding is all the more interesting when we consider that a similar question that asked the respondents about their firms' willingness to donate to Islamic charity (zakat) had about half as much discrimination. In other words, the political issue is not so much whether one is a Muslim and willing to engage in Muslim pious actions such as giving alms, but rather whether one engages in actions that might indicate an affiliation with Islamism and the belief that Islam should have a say in the organization of financial (and hence, possibly political) institutions.

We can also use these discrimination parameters to as a way to test H1 that firms with higher levels of political connections should be less likely to believe that bribery is an obstacle to their business. What is interesting here is that because we included two questions on the survey about bribery–one asking respondents the percentage of income that their firm paid in bribes and the other asking whether this percentage had increased since the Arab Spring–we can make a rather nuanced statement about this hypothesis. Both of these questions load negative, meaning that those who report higher values on both questions tend to be more politically-connected, but the relationship is stronger for those firms that witnessed a change in the amount of bribery since the Arab Spring

than those firms which report high bribe payments currently. It would seem that some firms have lost political connections since the Arab Spring, and this loss is resulting in a higher amount of bribe payment ceteris paribus. Conversely, the amount of bribes paid in any one year is indicative of a firm's political connections, but the signal is less precise.

This over-time dimension to political connections may provide some additional granularity to the picture of political connected firms that is often found in the literature. These connections are not static and may change over time (Marinov and Goemans 2014; Earle and Gehlbach 2015). What we cannot know for sure is why these political connections are changing and whether it is due to the extraordinary political events of the post-Arab Spring era or whether it is due to the "slings and arrows of outrageous fortune" in palace intrigues. Given the strong Islamist dimension that the model picked up, we may wonder whether Islamists are also becoming more targeted for bribes by regime officials since the Arab Spring. However, the answers of the two variables are almost perfectly uncorrelated ($\rho = 0.05$).

Finally, I can also look at all of the questions that had unconstrained discrimination parameters, which is shown in Figure 3. What I can observe here is that respondents in firms with fewer political connections tend to rate the royal court as a less effective institution, although the relationship is not as strong as other predictors. This is could be due to the fact that employee's perceptions differ from their firm's perceptions, inducing additional variability.

What is also important to note from Figure 3 is that the political activities which involve the firm more directly in supporting parties, including holding party rallies and instructing employees to vote, have significantly less predictive power of lower political connections than providing funds to parties. In fact, holding rallies is in fact a positive (though weak) predictor of more political connections, while ordering employees to vote for a party predicts lower connections, although less so than giving funds to parties. In other words, while less connected firms may order their employees how to vote, they are much more likely to give money to parties, while more connected

firms are more likely to take public forms of political support like holding rallies.

It would appear, then, that political connectedness as an asset to the firm depends on a firm's expressed loyalty to a political side. What could explain these findings is that firms are paying bribes in order to maintain some political autonomy, while firms with connections need to display or prove their connections during the election season. This evidence provides some initial support of our theory that bribes are in fact substitutes for other kinds of political activity, and that political connections do not come without their own obligations of the client to the patron.

Figure 3: Unconstrained Discrimination (Factor Loadings) For Survey Questions on Political-Connectedness
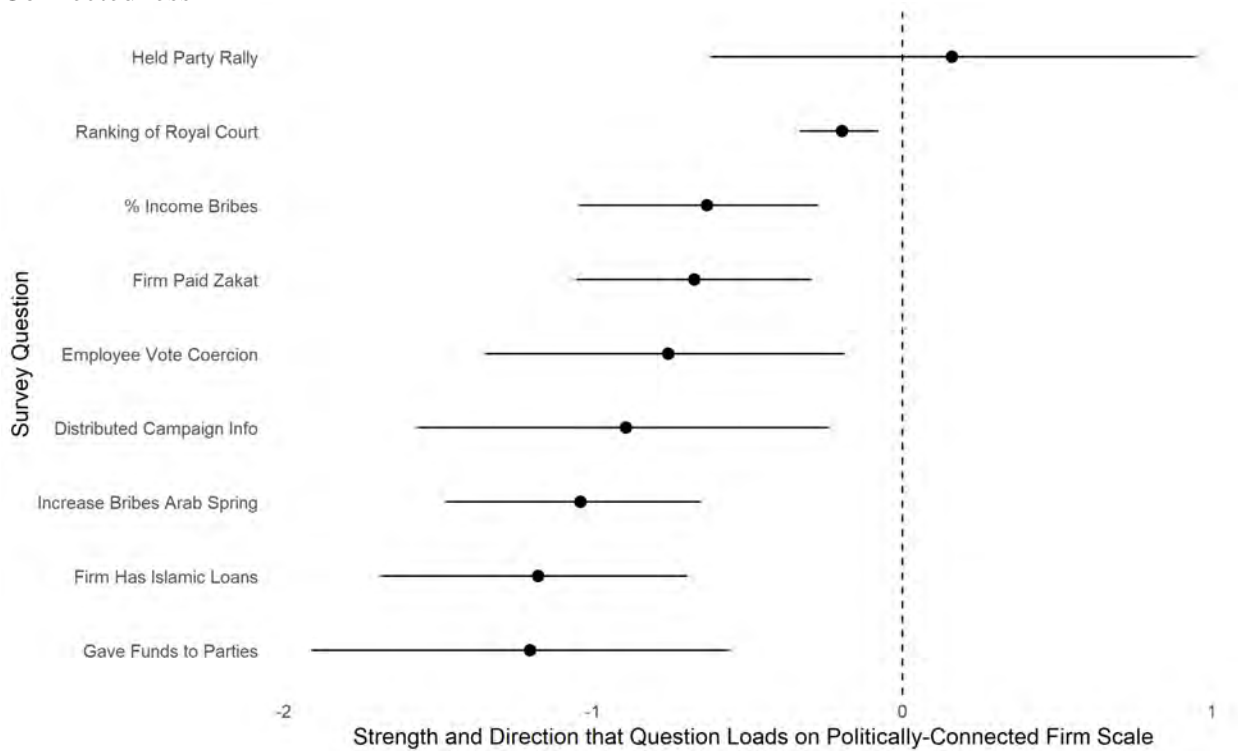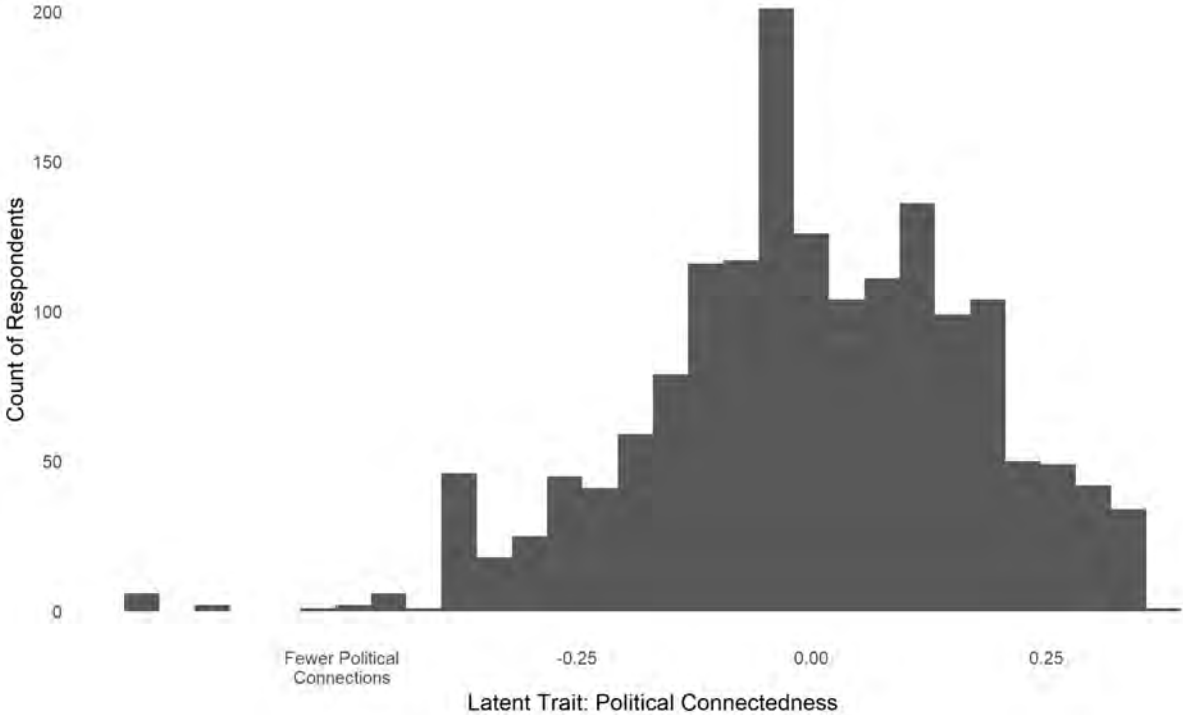

Note: Point estimates are the median of the posterior values, and the intervals represent the 90% and 10% quantiles of the posterior distribution of the parameters.

The model also assigns a latent score to each respondent that represent that respondent's firm's political-connectedness score. The distribution of these scores is shown in Figure 4. What we can see from the distribution is that there are relatively few respondents and firms that report very high levels of political connections. The tail towards fewer political connections is substantially heavier.

Looking at this variable as a continuum is helpful because it enables more nuanced classification of firms than the literature has undertaken here to date. Roughly we can identify three groups: 1) those firms with very high political-connectedness that might fit the traditional definition, 2) a large mass of firms who are slightly higher or lower than each other in terms of political connectedness but are more or less average, and 3) firms that are essentially political outcasts and are dis-favored by the current regime. That is, we can identify both relatively discrete boundaries, such as around 0.25 and -0.25 on the scale, and also see continuous variation in political connectedness across all firms.

Figure 4: Histogram of Political Connectedness Scores for Survey Respondents

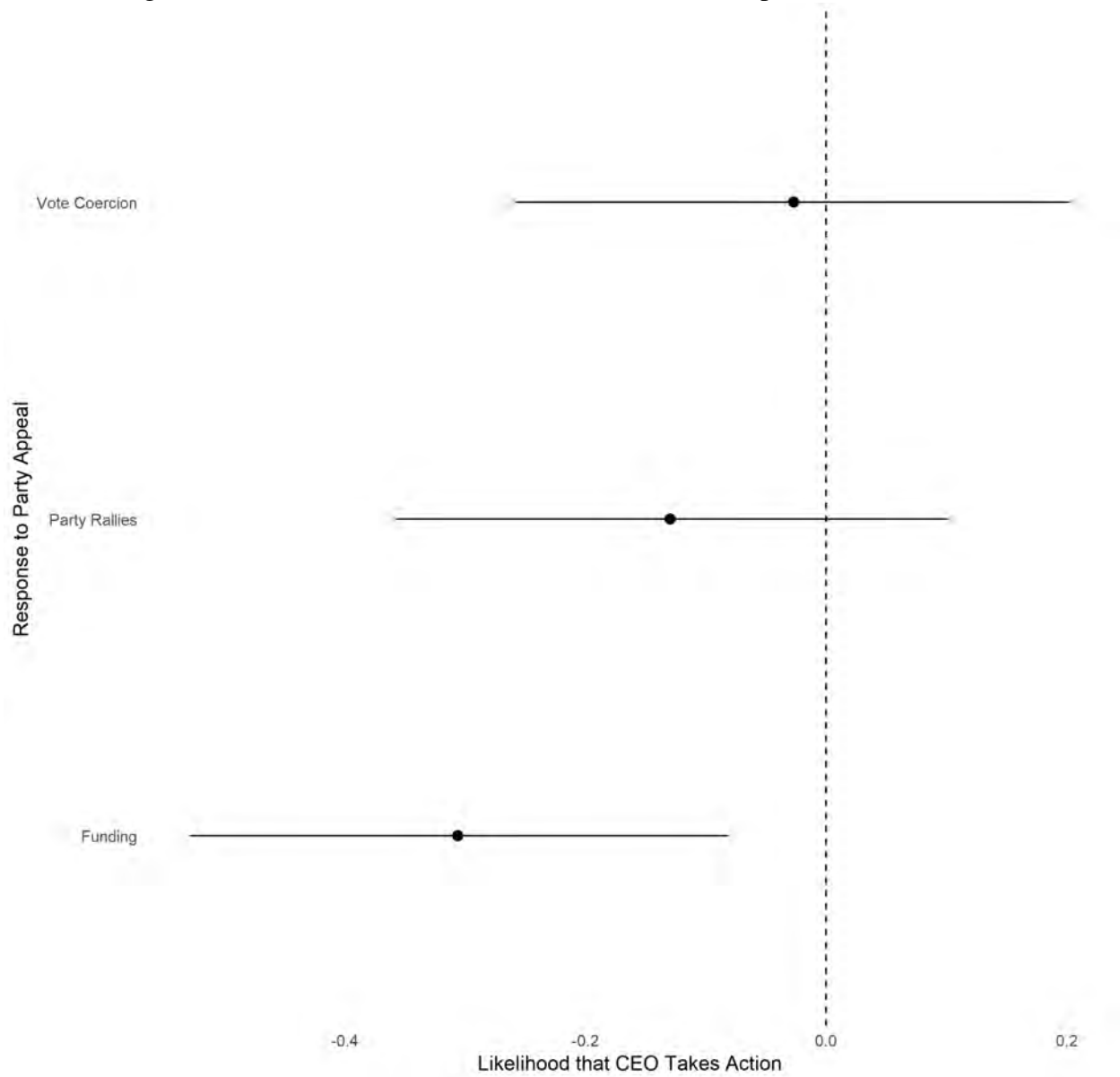Note: Point estimates are the median of the posterior values for the parameters.

We can also use this index to test hypotheses 2 and 3 regarding whether politically-connected firms tend to be more responsive to political appeals in our survey experiment. To do so, we include the index as an exogenous covariate for each of the three outcomes in the experiment: whether the

respondent's boss would provide funds, order people in the firm to vote, or would host rallies in exchange for some quid pro quo for the firm. The use of experimental evidence is important because it addresses a critical self-selection issue that the index itself cannot resolve: are firms that already have more political connections more or less likely to receive requests for bribes or funds in the first place? Unfortunately, parties do not randomly distribute request for funds, which means that the relationship evinced in our index analysis may be due to parties choosing certain kinds of firms to make appeals to. While the experiment presented is hypothetical, the randomization of appeals helps us to make fair comparisons of firms without the selection problems of purely observational data.

The experimental results are in fact even more clear than the observational analysis. The x axis of Figure 5 is the scale of the outcome question of the experimental survey: whether or not the CEO of the firm would respond positively to an offer made to a firm on a scale of 1 being very unlikely and 10 being very likely. As the independent variable here is the political connectedness index, a positive relationship would indicate that firms with more positive connections are more likely to respond positively to an offer from a party.

The results clearly show that employees at firms with low political connections rate offers from parties in exchange for giving funds to the party to be much more likely than firms with high political connections. By contrast, the outcome of employee voter coercion–i.e. the CEO ordering parties to vote for a specific candidate–does not show such a relationship. These findings indicate that, even when randomizing the type of quid pro quo offered to the firm, such as export licensing or government contracts, and the agency that could benefit the firm, those firms with reported lower levels of political connections seem to compensate for lower political connections by giving funds to parties. By contrast, those firms with higher political connections are more likely to order employees to vote for a particular party and somewhat more likely to host party rallies, which fits the description of these firms as clients who must display public political loyalty to their patrons

Figure 5: Effect of Political Connectedness Score on Experimental Outcomes

Note: Point estimates are the median of the posterior values for the parameters.

in terms of partisan actions.

5 Discussion

My research explores new ground in the study of political-connected firms by focusing on political-connectedness as a latent concept. Applying dimension-reduction methods to an original survey enables us to measure this concept more precisely without having to choose an ad-hoc measurement strategy. As a result, I am able to capture some of the nuances in this concept that also enables me to test some very specific and nuanced hypotheses.

What I aim to do with this analysis is to provide a clearer picture of what is meant by the term political-connectedness. In particular, I look at the sociological basis in terms of patron-client relationships. I aver that political-connectedness functions as an asset to the firm that makes the firm less vulnerable to dependency on state bureaucrats. As a result, the firm can become more of a patron than a client when interacting with lower-level bureaucrats.

At the same time, firm political connections do come with their own expectations to their own patrons, who are very likely higher-level political leaders and government ministers. Firms with these connection do appear to engage in certain behaviors more frequently than their non-connected counterparts, in particular ordering their employees to vote for a certain candidate and holding party rallies, a finding I was able to confirm with experimental evidence. This behavior, in addition to the fact that secularism was also associated with connectedness, strongly suggest that the price firms pay to maintain these connections is in part ideological. They must be fully committed to the existing regime and willing to play the part in supporting the regime's policy goals, including dampening Islamism. It is important to note that giving funds to parties, which is a behavior more associated with lower political connections, does not need to be a partisan action. Firms can provide funds to any number of parties, but they can only order their employees to vote for one specific party.

6 Conclusion

This paper presented an original survey of firm employees in Morocco and Jordan that breaks new ground by providing more precise and transparent measures for political-connectedness. I showed that this measure enables us to discern whether connected firms are able to use their connections as assets that can save the firm from having to make large bribe payments. These connections still come at a cost, which the firm pays by conforming to the ideological requirements of the state.

In particular, it would appear that firms with fewer political connections engage in payments to parties that may help to offset their greater vulnerability to bureaucratic predation. The single strongest predictor of lower political connections was the number of times that a firm was inspected in a given year. In addition, reported increases in bribes paid since the Arab Spring strongly predicted lower connections. Combined, these results suggest that firms without access to connections are more vulnerable to inspections, and they need to purchase protection through side payments to politicians and bureaucrats.

By contrast, public political behavior, in particular holding party rallies, is associated with higher political connections. A plausible explanation of these results would be that firms with higher political connections, as clients with powerful patrons, need to demonstrate their support of their patron during elections. It is important to note that political connections do come with their own costs and expectations of political behavior for firms.

This research helps to situate Middle Eastern firms relative to other areas of the world. It would appear that to obtain state largesse or even just permissions to operate, Middle Eastern businesses are required to offer either side payments in the form of bribes or political patronage through requiring their employees to vote or participate in rallies on behalf of political parties. It is important to note that both of these behaviors will result in a loss in firm efficiency. Bribe payments constitute a form of tax on firms, which firms have to pay in addition to any formal taxes.

Furthermore, as bribe payments may fluctuate, firms may face difficulties in pricing back bribes to consumers by raising prices, which will delay or hinder investment and business expansion.

Attempting to coerce employee political loyalties, on the other hand, is likely to decrease the ability of firms to retain and attract talent. It could be another reason why so many young Middle Easterners choose to emigrate instead of remaining at home, creating an acute crisis of highly-skilled laborers even as unemployment remains stubbornly high (Arezki et al. 2018). As employment becomes a political role, it can make it more and more difficult for firms to hire and retain the workers they need. The divide between secular firms and Islamist firms is another worrying sign of government-induced segmentation in markets that will not result in economic growth.

It is also useful to compare this fairly negative form of state-business relations to that found in other states. For example, in the so-called developmental states in East and southeast Asia, firms that receive state aid and have the closest relationships to government officials may be expected to compete on international markets and may in fact be *more* efficient than less-connected firms (Evans 1995). Ultimately, we need more research to be able to understand how the political sociology of the Middle East produces these kinds of roles played by firms and government officials, and how these roles can prevent the kind of economic development that Middle East residents demand.

In the future, I believe that more work on the micro-foundations of political-connectedness would advance the field's understanding of the subtleties of this concept. Extant research has provided a wealth of insight into politically-connected firms via a largely binary distinction between connected and non-connected firms, and dis-aggregating these measures promises to help unify findings in this field while also generating new hypotheses.

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