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SME's registration: Evidence from an RCT in Bangladesh☆

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HIGHLIGHTS

- We implemented an information campaign on business registration.
- The treatment made firms more aware of the procedures, but had no impact on actual registration.
- Our results point towards potentially low benefits and high indirect costs of registration.

ARTICLE INFO

ABSTRACT

Firms informality is pervasive in Bangladesh. We implemented an information campaign on registration and find that the treatment made firms more aware, but had no impact on registration. Low benefits and high indirect costs appear to be barriers to formality.

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1. Introduction

Firms' informality is pervasive in developing countries. Often firms are not registered with business registration or tax authorities. The 2010 census of 55,000 small and medium enterprises (SMEs) in 19 major district towns in Bangladesh suggests that about 70% of firms are informal, according to either their business or tax registration status. It is widely known that informality decreases with the size and performance of firms, which suggests that

formality might cause better economic performance. Clearly this might not be the case; better performing firms might simply decide to be formal. It still leads to the question of why so many firms remain informal. A 14-country survey of informal firms by the World Bank suggests that the lack of information about the registration process and the time that it takes to register a business are two leading causes for firms to operate informally. A 2008 International Finance Corporation (IFC) survey of SMEs in Bangladesh suggests that while the majority of the businesses believe that it is better to register their business with the registration authority, named the Registrar of Joint Stock Companies and Firms (RJSC), and operate formally, the cost of registering a business, the corruption and the complicated registration processes keep many from becoming formal. In contrast to these survey findings, however, there is a growing body of evidence suggesting that although easier, less costly, and speedier registration procedures cause a modest increase in registration, direct incentives are more effective (McKenzie and Sakho, 2010; Bruhn, 2011; Kaplan et al., 2011; de Mel et al., 2012). Building on a major business registration reform in Bangladesh

that substantially reduces the time, complexity, and hidden costs of registering a business, our intervention aims to encourage SME's registration through a targeted information campaign. The information campaign is meant to raise awareness of the potential benefits of registration and clarify the registration procedures implemented with the recent registration reforms.

There are clear legal benefits of registration, starting from name protection to easier access to legal authorities in the case of controversies. In terms of potential economic benefits, one can imagine that registered firms have better access to markets, both financial and credit ones, stipulate formal contracts and are better protected against fraudulent behavior of third parties. On the other hand, one needs to consider that associated with registration there are both direct and indirect costs. Direct costs are often small as in our current case post-reform, while indirect costs can be substantial due to the higher monitoring by the relevant institutions, including the tax authority, which would inevitably raise the (expected) tax burden on the registered firm. If such indirect costs are large compared to direct costs and potential benefits, a reduction in the direct costs of registration will have a negligible effect on actual registration. At the same time the potential economic benefits of formality might be small or too uncertain. One needs to consider that the low performing firms might disappear if registration were to be mandatory and severely enforced. However, losing the left tail of the distribution of firms in terms of profitability might be a positive outcome in the longer term as the more productive, and larger firms, already registered or at the margin of such choice, would not have to face an "unfair" competition from low productivity informal firms. Another important point to consider is that the government also loses a large share of tax revenues due to unregistered economic activity.

Our intervention aims at understanding whether the lack of information on the process and the potential benefits of registration constitute a significant barrier to formalization. We therefore implement a randomized controlled trial in Bangladesh where we provide face-to-face information to randomly chosen firms. The intervention consists of one visit by a facilitator to the informal firms, on which we have previously collected baseline information. Our analysis focuses first on whether the information campaign was somewhat successful in terms of exits from informality; if such a first stage appears significant than one can investigate the causal relationship between registration and economic performance. Unfortunately, our results are discouraging given that our information campaign had a positive and significant effect on the knowledge of the registration procedures but no effect (both economic and statistically) on actual business registration. Very few firms, below 5%, register both in the treatment and in the control group, and we estimate a "precise" zero effect.

Although it is disappointing, we take this result as consistent with previous evidence and once again suggestive that the actual barriers to registration have little to do with the direct costs of emerging from informality and most likely have to do with the indirect costs associated with it, in particular in an environment where the density of small/low productivity firms seems rather high, and/or with low benefits of formalization. In such an environment, stricter enforcement may be a more effective means for formalizing firms as found by De Andrade et al. (2013) in Brazil.[1]

The rest of the paper proceeds as follows: in Section 2 we sketch a conceptual framework for the decision to register; Section 3 describes the institutional context, while in 4 we present our intervention; Section 6 presents our empirical analysis and Section 7 concludes.

2. A narrative on the decision to register

A firm decision to register rests upon the comparison of costs and benefits. On the one hand, registration can be beneficial as it might allow better access to markets—both goods and financial/credit markets. For example, a registered firm might be able to borrow from a formal lender at a lower cost of capital, it might be able to access customers in distant markets and write long-term contracts. On the other hand, there are both direct and indirect costs of registration. Direct costs may include registration fees (monetary contribution), time taken to register, and the cost of acquiring information about the registration process. Indirect costs could be the costs that the firm has to incur once registered, for example compliance with the labor and goods regulations and taxation.

We can thus summarize the decision in an expected present value framework as follows:

$$\left(\Pi_f^R - \Pi_f^{NR}\right) > \underbrace{FEES + TIME + INFO}_{\text{Direct Costs}}$$
$$+ \underbrace{COMPLIANCE + TAXATION}_{\text{Indirect Costs}}. \quad (1)$$

Firm f will register if the discounted present value of profits in the registered state Π^R minus profits in the unregistered state Π^{NR} is larger than the costs, both direct and indirect. The difference in profits between the two states accounts for the lower cost of capital, when registered, and the ability of a registered business to access additional markets and a potentially different (and larger) set of players.

If firms are credit constrained than the monetary $FEES$ can contribute substantially to the inability to register. We should expect, other things being equal, less constrained firms to register; a similar argument would apply to time constraints, due to the size or business process of the firm. However, we also need to consider that the availability of information may or may not be highly correlated with the degree of credit that a firm has access to. The intervention that we implement in this work aims mainly at increasing the amount of information on registration available to the firm. At the same time one can think that by informing firms' owners about the process the information also modifies the expectations regarding all the components of costs on the right-hand side of the inequality. There are other reasons why the first three terms on the right-hand side of the inequality might be affected by the intervention; in particular $FEES$ are going to be reduced because an intermediary will not be needed, and better knowledge of the actual registration process would also reduce the time it would take to register ($TIME$).

Notice that the registration reform implemented by the Bangladeshi authority, discussed below, is orthogonal to our intervention. The effects of such intervention need not be homogeneous in the population of firms. Indeed, one can conjecture that small scale production firms will probably not register as the fixed cost of registration will outweigh the benefits; however bigger (unregistered) firms oriented towards bigger markets might be affected positively by the intervention. It is however an empirical issue as there are a large number of conflicting forces at play.

3. Context: the business registration reform in Bangladesh

In 2009–2010, Bangladesh implemented a major information and communication technology (ICT) based business registration reform initiative.[2] Prior to this reform, registering a business required on average 42 days (against the international best

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[1] They found that information and free cost of registration treatment increased firms' knowledge but had zero impact on registration while enforcement in the form of municipal inspection increased municipal registration by 21–27 percentage points.

[2] For the details of the reform see World Bank Group (2013).

Table 1
Balance table.

Variables	(1) Control number with non-missing values	(2) Mean	(3) Standard deviation	(4) Treated number of firms with non-missing values	(5) Mean	(6) Standard deviation
Year that business began	1448	1995	14.41	1444	1995	14.84
Number of employees	1453	26.19	80.89	1448	22.39	74.05
Percentage of goods sold domestically	1445	99.10**	7.040	1438	99.58**	5.161
Monthly revenue	1440	2.271e+06	1.589e+07	1427	2.054e+06	1.421e+07
Monthly profit	1390	107,564	541,972	1391	103,997	528,668
Percentage that have invested	1102	0.407	0.491	1098	0.438	0.496
Percentage in services	1453	0.407	0.491	1448	0.395	0.489
Percentage in Dhaka	1453	0.380	0.486	1448	0.363	0.481
Percentage in Chittagong	1453	0.191	0.393	1448	0.193	0.395
Percentage in Rajshahi	1453	0.142	0.349	1448	0.148	0.356
Percentage that are sole proprietorships	1453	0.818	0.386	1448	0.829	0.376
Percentage that are partnerships	1453	0.149	0.356	1448	0.144	0.351
Percentage that import directly	1070	0.0327	0.178	1066	0.0356	0.185
Number of firms in the informality survey	351	n/a		350	n/a	

All variables come from BCS2, BC3, and Informality surveys and thus the "baseline" version of the question. "Monthly profit" and "Monthly revenue" are answers to the question "How much revenue did you make last month?"
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

Table 2
The effect on registration.

Variables	(1) Linear regression registered?	(2) Linear regression registered?	(3) Linear regression registered?	(4) Probit registered?	(5) Probit registered?	(6) Propensity score matching registered?
Treated?	−0.00620 (0.00759)	−0.00657 (0.00776)	−0.0115 (0.00994)	−0.00679 (0.00948)	−0.00699 (0.0123)	−0.00615 (0.00760)
Number of employees		0.000165** (7.65e−05)	0.000122 (8.84e−05)	0.000156 (0.000113)	0.000149 (0.000154)	
Is it in Dhaka?		0.0184* (0.00991)	0.00627 (0.0131)	0.0256 (0.0177)	0.00958 (0.0141)	
Is it in Chittagong?		−0.00811 (0.0125)	−0.0254 (0.0168)	−0.00710 (0.0115)		
Is it in Rajshahi?		−0.00446 (0.0123)	−0.0147 (0.0149)	−0.00388 (0.0132)	−0.0128 (0.0129)	
Is it a sole proprietorship?		−0.147*** (0.0484)	−0.161*** (0.0515)	−0.225 (0.326)	−0.360 (0.400)	
Is it a partnership?		−0.135*** (0.0492)	−0.156*** (0.0526)	−0.0253 (0.0171)	−0.0302 (0.0204)	
Percentage of goods sold domestically		0.000858 (0.000949)	0.000834 (0.000997)			
Does the firm import?			0.0218 (0.0265)		0.0317 (0.0546)	
Did it invest from Oct–Dec '08?			0.0130 (0.0100)		0.0171 (0.0150)	
BCS 3	0.0196** (0.00876)	0.0175* (0.00902)	0.0219** (0.00990)	0.0290* (0.0168)	0.0318* (0.0190)	
Informality	0.00447 (0.00937)	0.0125 (0.0105)		0.0268 (0.0258)		
Constant	0.0113 (0.00785)	0.0608 (0.107)	0.0853 (0.113)			0.0196*** (0.00585)
Observations	1133	1124	791	580	323	1128
R-squared	0.005	0.105	0.132			0.001

Standard errors in parentheses.
There are "Year founded" fixed effects in every column but column 1.
The probit results display marginal effects, evaluated at the means of the continuous variables.
The propensity score matching used nearest neighbor matching with replacement.
Columns 3 and 5 use data from BCS2 and BCS3; the rest use data from BCS2, BCS3 and Informality.
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

practice of 1 day) to complete an 18-step process of registration. This would require on average 4–5 visits to the agency, sometimes 10 visits, and a 4–5 week payment process of registration fees through a stamp duty procedure. This latter step often involved artificial stamp shortages and stamp price hikes by the officials, and stamp forgery (causing government revenue leakages). Further impediments included hassle and harassment by officials and the need for intermediaries at every step to navigate the bureaucratic maze of the registration process and side payments and bribes.

Due to the ICT led reform, the registration time has been reduced to 1 day, and one final visit to pick up the registration certificate. The payment of fees can be completed in 15 min through BRAC Bank. The applicant can access a transparent online system in which a business can check its status without the need to visit

Table 3
The effect on awareness.

Variables	(1) Linear regression do not know	(2) Linear regression do not know	(3) Linear regression do not know	(4) Probit do not know	(5) Probit do not know	(6) Probit do not know	(7) Propensity score matching do not know
Treated?	−0.0806***	−0.0293	−0.0859***	−0.0866***	−0.0318	−0.0914***	−0.0661**
	(0.0293)	(0.0373)	(0.0304)	(0.0317)	(0.0398)	(0.0321)	(0.0298)
Number of employees		−0.000767**	−0.000671**		−0.00157**	−0.00155**	
		(0.000328)	(0.000298)		(0.000688)	(0.000638)	
Percentage of goods sold domestically		0.00116	0.000941		0.00145	0.00158	
		(0.00377)	(0.00373)		(0.00415)	(0.00416)	
Is it in Dhaka?		−0.0746	−0.112***		−0.0806	−0.122***	
		(0.0488)	(0.0387)		(0.0517)	(0.0400)	
Is it in Chittagong?		−0.0133	−0.0424		−0.00970	−0.0453	
		(0.0623)	(0.0485)		(0.0665)	(0.0506)	
Is it in Rajshahi?		−0.0216	−0.0350		−0.0249	−0.0425	
		(0.0557)	(0.0483)		(0.0594)	(0.0501)	
Is it a sole proprietorship?		0.316	0.338*		0.369**	0.365**	
		(0.194)	(0.190)		(0.179)	(0.159)	
Is it a partnership?		0.302	0.306		0.389*	0.392*	
		(0.199)	(0.193)		(0.209)	(0.214)	
Does the firm import?		−0.145			−0.174*		
		(0.102)			(0.102)		
Did it invest from Oct–Dec '08?		−0.0210			−0.0227		
		(0.0379)			(0.0402)		
BCS3	−0.197***	−0.194***	−0.200***	−0.211***	−0.196***	−0.191***	
	(0.0338)	(0.0372)	(0.0351)	(0.0337)	(0.0393)	(0.0355)	
Informality	−0.200***		−0.242***	−0.200***		−0.242***	
	(0.0365)		(0.0410)	(0.0366)		(0.0385)	
Constant	0.602***	0.614	0.668				0.469***
	(0.0303)	(0.648)	(0.641)				(0.0229)
Observations	1143	801	1134	1115	776	1110	1138
R-squared	0.041	0.128	0.109				0.004

The dependent variable is equal to 1 iff the individuals report that they do not register either because they do not know how to or do not know how to online.
Standard errors in parentheses.
There are "Year founded" fixed effects in every column but columns 1, 4, and 7.
The probit results display marginal effects, evaluated at the means of the continuous variables.
The propensity score matching used nearest neighbor matching with replacement.
Columns 3 and 6 use data from BCS2 and BCS3; the rest use data from BCS2, BCS3 and Informality.

*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

the agency. Overall, it seems safe to assume a reduced scope for corruption due to limited interactions with the officials.

4. Intervention: the information campaign

We implemented an information experiment around this business registration reform to test whether a simplified registration regime would encourage informal firms to register and become formal once they learn how to register and about the potential benefits of registration.

We extracted a sample of informal firms (3000) from two waves of IFC's quarterly Business Confidence Surveys, BCS (Q1 and Q2, 2009) and IFC's Informality Survey of 2010.[3] These are all representative surveys of the businesses operating in Bangladesh.

The data from these surveys form our baseline sample with information regarding business registration as well as several variables concerning business performance and composition. We then randomly assign these firms to a treatment and control group. The assignment is implemented at the firm level.

We then had members of our staff visit the "treated" firms and provide information on the process and potential benefits of registration. In practice the staff members presented a set of potential legal and economic benefits of the registration and the step-by-step registration process. They were equipped with two booklets

containing all this information in easy to understand (Bangla) language. The benefits booklet also contained virtual stories of different entrepreneurs, so that the treatment group could relate their personal situations to these fictitious characters. The potential legal and economic benefits of the registration are as follows: protection of business name and goodwill, greater access to bank loans, limited liabilities, continuity of businesses, better business confidence, raising finance, greater ownership rights, and enhancement of social status. The visits were conducted in two waves, according to the original spacing of the BCS and informality surveys. The first set of firms were visited in March–June of 2010, while the remaining firms were visited during January–February of 2011. We then conducted follow-up (phone) interviews in April–July 2011 for the first batch of firms and May–July 2012 for the second one. In practice, this was done such that all the follow-up interviews occurred about one year after treatment.

Notice that our intervention was orthogonal to the simplification and informatization procedure implemented by the RJSC. The new registration procedure was available to all firms irrespective of their treatment status. At baseline, firms indicated that they were unaware of this reform initiative.

5. Treatment and control selection

The procedure used to randomly select the receivers of the information visits on registration is based on pure random assignment at the firm level, where conditional on the predicted value of

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[3] Details of the surveys are available from the authors.

Table 4
The effect on awareness.

Variables	(1) Linear regression info1	(2) Linear regression info1	(3) Linear regression info1	(4) Probit info1	(5) Probit info1	(6) Probit info1	(7) Propensity score matching info1
Treated?	0.382***	0.336***	0.397***	0.393***	0.364***	0.432***	0.372***
	(0.0289)	(0.0357)	(0.0296)	(0.0277)	(0.0341)	(0.0289)	(0.0298)
Number of employees		0.000199	9.21e−05		0.000317	0.000176	
		(0.000292)	(0.000272)		(0.000316)	(0.000340)	
Percentage of goods sold domestically		−0.00132	−0.00147		−0.00110	−0.00140	
		(0.00329)	(0.00328)		(0.00373)	(0.00397)	
Is it in Dhaka?		−0.108**	−0.0863**		−0.138***	−0.116***	
		(0.0471)	(0.0379)		(0.0520)	(0.0436)	
Is it in Chittagong?		−0.107*	−0.160***		−0.116**	−0.175***	
		(0.0600)	(0.0472)		(0.0578)	(0.0449)	
Is it in Rajshahi?		0.0592	0.0659		0.0627	0.0789	
		(0.0535)	(0.0469)		(0.0641)	(0.0586)	
Is it a sole proprietorship?		0.282	0.327		0.684***	0.743***	
		(0.221)	(0.219)		(0.0788)	(0.0886)	
Is it a partnership?		0.227	0.330		0.944***	0.943***	
		(0.225)	(0.222)		(0.0249)	(0.0317)	
Does the firm import?		−0.00696			−0.0192		
		(0.0961)			(0.109)		
Did it invest from Oct–Dec '08?		0.0702*			0.0719*		
		(0.0361)			(0.0428)		
BCS3	0.189***	0.213***	0.189***	0.227***	0.240***	0.237***	
	(0.0331)	(0.0354)	(0.0338)	(0.0397)	(0.0398)	(0.0429)	
Informality	0.256***		0.228***	0.309***		0.295***	
	(0.0362)		(0.0405)	(0.0445)		(0.0524)	
Constant	−0.00596	−0.490	−0.579				0.139***
	(0.0296)	(0.583)	(0.582)				(0.0230)
Observations	931	662	924	931	639	899	928
R-squared	0.194	0.272	0.277				0.144

Standard errors in parentheses.
There are "Year founded" fixed effects in every column but columns 1, 4, and 7.
The probit results display marginal effects, evaluated at the means of the continuous variables.
The propensity score matching used nearest neighbor matching with replacement.
Columns 3 and 6 use data from BCS2 and BCS3; the rest use data from BCS2, BCS3 and Informality.
Info1 is a binary variable indicating that the respondent reported being visited by a staff member who informed him/her of the registration procedures (info1 = 1).
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

an outcome index, i.e. profits in this case, 50% of the subjects are randomized in and the remaining are randomized out.

The procedure consists in running a regression to estimate profits: $\Pi_i = f(x_i) + u_i$, where the Π_i are the recorded profits of firm i, and the x_i include a large series of inputs in a firm production function, e.g. physical and human capital, labor, credit and so on. We then construct the predicted value of the profits $\widehat{\Pi}_i$, as a dimensionality reduction index (a single index rather than a very large set of x_i), and on the basis of that index we form pairs of comparable firms and assign one to the treatment group and one to the control group. We repeat such assignment mechanisms several hundreds of times in order to minimize the sum of squares difference between each pair of treatment and control in the predicted index. The variables of interest of the treatment and control groups are summarized in Table 1.

6. Empirical analysis

6.1. Registration

Given the RCT nature of our intervention, the identification of the parameter of interest rests on the validity of the randomization procedure. We estimate both simple linear probability and probit models of the registration decision according to whether the firm was assigned to a treatment or control group. The results on registration are somewhat discouraging, but consistent with de Mel et al. (2012), and summarized in Table 2.

The treatment effect is essentially zero. We find no evidence that providing detailed information on the registration procedures

and on the potential benefits increases the probability of registration. In particular the number of registered firms, post-treatment, is very low both in the treatment and control group and clearly not differential across the two groups. This result is robust to several specifications, for example adding baseline controls as in column 2–4 as well as to a probit model in columns 5 and 6 or using a propensity score matching method to deal with the sample attrition. We match firms on the basis of their baseline characteristics so that only matched treated/control pairs contribute to the estimation of the parameters in column 7.

Interestingly, although the treatment had no effect on actual registration behavior, we find that firms that were treated, i.e. visited by the staff member, are more likely to know (self-declared) how to register (Table 3). When asked why they did not register, the treated firms are about 6–9 percentage points less likely to declare that they do not know how to register. This is a 20% difference from the control firms. At the same time when asked about whether they were visited by a staff member who explained the new registration procedures, treated firms are significantly more likely to respond affirmatively to such a question as shown in Table 4. Ultimately, it appears that treated firms did indeed receive the treatment but simply did not act upon it. These results lead us to believe that the impediments to registration are not due to the lack of information but rather to other constraints; in particular given that very few firms register both in the treatment and control group it seems that the direct costs of registration are not the main issue. It seems plausible that the larger probability of taxation might be the binding constraint. If direct costs were the major

constraints then both treatment and control firms should register after the implementation of the RJSC reform as the direct costs went down dramatically. At the same time it is also possible that the actual or perceived benefits of formalization are simply too low or uncertain for firms to register.

7. Conclusions

Given the prevalence of informal firms in less developed countries, we implemented a randomized controlled trial to investigate the effects of a face-to-face information campaign about the potential legal and economic benefits of registration and a step-by-step demonstration of how to register. Our treatment followed the registration system reform in Bangladesh. The reform replaced lengthy and costly registration procedures with online speedy procedures, causing the number of days required for registering a company to decrease from forty-two days to just one day. We randomly selected a large number of firms to be visited by our team members. About one year after the visits we re-interviewed the firms. Although our treatment seems to have affected self-declared knowledge of the registration process, it did not affect registration behavior. We find no evidence that information constraints are the main barrier to registration for informal firms. At the same time, given the overall low registration rate amongst treatment and control firms, we believe that the main barriers to registration are due to the indirect costs and/or the low perceived benefits of registration. In particular, one needs to consider the higher taxes, and possibly stringent regulations, that a registered firm would be subject to.

References

Bruhn, M., 2011. License to sell: the effect of business registration reform on entrepreneurial activity in Mexico. The Review of Economics and Statistics 93 (1), 382–386.

De Andrade, G., Bruhn, M., McKenzie, D., 2013. A helping hand or the long arm of the law? Experimental evidence on what governments can do to formalize firms. World Bank Policy Research Paper, 6435.

de Mel, S., McKenzie, D., Woodruff, C., 2012. The demand for, and consequences of, formalization among informal firms in Sri Lanka. In: Policy Research Working Paper Series, vol. 5991. The World Bank.

Kaplan, D.S., Piedra, E., Seira, E., 2011. Entry regulation and business start-ups: evidence from Mexico. Journal of Public Economics 95 (11–12), 1501–1515.

McKenzie, D., Sakho, Y.S., 2010. Does it pay firms to register for taxes? The impact of formality on firm profitability. Journal of Development Economics 91 (1), 15–24.

World Bank Group, 2013. Reforming Business Registration: A Toolkit for the Practitioners. Investment Climate, Washington, DC.