PEDL Research Papers

This research was partly or entirely supported by funding from the research initiative Private Enterprise Development in Low-Income Countries (PEDL), a Department for International Development funded programme run by the Centre for Economic Policy Research (CEPR).

Journal of Public Economics 157 (2018) 1–14

Contents lists available at ScienceDirect

Journal of Public Economics

journal homepage: www.elsevier.com/locate/jpube

Does inducing informal firms to formalize make sense? Experimental evidence from Benin☆

Najy Benhassine[a], David McKenzie[a,*], Victor Pouliquen[b], Massimiliano Santini[a]

[a] World Bank Group, United States
[b] Paris School of Economics, France

ARTICLE INFO

JEL classifications:
O17
O12
D21
L26
H25

Keywords:
Informality
Small enterprises
Regulatory simplification

ABSTRACT

Efforts to bring informal firms into the formal sector are often based on a view that this will bring benefits to the firms themselves, or at least benefit governments through increasing the tax base. A randomized experiment based around the introduction of the *entreprenant* legal status in Benin is used to test these assumptions, along with supplementary efforts to enhance the presumed benefits of formalizing to firms. Few firms register when just given information about the new regime, but our full package of supplementary efforts boosts formalization by 16.3 percentage points. However, this formalization does not bring firms higher sales or profits, and the cost of formalizing these firms exceeds the added taxation they will pay over the next decade. We show how better targeting of these policies towards firms that look more like formal firms to begin with can increase the formalization rate and improve cost-effectiveness.

1. Introduction

A large majority of micro, small, and medium-sized firms throughout the developing world operate in the informal sector (La Porta and Shleifer, 2014a). This is certainly the case in Benin, where the national statistics agency has estimated that the informal sector represents up to 70% of GDP and 95% of employment (INSAE, 2009). There are two main reasons why governments usually view these high levels of informality as a problem.[1] The first, spurred by the work of De Soto (1989), is the idea that informality is costly for the firms themselves, who are unable to access bank financing, public contracts, or government programs, and suffer from low productivity as a result. The second reason is the idea that a large informal sector represents lost tax revenues for the government. In response, many countries have implemented business entry regulation reforms designed to make it easier for firms to become formal (World Bank, 2016). However, even after these regulatory reforms, the majority of firms remain informal in many developing countries (Bruhn and McKenzie, 2014), raising the question of whether governments should undertake additional efforts to induce informal firms to formalize.

We use a randomized experiment with 3600 informal businesses in Benin to help answer the question. We do this in the context of the launch of the *entreprenant* legal status, a simplified regime being offered to small informal businesses in 17 African states with the goal of making it easier for them to enter the formal economy. In the pilot phase of launching this new status, we worked with the Government of Benin to experimentally test three interventions designed to induce these informal firms to register. The first treatment group received in-person visits in which the new status was explained, the potential benefits verbally described, and advisors helped firms with paperwork as needed. A second treatment aimed to enhance the benefits of formalizing by offering business training and support opening a business

☆ The authors owe particular appreciation to all the experts and colleagues who contributed to the design and implementation of the *entreprenant* program and its impact evaluation: Louis Akakpo, Theodore Anthonioz, Zoubir Benhamouche, Julien Bornon, Laurent Corthay, Tonagnon Dadjo, Matina Deen, Magueye Dia, Benedicta Houetchenou, Ferdinand Ngobounan, Adrien Pawlik, Dolele Sylla, Kjartan Sorensen, Hamidou Sorgo, Adama Tiendrebeogo, and Alain Traore. The authors would also like to thank the Government of Benin for the cooperation and support during the impact evaluation, CGA (*Centres de Gestion Agrées),* GUFE (*Guichet Unique de Formalisation des Entreprises)*, Bank of Africa, Orabank and IERPE (Institute for Empirical Research in Political Economy). Helpful comments were received from the editor, two anonymous referees, and Michael Koelle. Research for this paper has been supported by (1) the International Finance Corporation, the Facility for Investment Climate Advisory Services (FIAS), the U.K. Department for International Development (DFID), the Foreign Affairs, Trade and Development Canada (DFATD), and the U.S. Agency for International Development through the Impact Program managed by the World Bank Group (WBG)'s Trade and Competitiveness Global Practice; (2) the Research Support Budget (RSB), the Strategic Research Program (SRP), and the Impact Evaluation to Development Impact (i2i) through the WBG's Development Economics Department; and (3) the Private Enterprise Development for Low-Income Countries (PEDL) initiative managed by the Centre for Economic Policy Research (CEPR) and DFID.

* Corresponding author.
E-mail address: dmckenzie@worldbank.org (D. McKenzie).

[1] See, for example, Levy, 2008; Farrell, 2004; Perry et al., 2007; and La Porta and Shleifer, 2014b.

https://doi.org/10.1016/j.jpubeco.2017.11.004
Received 2 February 2017; Received in revised form 2 August 2017; Accepted 14 November 2017
Available online 21 November 2017
0047-2727/

bank account. The third treatment built on the first two by also offering tax mediation services. A supplementary treatment provided information in the form of leaflets to test whether information alone had an impact.

We use administrative data on formalization coupled with two rounds of follow-up surveys to measure the impact of these treatments. Only 2% of the control group formalized over a two-year period, showing that, in the absence of any intervention, most informal firms stay informal. All three treatments had significant impacts on formalization, with the impacts larger as more supplementary services were offered: there was a 9.6 percentage points increase in registration in the first treatment group, 13 percentage points in the second, and 16.3 in the third, with these differences between groups all statistically significant. In contrast, information leaflets alone had no impact on formalization. We then measure the consequences of formalizing for these firms. Formalizing leads to increased participation in business training, more formal accounting, lower tax harassment, and less taxes paid (due to a tax exemption in the year after formalizing). However, formal firms are not significantly more likely to obtain business bank accounts or loan financing, do not gain more customers, and have no significant gains in sales, profits, or standard of living.

While the benefits of formalizing for firms are thus modest, the cost of the intervention is not. We calculate an average cost of US $1200–2200 per firm formalized. Even assuming 100% compliance with tax payments, and that firms achieve turnover growth at the very top of our estimated confidence interval, we calculate that it would take a decade or more for this additional tax revenue to cover the costs of formalizing. As such, our analysis suggests that while introducing a simplified registration system offers at least time-saving benefits for firms that want to formalize on their own, adding additional services or in-person visits to attempt to get additional firms to become formal is unlikely to pass a cost-benefit test.

Although these results suggest it is not beneficial for governments to try to formalize all firms, better targeting may identify a subgroup for whom formalization makes more sense. We examine heterogeneity in impact according to key characteristics specified in a pre-analysis plan.[2] We find the formalization impacts of our treatments are higher for male business owners, those with more education, those operating outside the biggest market in Cotonou (Dantokpa), and those that we classified ex ante as being more similar to businesses already formal using species classification (De Mel et al., 2010). Targeting on these characteristics could increase formalization rates to over 20%, and lower the cost per firm formalized to $600–700, which could be recouped in tax revenues within 6 to 13 years. However, we still find no profits or sales benefit to these targeted firms of formalizing.

This work builds on a literature which tests different interventions designed to bring informal firms into the tax system. Providing information and removing the upfront cost of registration had no effect on tax registration in randomized experiments in Sri Lanka (de Mel et al., 2013), Bangladesh (De Giorgi and Rahman, 2013), Brazil (Andrade et al., 2016), Malawi (Campos et al., 2015), or Colombia (Galiani et al., 2017). We add evidence from Africa, where development levels are lower, and the informal sector larger still. One interpretation of this evidence is that burdensome regulations are not the main reason these firms are informal, but instead they are rationally choosing to be informal because the benefits of formalizing are low for them compared to the tax and other costs (Maloney, 2004).[3] The limited success of these studies in getting firms to formalize has meant there have been few opportunities to measure the benefits of tax registration for informal firms. Some evidence is available from Sri Lanka, where de Mel et al. (2013) paid firms to formalize, and from Brazil, where Andrade et al. (2016) used tax inspectors to force formalization. In neither case were firms able to benefit from many of the purported advantages of formal status, including access to business banking, participation in government training programs, receiving government contracts, or increased certainty over taxes. De Mel et al. (2013) find some impact of formalization on firm profitability, but this impact appears to be driven by a handful of firms for which profit increased substantially, with most firms experiencing no change. Our paper shows this finding of little benefit to informal firms from formalizing continues to hold, even when additional interventions were undertaken to attempt to increase these supposed benefits, and complements this with analysis on the taxation side, which was not present in these earlier studies. Moreover, because of the larger sample, we can provide the first guidance over targeting of such efforts towards firms more likely to respond.

2. Formalization in Benin

The seventeen OHADA (*Organization pour l'Harmonisation en Afrique du Droit des Affaires*) member countries adopted a revised General Commercial Law in December 2010, which came into effect in May 2011. The new law, introduced the *entreprenant* status, a simplified legal regime specifically designed for small entrepreneurs, whose intended objective is to facilitate the migration of businesses operating in the informal sector into the formal sector. However, the law did not make explicit how the *entreprenant* status practically functioned, nor the specific combination of incentives that it would include, instead allowing each country to fill in the vacuum through ad-hoc secondary legislation and institutional changes. Benin, as a member of OHADA, was the first OHADA country to implement the *entreprenant* legal status.[4]

The *entreprenant* status can apply to a physical person running a micro or small business involved in any type of activity. Formalization with this new status is easy, free of charge and takes only one business day. The introduction of the *entreprenant* status is part of a broader effort from the Government of Benin to simplify and reduce the costs of formalization. Reforms of other existing legal status were implemented a few months before the creation of *entreprenant* status, and included the creation of a one-stop shop for business registration, and a significant reduction of the registration costs associated with the main existing legal status. The registration cost for individual enterprises dropped from CFAF 65,000 (USD109[5]) to CFAF 10,000 (USD17) and from CFAF 225,000 (USD378) to CFAF 17,000 (USD29) for limited liability companies (only the *entreprenant* status is totally free of charge). For all statuses, the time to register was reduced to one business day. The only documentation required to become formal is a legal ID, and then firm owners fill out a short form, provide two pictures and sign a declaration saying that they were never imprisoned. As these reforms (including the creation of the *entreprenant* status) were implemented recently, information on the new conditions to formalize was not likely to be known by the majority of informal businesses operating in Cotonou at the time of the start of the program.

Formalizing in Benin means to choose a legal status and register at the GUFE (*Guichet Unique de Formalization des Entreprises*), the one-stop-shop for formalization that gathers services of the chamber of

[2] This study was registered in the AEA RCT Registry on October 7, 2014, prior to any follow-up survey data being collected https://www.socialscienceregistry.org/trials/515

[3] Larger impacts on formalization have occurred in settings where firms could register for a status not directly linked to tax registration, such as a municipal license in Peru (Alcãzar et al., 2010), and a business registration certificate in Malawi (Campos et al., 2015). Non-experimental evidence from a reform in Mexico to municipal registration is mixed as to whether this induced registration of existing informal firms. Bruhn (2011) and Kaplan et al. (2011) both find this reform increased formal registrations by 5%, but

(*footnote continued*)
disagree as to the extent to which this came from registration of existing informal firms versus new entrants registering.

[4] Other developing countries often have a similar form of legal status, but these typically require more documentation and are usually not free as in Benin. See Appendix 1 for a description of similar legal statuses in other countries in West Africa.

[5] Exchange rate on June 1, 2016 on *oanda.com*: 1 USD = CFAF 596.

commerce and of the tax administration. It offers some potential benefits (presented in Table A1) depending on the type of status chosen. Most of these potential benefits are related to the possibility to apply for bank services, or to access new markets like government and large companies' contracts. The *entreprenant* status gives access to all advantages except the rights to export and to access large public contracts. It explicitly targeted micro and small businesses managing one type of activity with a limited turnover.[6]

When they formalize, businesses get a unique fiscal identifier and are registered with the tax administration. Accordingly, the main potential cost of formalization is related to taxes. In Benin, the link between formalization and taxes is complex and varies according to the type of business. In theory, all businesses with a fixed location would pay taxes even if they were informal. But in practice, tax enforcement is easier for formal firms, since they have known addresses, can be sent tax notices, and can be found more easily, whereas tax collection from informal firms relies on field inspections from tax inspectors. When the program was launched the tax system applicable to most micro-entrepreneurs[7] was an assessment based on the rental value of the business premises. However, most informal firms do not have a lease contract proving rental value, and so taxes were based on the assessment of inspectors. Data from our baseline survey (see Table 1) show that formal firms were more likely to be paying taxes at all (84% paid versus 55% of informal firms), and paid a higher amount of taxes conditional on paying (an average of 17% of profits versus 9%). But both formal and informal firms express considerable uncertainty over the taxes they will pay, with more than 70% saying it is difficult to know in advance the tax they would have to pay.

After the *entreprenant* status and our interventions were launched, the government introduced a new tax regime for micro and small enterprises that shifted the tax basis from rental value of premises to turnover.[8] This was not known at the time of the launch of our interventions, so should not affect formalization decisions, but will affect projected future tax revenue from newly formalized firms. Fig. A1 shows the project timeline and the date of introduction of this reform.

When they formalize, businesses which were not paying any tax before benefit from a full year of tax exemption (as we will see later, in practice this exemption was also applied to firms already paying tax). In addition, businesses which also register with the CGA (an association providing business counseling and account certification) can benefit from a reduction of 40% in the amount of taxes due for the following 3 years. As a result, the amount of taxes paid by firms which formalize may actually decrease in the short-term.

3. Evaluation design

3.1. The intervention

Given the flexibility provided by the OHADA framework as to how the *entreprenant* status should be implemented, the Government of Benin was interested in knowing the most impactful and efficient way to operationalize the legal status. We worked with the government to design and test the following three packages of incentives to formalization, with the goal of understanding what would be the best combination of incentives:

3.1.1. Package A – information on the entreprenant status and assistance in registering

The *Centres de Gestion Agréés* (CGA) is a semi-public organization that focuses on providing small and medium enterprises with business management, accounting, and tax consulting services.[9] They provided advisors who would visit selected firms in person. These advisors were professionals with Masters degrees and an average of eight years of professional experience (see Appendix 1). They explained the benefits of becoming an *entreprenant*, and provided (i) a leaflet describing the *entreprenant* status, its advantages and requirements, (ii) one leaflet explaining the registration process at GUFE, and (iii) one leaflet explaining the different tax regimes applicable to *entreprenants* and how to calculate taxes due within each regime. They did not emphasize the short-term tax reductions during these visits, but rather the steady-state tax regimes that firms would now be part of. The informal businesses that decided to formalize needed to submit an application at GUFE to obtain the *entreprenant* card. When necessary, CGA advisors helped *entreprenants* with the formalization process at GUFE, including filling in the declarations and preparing all the required accompanying documents.

3.1.2. Package B – provision of business services and trainings, and assistance in opening a bank account

The second package aimed to supplement the basic help in package A by facilitating access to the training services and to commercial banks, which are potential benefits of formalizing, but which many firm owners may not otherwise benefit from in practice. Following the first visit to each business, CGA advisors organized a second visit to deliver a 1–2 h f training session. They then noted a variety of additional training sessions that business owners could access conditional on receiving the *entreprenant* card. They could sign up for training at CGA which included four workshops (a) basic accounting, (b) initiation to tax obligations, (c) financial education and (d) a fourth workshop where they could choose one of (i) basics of microenterprise management, (ii) initiation to sales development and access to markets, and (iii) basic of business plan development. Each workshop lasted three consecutive half-days. Once the business owner completed the four workshops with the CGA, he/she received an official diploma, and a sticker acknowledging that he/she received the training.

Firms receiving this package were also offered support from CGA to open a business bank account. The bank partners (Orabank and Bank of Africa) designed a specific banking product for the *entreprenant*, with dedicated services and simplified banking access conditions, including a debit card, bank account consultation with mobile phone, cash transfers, SMS-banking, internet banking and mobile money. The *entreprenant* bank accounts in both banks are cheaper than what businesses can usually get (around CFAF 1000 per month, or USD 1.7, against CFAF 2000, or USD 3.4) and do not require any initial deposit, whereas business bank accounts usually do in Benin. CGA advisors assisted the *entreprenant* to open a bank account and provided instructions on how to use it.

[6] The OHADA General Commercial Law defines the *entreprenant* as having an annual turnover below CFAF 30 million (USD 50,400) for trading activities, CFAF 20 million (USD 33600) for crafting activities (artisans), and CFAF 10 million (USD 16,800) for services.

[7] The most common tax regime for microbusinesses was the "*Taxe Professionnelle Unique*" (TPU). Microbusinesses operating in specific sectors such as transportation, fabric merchant or businesses with a high level of revenue could also be contributing to three other tax regimes: "*Taxe Unique sur les Transports Routiers*" (TUTR), "*Régime du forfait des revendeurs de tissus et divers*", and "*Régime du bénéfice réel simplifié*".

[8] In December 2014, the Beninese Parliament adopted a new MSE tax regime. This regime introduced the Synthetic Professional Tax (TPS: *Taxe Professionnelle Synthètique*) which replaces the four taxes that micro and small businesses were subject to before the reform. This reform creates more predictability and transparency in the calculation of the amount of tax due. Our survey data and qualitative surveys suggest that *entreprenants* started paying under the TPS regime in 2017 based on their 2016 turnover.

[9] CGA business associations were introduced in 2001 by a law decree that defined their legal status. This status acknowledges their independence from the administration and the fact that they should respect professional secrecy. Outside this pilot program, CGA support services are not provided for free and firms have to pay annually CFAF 120,000 (or USD 200). The government was interested in learning through this evaluation whether there was value in scaling up or facilitating more access to these services, so the services they provide can be considered as government services that are a potential benefit of formalizing.

Table 1
Descriptive statistics on study population.

	(1) Selected Sample		(2) All informal businesses		(3) Formal businesses	
	Mean [SD]	N	Mean [SD]	N	Mean [SD]	N
Firm owner characteristics						
Female owner	0.629 [0.483]	3596	0.632 [0.482]	7089	0.419 [0.494]	608
Age of the owner	39.5 [10.4]	3557	39.4 [11.2]	6955	43.6 [10.5]	589
Business owner has some formal education	0.712 [0.453]	3591	0.708 [0.455]	7081	0.884 [0.32]	606
Business owner has some secondary education	0.409 [0.492]	3596	0.38 [0.486]	7090	0.74 [0.439]	608
Firm characteristics						
Trade	0.55 [0.498]	3596	0.518 [0.5]	7090	0.584 [0.493]	608
Services	0.262 [0.44]	3596	0.277 [0.447]	7090	0.26 [0.439]	608
Craft	0.16 [0.366]	3596	0.17 [0.375]	7090	0.09 [0.287]	608
Firm area in m^2	18.7 [43.5]	3590	18.3 [50.8]	7078	52.5 [106.5]	606
Business connected to electricity network	0.619 [0.486]	3594	0.605 [0.489]	7085	0.898 [0.303]	608
Number of employee	1.175 [1.687]	3596	1.03 [1.603]	7090	2.961 [4.59]	608
The firm does any form of accounting	0.179 [0.383]	3594	0.156 [0.363]	7089	0.642 [0.48]	604
Amount of sales in an average week	60,561 [56,508]	3596	82,630 [298,695]	6639	542,167 [4,434,990]	528
Amount of profit in the last month	46,698 [46,578]	3596	46,434 [141,423]	6358	223,041 [726,068]	490
Firm owner owns a bank account	0.222 [0.416]	3514	0.194 [0.395]	6928	0.789 [0.409]	582
Firm pays taxes	0.547 [0.498]	3560	0.466 [0.499]	7005	0.836 [0.371]	597
Amount of taxes paid in the previous year	18,732 [27,265]	3482	16,649 [30,727]	6827	316,636 [2,591,065]	533
Thinks that it's difficult to know in advance how much taxes she will have to pay	0.744 [0.437]	2665	0.764 [0.424]	4921	0.725 [0.447]	520
Ratio tax/annual profit for all businesses	0.051 [0.089]	3482	0.072 [0.174]	6174	0.128 [0.221]	445
Ratio tax/annual profit for businesses paying taxes	0.094 [0.104]	1870	0.165 [0.286]	2859	0.169 [0.313]	372

Notes: sources: listing-baseline survey March 2014.

3.1.3. Package C – provision of tax preparation support and tax mediation services

The third package aimed to address the uncertainty and concerns that entrepreneurs had about taxes. Firms which formalized under the third group were offered help in preparing tax forms (including tax returns and supporting documentation). However, given that most businesses were subject to the TPU, and that the amount of TPU to be paid by a given business is determined by the tax administration without any form being filled by the business, this "offer" was not technically implemented. The advisors also left their contact information in case the *entreprenant* had any complaints about future tax payments and inspections, and offered mediation services in case of a dispute between the firm and the tax administration.

Appendix 1 provides more detail on how these three packages were implemented.

3.2. Sample selection and study population's characteristics

A listing survey was conducted in Benin's largest city of Cotonou in March and April 2014. This survey was designed to obtain a representative sample of all businesses operating in Cotonou, including Dantokpa market.[10] All businesses with fixed location, except international and nationwide companies and liberal professions, were targeted. Overall, 19,246 businesses were listed, of which a sample of 7945 were surveyed. We then dropped businesses which were already formal and firms which had very high or very low profits and sales to arrive at a sample of 3596 for the study, all of which have sales below the turnover eligibility thresholds for the *entreprenant*.[11] Appendix 2 provides details on the sampling protocols and this selection process. Appendix 3 describes how each key outcome was measured.

Table 1 provides descriptive statistics for businesses selected in the sample, and compares them to the overall set of informal businesses and to formal businesses. Businesses selected for the study have very similar characteristics to the whole population of informal businesses surveyed, and the overall study shows good external validity for the whole city of Cotonou. Formal businesses had on average 3 employees and monthly profits of around CFAF 223,000 (USD 374), while informal businesses

[10] The largest market in Cotonou and one of the largest in West Africa.

[11] Firms with annual turnover higher CFAF 4.8 million or lower than CFAF 144,000 were excluded. As a result, all firms in the study sample are well below the entreprenant turnover eligibility threshold (30 million for traders, 20 million for craftsmen and 10 million for services).

had 1 employees and a monthly profit of CFAF 46,000 (USD 77). 52% of businesses were involved in trade activities, 28% worked in services, and 17% were craftsmen. 63% of businesses sampled for the study were owned by women. This reflects the high share of female owners in Dantokpa market. Approximately 30% of business owners never went to school, and less than 20% of the businesses were keeping some type of accounting.

In comparison to similar studies in other contexts, the businesses in this study are smaller in size, reflecting the less developed nature of the country and small size of most informal businesses. In the study in Malawi (Campos et al., 2015), businesses had on average two employees and monthly profit of USD 214, while in the study in Sri Lanka (de Mel et al. (2013)), businesses had on average three employees and monthly profit of USD 300.

3.3. Experimental design

The 3596 informal businesses[12] were randomly allocated into three treatment groups and one control group. The first group of informal businesses received package A of incentives, the second group packages A and B of incentives, and the third group packages A, B and C.

The randomization was done in the office using STATA and the following methodology was used for stratification:

(1) 16 strata were created using the following variables: business owner gender, business operating in Dantokpa market, trader, and business owns a bank account.
(2) Inside each stratum a *Z*-score was created as the average of standardized profits, turnover and number of employees. Based on this Z-score, triplets of businesses were created and inside each triplet, businesses were randomly allocated to 3 groups, each of 1200 firms.
(3) The 1200 businesses in one group were then randomly allocated further into a first treatment group with 301 businesses, and second treatment group with 899 businesses.

As a result, 301 businesses were allocated to receive package A (treatment group 1), 899 to receive packages A and B (treatment group 2), 1199 to receive packages A, B, and C (treatment group 3), and 1197 to the control group. Fig. A2 describes the f chart of the interventions. Table A2 shows the groups are balanced in terms of baseline characteristics across the different groups.

3.4. Data

Two main sources of data are used for this study: administrative data on formalization and program implementation and in-person quantitative surveys with business owners. In addition, we supplement this with qualitative data from study participants and implementing agencies.[13]

Our main measure of formalization is based on monthly administrative data on business registration provided by the GUFE. This database includes the complete list of all newly registered businesses for all legal statuses. Since most businesses in the control group would not have been aware of the new *entreprenant* status, this measure will capture any alternative legal status they registered under. Appendix 4 describes the matching process used to identify whether firms in the GUFE database came from our sample.

Other main outcomes on business performances (profits and turnover) and intermediate outcomes like business knowledge and practices, taxes and banking were measured through in-person interviews with business owners. The baseline survey of the selected sample of businesses was conducted in March–April 2014 prior to program implementation. Two follow-up surveys were conducted in April–June 2015, and in May–June 2016. Attrition rates at first and second follow-up surveys were 11.8% and 15.9 respectively and were not correlated with treatment status (Table A3). The post-attrition sample remains largely balanced in terms of baseline observables (Table A4).[14] Two years after the baseline survey, 8.6% of the businesses had closed their operations, and business closure was also not correlated with treatment status.

4. Program implementation and take-up

Table 2 f key program implementation information, with further details provided in Appendix 1. Panel A uses the administrative data from the CGA. Between April 2014 and January 2015, 2344 of the scheduled 2399 “first visits” (98%) were completed by CGA. First visits were considered as not completed successfully when CGA advisers were not able to locate the business. All businesses who received a first visit in treatment groups 2 and 3 were offered a second visit by CGA. Only 932 of these second visits were completed with success (44% of total). According to our qualitative surveys and focus groups with the CGA, the main reasons for this relatively low take-up rate were that many businesses were not interested by the second visit, or did not have time to receive it. This finding is consistent with McKenzie and Woodruff (2014) who find an average attendance rate of only 65% for business training programs in developing countries. During the two years following the program launch, 302 businesses registered with the CGA (13% of the total in treatment group 2 and 15% of the total in treatment group 3), and 272 businesses participated in a group training session at CGA (12% of the total in treatment group 2 and 14% of the total in treatment group 3). Businesses had to first register for the *entreprenant* status with GUFE in order to be eligible to register at the CGA, and conditional on this registration, the percentage of eligible businesses that did register with CGA and obtain training is sizeable: 83% of the businesses in groups 2 and 3 that formalized (362 businesses in total) decided to register with the CGA, and 75% decided to obtain trainings. This suggests that a large majority of businesses that formalized in group 2 and 3 valued the counseling and training services provided by the CGA. After two years, 131 businesses in groups 2 and 3 opened an *entreprenant* bank account at the partner banks (6.2% of total).[15]

Panel B of Table 2 shows implementation information taken from our follow-up survey. It confirms that registration was much cheaper and faster under this new status. The median firm in the treatment group took 3 days to formalize, and more than 80% declared that they did not pay anything in the process (those who paid something in the treatment groups formalized with a different status than the *entreprenant* status). Qualitative work conducted a few days or weeks after the businesses had received a visit from the CGA suggests that the program understanding was relatively good. However, data from our endline survey suggest that one and a half to two years later, most businesses had forgotten about the program. Only 36% of businesses in treatment groups 2 and 3, and 32% of those in group 1, remembered the *entreprenant* program. Moreover, only 23% in groups 2 and 3, and 22% in group 1, were able to describe correctly what it is. In the control group, only 13% of the businesses

[12] The sample was initially composed of 3600 businesses, but 4 businesses were in fact duplicates of other businesses in the sample and were dropped from the sample.

[13] 73 semi-structured qualitative interviews were conducted with program participants at different stage of the program (including 36 interviews with formal business owners conducted in June 2017 to understand the long-term impact on tax), a qualitative surveyor was also regularly sent with the CGA advisors to assess if the study design was respected (29 surveys). In addition, 61 qualitative interviews were conducted with business owners not selected for the program to monitor potential externalities of the program. Finally, focus groups were conducted with the main implementing agencies (CGA, GUFE and both commercial banks).

[14] The one exception is that group 1 firms were paying lower taxes at baseline. Our Ancova estimation controls for this when examining the impact of formalization on tax revenues.

[15] Bank data did not include sufficient information besides names that could be used for the matching. As a result, matching between study data and bank data was not perfect and only 70% of the *entreprenant* accounts were found in the study data. Therefore, 6.2% represents a lower bound of the number of *entreprenant* bank accounts opened by study participants.

Table 2
Program implementation.

	(1)	(2)	(3)	(4)	(5)	(6)
	Mean [SD] in Control Group	Difference between […] and Control group			N	*P*-values joint tests G1 = G2 = G3 = 0
		Group 1	Group 2	Group 3		
Panel A: Administrative data from CGAs						
Step 1: First visit done successfully	0	0.991***	0.973***	0.976***	3596	0.000***
	[0]	(0.009)	(0.006)	(0.005)		
Step 2: Second visit done successfully	0	− 0.008	0.415***	0.466***	3596	0.000***
	[0]	(0.027)	(0.017)	(0.015)		
Step 3: Business is formal according to the CGA$^{\beta}$	0	0.002	0.146***	0.171***	3596	0.000***
	[0]	(0.02)	(0.013)	(0.011)		
Step 4: Additional services:						
Business registered to CGAs	0	0.009	0.129***	0.154***	3596	0.000***
	[0]	(0.02)	(0.012)	(0.011)		
Business attended to at least one group training at CGAs	0	0.006	0.113***	0.141***	3596	0.000***
	[0]	(0.019)	(0.012)	(0.01)		
Panel B: Endline survey data						
Formalization process: (only formal businesses)						
Number of days it took to formalize$^{\eta}$	22.9	− 14.6	− 21.6**	− 15.6**	329	0.11
	[27.3]	(11.4)	(8.6)	(7.5)		
Amount paid for formalization	66,931	− 73,289***	− 57,145***	− 56,552***	332	0.001***
	[57,036]	(19,449)	(15,343)	(13,302)		
Share of business who paid something to formalize	1	− 0.788***	− 0.693***	− 0.773***	332	0.001***
	[0]	(0.246)	(0.194)	(0.168)		
Program knowledge:						
Ever heard of the Entreprenant status	0.131	0.187***	0.207***	0.252***	2582	0.000***
	[0.338]	(0.041)	(0.026)	(0.023)		
Was able to explain what is the Entreprenant status	0.055	0.174***	0.148***	0.198***	2582	0.000***
	[0.228]	(0.034)	(0.022)	(0.02)		

Notes: Column 1: Standard deviations presented in brackets. Columns 2–4: coefficients and standard errors (in parentheses) from an OLS regression of the firm owner/firm characteristic on treatment dummies, controlling for strata dummies (dummies for each triplet). **β**: For the control group and group 1, CGA did not have any information as they are not following up with these businesses. **η**: Top-coded at the 99th percentile. ***, **, * indicate statistical significance at 1, 5 and 10%.

declared that they had heard about the *entreprenant* program, and 5% were able to describe it correctly. It suggests that only marginal externalities were generated by the program on those not directly targeted. This is consistent with qualitative interviews conducted with informal businesses not targeted by the program.[16]

In practice, tax mediation services were implemented by CGA for all businesses registered with the CGA (even for those in treatment group 2). Some *entreprenants* reported to the CGA that the tax administration requested tax payments that were higher than expected, or that the tax exemption offered during the first year after registration to the CGA was not implemented. The CGA advisors helped them to solve these issues as they arose. The CGA reported that 29 (2.4%) mediation cases happened during the two years of program implementation and that all these cases were solved in favor of the *entreprenant* (i.e. the tax exemption was respected by the tax administration). Firms in group 3 were the main consumers of these services comprising 23 out of the 29 cases of tax mediation (and the remaining 6 in group 2). The main difference between group 2 and group 3 is that the salience of the tax mediation services was increased for firms in group 3 by providing information on the existence of this service before firms had to decide to become formal or not. In comparison, firms in group 2 were only informed about the general support they could receive from the CGA and learned about the mediation services only if they first become formal and then had an issue with the tax authority and informed the CGA.

5. Theory and empirical strategy

We begin by sketching a simple organizing framework for how we should think of firms deciding on whether or not to formalize, and how the different interventions may change this decision. This is followed by a description of our empirical strategy.

5.1. Theory: how might the entreprenant program impact formalization and business performance?

A firm owner will formalize if the expected discounted value of the net benefits from doing so exceeds the upfront costs. That is, if:

$$\sum_{t=1}^{T} \beta\delta^{t} EU\left(\pi_{F,t} - \pi_{I,t}\right) > C_{Money} + C_{Time} + C_{Information} + \lambda_{liquidity} \quad (1)$$

where $\pi_{F,t}$ denotes the firm's profits if it is formally registered at time t, and $\pi_{I,t}$ denotes the firm's profits if it is not formally registered at time t. C_{Money}, C_{Time}, and $C_{Information}$ denote the monetary, time, and information costs from registering. The shadow value of capital for liquidity-constrained firms is given by $\lambda_{liquidity}$.

In this framework, firms decide whether or not to become formal after weighing these costs and benefits. The basic introduction of the *entreprenant* status then influences this decision by lowering the monetary costs of registering since the registration itself becomes free (which results in both a direct reduction in C_{Money}, as well as in lowering the liquidity costs $\lambda_{liquidity}$) and by lowering the tax obligations associated with formality, especially in the first three years, therefore boosting $\pi_{F,t}$. This should induce formalization by informal firms who were at the margin of formalizing. Our three interventions can then be viewed as changing additional aspects of this decision. Package A further lowers the time and information costs of registering, package B aims to further increase the profitability benefit ($\pi_{F,t} - \pi_{I,t}$) from formalizing by linking it to training and banking services, and package C aims to increase the expected returns from formalizing by reducing uncertainty about tax payments and also lowering the chance of being overcharged taxes relative to informal status.

[16] None of the 61 business owners not in the study population that were interviewed some weeks and months after the program started had ever heard of the *entreprenant* status or of any program related formalization.

This framework also offers three predictions which we can test within our experiment. The first is that not all informal firms will formalize following the reform, only those which were close to the margin and for which these changes tip the balance. In particular, while the registration cost is zero, firms which lack personal identification such as a birth certificate or legal title may still face high monetary and time costs of obtaining the documentation necessary for registering, and so not register.

Second, the framework suggests that those who formalize will have been much closer to the margin of formalizing beforehand than those who do not. We test this through examining heterogeneity of response with respect to several pre-specified characteristics of the owners and businesses which are likely to proxy for closeness to the formalization margin. The first is gender. If women are more likely to be running small businesses as a way of working while also taking care of family responsibilities, they may have fewer plans to grow their business to the size where many of the benefits of being formal attain. This would suggest they are further from the margin of formalizing and will have lower treatment effects. Second, some businesses already have access to other forms of registration that offer partial benefits and for which the added benefits of the *entreprenant* status will be lower. This includes two groups – those in the Dankopta market who are registered with the public company in charge of all markets ("*Société de Gestion des Marchés Autonomes,*" or SOGEMA), and traders who have access to a "trader card". Third, we use our baseline data on formal and informal firms together with the species classification technique of de Mel et al. (2010) to identify which informal firms look similar to the formal "species", and predict that they will be closer to this formalization margin (Appendix Table TA5 shows this estimation). Fourth, we consider directly size and owner education, believing smaller, less productive firms are likely to be further from the margin where formalization can benefit them, so will respond less. Finally, if avoiding problems with tax inspections is a benefit of formalizing, we predict that firms that are less frequently inspected will see less benefit from formalizing.

5.2. Estimation

To analyze the impact of the program on formalization rates, our estimation is at the firm level and involves the following specification for firm i:

$$Y_{i,t=1} = \beta_0 + \beta_1 T1_i + \beta_2 T2_i + \beta_3 T3_i + X'_{k,i} + \varepsilon_{i,t=1} \quad (2)$$

where $Y_{i,\ t\ =\ 1}$ is the outcome variable (formalization), $T1_i$ is an indicator for being assigned to treatment group 1, $T2_i$ an indicator for being assigned to treatment group 2 and $T3_i$ an indicator for being assigned to treatment group 3. X_k is a vector of strata dummy variables (one dummy variable for each triplet of businesses) (Bruhn and McKenzie, 2009) and $\varepsilon_{i,\ t\ =\ 1}$ is the error term. β_1, β_2 and β_3 provide the intent-to-treat effect of being assigned to treatment groups 1, 2 and 3, respectively. This is the effect of being a business assigned to treatment 1, 2 or 3 relative to being a business in the control group.

To estimate the intent-to-treat impacts of the interventions on business performances and practices, we pool data from the two follow-up surveys to run panel regressions with the following specifications:

$$Y_{i,t} = a + b_1(T1_i{}^*F1) + b_2(T2_i{}^*F1) + b_3(T3_i{}^*F1) + c_1(T1_i{}^*F2) + c_2(T2_i{}^*F2) + c_3(T3_i{}^*F2) + \pi Y_{i,t=0} + \gamma M_{i,t=0} + X'_{k,i} + \varepsilon_{i,t} \quad (3)$$

where $Y_{i,\ t}$ is the outcome variable measured post-treatment for business i in year t (t = 1,2), $Y_{i,\ t\ =\ 0}$ is its baseline value[17] and $M_{i,\ t\ =\ 0}$ a dummy variable indicating whether or not this baseline value is missing, $(Tj_i{}^*Fk)$ is the interaction of being assigned to treatment group j (j = 1, 2, 3) with a dummy for the follow-up survey k (k = 1, 2). X_k is a vector of strata dummy variables and $\varepsilon_{i,\ t}$ is the error term clustered at the business level. b_1, b_2 and b_3 give the intent-to-treat effect at the first follow-up survey of being assigned to treatment groups 1, 2 and 3 respectively. Similarly, c_1, c_2 and c_3 provide the intent-to-treat effect at the second follow-up survey of being assigned to treatment groups 1, 2 and 3 respectively. We then test whether impacts are constant over time (e.g. $b_1 = c_1$), whether they are constant across treatments ($b_1 = b_2 = b_3$), and whether all program impacts are jointly zero ($b_1 = b_2 = b_3 = c_1 = c_2 = c_3 = 0$).

In order to estimate the effect of formalization on business performances and behaviors, we use panel regressions with the following specification:

$$Y_{i,t} = \alpha_0 + \alpha_1 \widehat{FORMAL}_i + \pi Y_{i,t=0} + \gamma M_{i,t=0} + X'_{k,i} + \varepsilon_{i,t} \quad (4)$$

where $\widehat{FORMAL}$ is an indicator for being formal, which is instrumented respectively by $(T1_i{}^*F1)$, $(T2_i{}^*F1)$, $(T3_i{}^*F1)$, $(T1_i{}^*F2)$, $(T2_i{}^*F2)$ and $(T3_i{}^*F2)$.

Heterogeneous treatment effects are estimated by interacting treatment status and the lagged dependent variable in (2), (3) and (4) with the variable of interest Z.

6. Impact of our interventions on formalization and of formalization on firms

We first examine whether these interventions were successful in inducing firms to formalize, and then measure the impact of formalizing on firm outcomes.

6.1. Overall impact on formalization

As discussed in Section 3.4, our main measure of formalization is registration of the business with the chamber of commerce at GUFE (i.e. the registration was found in GUFE data). We think that this definition of formalization is preferable over others that use follow-up survey data because administrative data included information on the whole study population, whereas survey data only have information on those who were surveyed. Moreover, survey data are subject to declaration bias. However, the correlation between survey data and administrative data was high (0.7), and we show similar results using the survey data as well.

Table 3 presents the results on formalization two years after the program started. The impact of the program on the formalization rate was 9.6 percentage points in group 1, 13%age points in group 2, and 16.3 percentage points in group 3. All these effects are statistically significant at the 1% level. The effects in treatment groups 2 and 3 are higher than in treatment group 1 (although the difference is only statistically significant for group 3), and the effect in treatment group 3 is significantly higher than in group 2. Both sets of additional incentives included in package B (counseling, trainings and bank services) and in package C (tax mediation) seemed to be valued by informal businesses as incentives to register. The formalization rate in the control group was only 2.3 percent. Therefore, in the absence of the program, only a few businesses would have formalized. The remaining columns of Table 3 show similar results using alternative measures of formalization that use our survey data, or which combine the survey and administrative data.

Fig. 1 presents trajectories of impacts in time with formalization rates by group in the months following the first visit received by the CGA.[18] It shows that most businesses that choose to formalize because of the program did it relatively quickly after the first visit. For all treatment groups, most of the impact arises during the first month following the first visit. This is also the case for groups 2 and 3, where

[17] In cases where an outcome variable was not collected at baseline, these same specifications are estimated without the control for baseline outcome.

[18] For the control group, the date of the first visit was set at the mode of the first visit date in the other groups (i.e. three months).

Table 3
Impact on Formalization.

	(1)	(2)	(3)	(4)	(5)
Dependent variables	Admin. Data (GUFE)	Declared that the business is formal	Showed a document	Declared formality or found in admin. data	Showed a document or found in admin. data
Group 1	0.096***	0.066**	0.069***	0.107***	0.130***
	(0.023)	(0.026)	(0.024)	(0.029)	(0.029)
Group 2	0.130***	0.108***	0.093***	0.143***	0.146***
	(0.014)	(0.017)	(0.015)	(0.018)	(0.018)
Group 3	0.163***	0.128***	0.120***	0.176***	0.181***
	(0.013)	(0.015)	(0.013)	(0.016)	(0.016)
Observations	3596	3061	2929	3061	2929
R-squared	0.392	0.436	0.453	0.446	0.464
Adjusted R-squared	0.086	0.072	0.075	0.090	0.094
Mean dependent variable in control	0.023	0.052	0.026	0.059	0.040
Pvalue Test Group1 = Group2	0.175	0.153	0.353	0.257	0.602
Pvalue Test Group1 = Group3	0.003	0.017	0.028	0.015	0.075
Pvalue Test Group2 = Group3	0.022	0.211	0.066	0.068	0.057
Pvalue Test Group1 = Group2 = Group3	0.002	0.037	0.026	0.016	0.049
Pvalue Test Group1 = Group2 = Group3 = 0	0.000	0.000	0.000	0.000	0.000

Note: Administrative data from GUFE and survey data May 2016. OLS regression of the outcome variable on treatment dummies, controlling for strata dummies (dummies for each triplet). ***, **, * indicate statistical significance at 1, 5 and 10%.

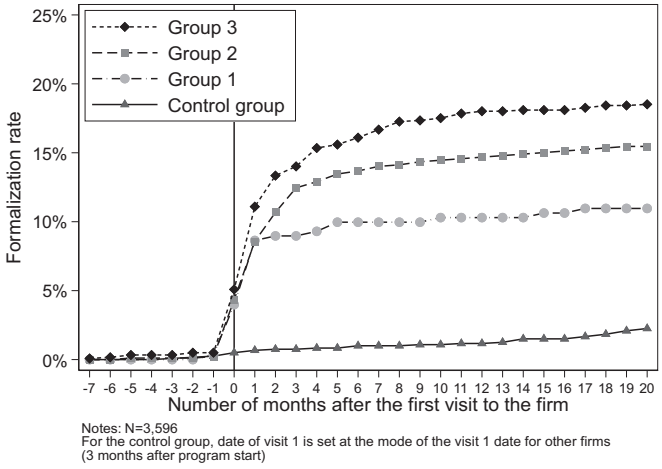

Fig. 1. Formalization rates over time.

59% of firms those firms formalizing within a year did so in the first month after the first visit, and 37% in the month after the second visit.

6.2. A supplementary information experiment

We find that almost 10% of informal firms registered in treatment group 1, even without being offered the additional benefits that groups 2 and 3 were offered. This is a higher rate than obtained in "information only" interventions such as de Mel et al. (2013) and Andrade et al. (2016) in which there was no significant impact of research assistants and survey staff delivering informational leaflets. This raises the question as to whether the impact seen reflects a purely informational effect (as firms learn about the new status and that registration is now free of charge and easy), or also reflects the impact of having highly trained and qualified CGA advisors explain the program in-person, attempt to convince business owners of the benefits of formalizing, and provide assistance in completing the process as needed.

To answer this question, we designed an additional experiment that was implemented during the two-year follow-up survey. Fifty percent of the control group (600 firms) was randomly selected[19] to receive two program leaflets just after the completion of the survey (so we are sure that survey answers were not affected by the "leaflets intervention"). The two program leaflets were identical to the leaflets given to group 1 firms when the program started and were introduced by the surveyor with a short script mentioning that the *entreprenant* status is now available for free and in one day to all businesses, and explaining the location of the one-stop shop for business registration. This small intervention tests whether surveyors only providing information on the new status but not in charge of convincing the business of the benefits of formalizing or assisting them with forms can have similar impact on formalization rate.

Table A6 presents the results of this "leaflets intervention". It shows that the leaflets intervention had no significant impact on formalization decision. It means that simply delivering information on the new status was not sufficient to increase formalization, and suggests that the impact measured for group 1 is also due to the fact that the information was provided by trained and qualified staff who took time to convince business owners to formalize. In the Appendix 1, we provide more details on CGA advisors characteristics and qualifications that could explain this result.

6.3. Impact on intermediate outcomes for firms

Table 4 examines whether formalizing is leading firms to be more likely to access banks, improve accounting and other business practices, be less harassed for taxes, or access new customers. It does this through estimation of Eqs. (3) and (4) using our two rounds of follow-up surveys. The top of the table presents the yearly intent-to-treat impacts of the different interventions, while the bottom of the table presents the impact of formalization for those who respond to treatment.

Despite the facilitation of access to bank accounts in treatments 2 and 3, and the creation by banks of a special account for *entreprenants*, column 1 shows no significant impact of formalizing on whether the business has a bank account. 25% of the control group report having a bank account they use for the business in the two year follow-up. However, only 1.1% have an account in the business name. Only 1.9% of firms in groups 2 and 3 report having an account in the business name. So most bank account use continues to be accounts opened up in the owner's personal name that are then used for the business.[20]

[19] With stratification on the following variables: gender, operates in Dantokpa market and trader.

[20] Note that the special *entreprenant* bank accounts offered by banks are also issued in the owner's name, rather than in the name of the business.

Table 4
Impact on intermediate outcomes.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Has a bank account[B]	Loan contracted in 2014-16[B] (bank or MFI)	Attended business training in the past year	The firm does any form of accounting[B]	Share of business practices implemented (26 questions)	Index of tax harassment[λ]	Has sold goods to the public administration or to a large company (last 3 months)	In the last month a client asked for a receipt[B]
1st stage: impact of treatment allocation:								
Group1 X year1 (b1)	0.028	−0.030	0.008	−0.099***	−0.046***	−0.057	0.014	−0.030
	(0.031)	(0.024)	(0.018)	(0.026)	(0.012)	(0.040)	(0.023)	(0.029)
Group2 X year1 (b2)	−0.008	−0.018	0.081***	0.007	−0.004	−0.053**	0.008	−0.027
	(0.018)	(0.014)	(0.014)	(0.017)	(0.008)	(0.024)	(0.014)	(0.018)
Group3 X year1 (b3)	0.017	−0.009	0.112***	0.023	0.004	−0.030	0.026**	0.004
	(0.016)	(0.013)	(0.012)	(0.015)	(0.008)	(0.022)	(0.013)	(0.016)
Group1 X year2 (c1)	0.054*	0.006	0.023	−0.052*	−0.018	−0.067*	−0.002	−0.026
	(0.031)	(0.025)	(0.019)	(0.028)	(0.015)	(0.039)	(0.022)	(0.031)
Group2 X year2 (c2)	0.011	0.051***	0.113***	0.020	−0.005	−0.031	−0.006	−0.017
	(0.019)	(0.016)	(0.015)	(0.018)	(0.009)	(0.025)	(0.013)	(0.019)
Group3 X year2 (c3)	0.003	0.015	0.145***	0.047***	0.007	−0.066***	0.008	−0.014
	(0.016)	(0.014)	(0.013)	(0.016)	(0.008)	(0.021)	(0.013)	(0.016)
Observations	6211	6215	5949	6166	6169	5217	5361	5394
Mean Dep. var. in control year1	0.249	0.13	0.033	0.198	0.262	0.008	0.093	0.234
Mean Dep. var. in control year2	0.257	0.173	0.056	0.234	0.273	0.000	0.083	0.25
Adjusted R-squared	0.147	0.191	0.140	0.155	0.099	0.133	0.089	0.252
Test for impact constant…								
…accross treatments, year1 (b1 = b2 = b3)	0.378	0.610	0.000	0.000	0.000	0.604	0.515	0.191
…accross treatments, year 2 (c1 = c2 = c3)	0.285	0.085	0.000	0.003	0.178	0.398	0.606	0.923
Coef. are jointly 0 (b1 = b2 = b3 = c1 = c2 = c3 = 0)	0.561	0.000	0.000	0.000	0.003	0.037	0.388	0.538
(IV) impact of formalization:								
Formalization instrumented by 1st stage treatment variables	0.053	0.031	0.669***	0.152**	0.009	−0.255***	0.068	−0.059
	(0.074)	(0.061)	(0.048)	(0.066)	(0.034)	(0.091)	(0.050)	(0.067)
P-values	0.469	0.613	0.000	0.022	0.782	0.005	0.172	0.377
Sharpened two-stage q-values[μ]	0.755	1	0.001	0.071	1	0.023	0.402	0.755

Note: Panel data from midline and endline surveys in 2015 and 2016. All regressions are controlling for strata dummies (dummies for each triplet). Standard errors (in parentheses) are clustered at the firm level. α: truncated at the 99th percentile. B: controlling for baseline value. μ: Sharpened two-stage q-values as described in Anderson (2008) using *P*-values in Tables 6 and 7. λ: summary index of the following questions: "Was asked to pay a bribe by a tax inspector in the last 6 months"; "Received a sexual suggestion or other inappropriate request from a tax inspector in the last 6 months"; "Was threatened with business closure by a tax inspector in the last 6 months"; "Received more than 1 visit by a tax inspector in the last 6 months"; "Received at least one visit by a labour or hygiena inspector "; "Feel that he/she paid more taxes than he/she should have paid according to the law"; "Thinks that tax officials override their duty and ask firms to pay too much taxes". ***, **, * indicate statistical significance at 1, 5 and 10%.

Treatment group 2 is 5%age points more likely to have received a loan in the second year, but there are no other significant impacts on loan usage. As a result, the overall instrumented impact of formalizing on loan receipt is positive, but not statistically significant. This does not stem from an abundance of alternative financing options which limit demand: 77.5 percent of firms in groups 2 and 3 say they would be interested in a loan from a commercial bank like Orabank or BOA, yet only 0.3% currently had a loan from such a bank. It therefore does not seem that the banks are using the *entreprenant* accounts as an entry point to lending. The main formal financing that does exist comes from microfinance institutions for which the *entreprenant* status is less likely to matter.

Columns 3 and 4 do show significant impacts of formalizing on the likelihood of attending business training in the past year (67 percentage points), with this impact coming from treatments 2 and 3 who were offered this service. Formalized firms are more likely to be doing any form of accounting (15 percentage points), but this did not translate into improved overall business practices.[21] One possible explanation is that there was some crowding out effects, and better accounting practices were offset by worst marketing and stock control practices.

Formalization also reduced significantly perceived tax harassment. This result is interesting as it is also valid for businesses in group 1 and 2. It means that it was not due mainly to the tax mediation performed by the CGA but instead that all newly formalized businesses faced less tax harassment. A likely reason for this is that the tax authorities substitute in-person visits with sending tax notices to formal firms, and so these formalized firms get visited less in the first year, and then the tax exemption means they also have less tax to pay in the second year (since taxes are paid on the previous year's turnover). In contrast, we see no significant impacts on the likelihood of selling to public institutions or to clients requesting receipts. We examine further the impact on other potential channels such as advertising, business presentation, investment, the number of customers, innovation, trust in institutions, and subjective standards of living, in the appendix Table A7. Formalization does not seem to be changing significantly these other intermediate outcomes. There are a few coefficients that are significant, in particular on the total value of inventories and raw materials, but these do not survive correction for multiple hypothesis testing (Anderson, 2008 and Benjamini et al., 2006). The lack of impact on trust in institutions suggests that formalization has not yet led to a change in the culture of legality.

6.4. Impact on firm performance

Taken together, the evidence in the previous section shows only limited impacts of formalizing on intermediate channels that might affect firm growth and profitability. We turn to examining these

[21] Measured using the same 26 questions on business practices as in McKenzie and Woodruff (2017).

Table 5
Impact on Firm Performances.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total sales in the last day$^{\alpha\beta}$ (CFAF)	Total sales in the last week$^{\alpha\beta}$ (CFAF)	Last month profit$^{\alpha\beta}$ (CFAF)	Summary index of sales and profit$^{\alpha\beta}$	Total number of employees$^{\alpha}$	Any tax paid for business activity in 2015^{B}	Sum of all taxes paid in 2015^{B} (CFAF)
1st stage: impact of treatment allocation:							
Group1 X year1 (b1)	2228	12,496	− 8053*	0.008	− 0.22**	0.013	− 19
	(2754)	(14,029)	(4798)	(0.057)	(0.10)	(0.030)	(1747)
Group2 X year1 (b2)	540	− 7376	− 3016	− 0.052*	− 0.06	0.048***	− 51
	(1451)	(7312)	(3021)	(0.031)	(0.09)	(0.018)	(1091)
Group3 X year1 (b3)	− 114	− 1224	− 3106	− 0.010	− 0.11	0.005	− 2041**
	(1384)	(6399)	(2858)	(0.030)	(0.08)	(0.016)	(949)
Group1 X year2 (c1)	602	12,192	470	0.041	− 0.09	− 0.066**	− 3308**
	(2930)	(14,243)	(5742)	(0.060)	(0.10)	(0.030)	(1678)
Group2 X year2 (c2)	1246	− 5235	− 874	− 0.007	0.05	− 0.055***	− 3413***
	(1832)	(8010)	(3377)	(0.036)	(0.07)	(0.018)	(1047)
Group3 X year2 (c3)	1847	3998	242	0.026	0.08	− 0.067***	− 5967***
	(1669)	(7911)	(3233)	(0.035)	(0.07)	(0.017)	(869)
Observations	5918	6043	5874	5926	6206	6163	6096
Mean Dep. var. in control year1	17,373	99,984	53,313	− 0.02	1.14	0.507	18,856
Mean Dep. var. in control year2	17,882	106,803	54,536	− 0.003	1.23	0.413	14,221
Adjusted R-squared	0.227	0.260	0.159	0.254	0.350	0.356	0.257
Test for impact constant…							
…accross treatments, year1 (b1 = b2 = b3)	0.684	0.401	0.593	0.406	0.457	0.085	0.168
…accross treatments, year 2 (c1 = c2 = c3)	0.908	0.449	0.957	0.670	0.303	0.826	0.024
Coef. are jointly 0 (b1 = b2 = b3 = c1 = c2 = c3 = 0)	0.873	0.796	0.438	0.447	0.111	0.000	0.000
(IV) impact of Formalization:							
Formalization instrumented by 1st stage treatment variables	4718	− 1877	− 10,235	− 0.008	− 0.12	− 0.127*	− 18,789***
	(6511)	(31,925)	(13,388)	(0.143)	(0.30)	(0.075)	(4463)
P-values	0.469	0.953	0.445	0.957	0.687	0.091	0.000
Sharpened two-stage q-values$^{\mu}$	0.755	1	0.755	1	1	0.251	0.001

Note: Panel data from midline and endline surveys in 2015 and 2016. All regressions are controlling for strata dummies (dummies for each triplet). Standard errors (in parentheses) are clustered at the firm level. α: truncated at the 99th percentile. B: controlling for baseline value. μ: Sharpened two-stage q-values as described in Anderson (2008) using *P*-values in Tables 6 and 7. ***, **, * indicate statistical significance at 1, 5 and 10%.

outcomes directly in Table 5. One important caveat to note here is that the limited impact the program had on formalization (even though this is large relative to the literature) lowers our power to find impacts of formalizing.

We do not find any significant impact of formalizing on any of our main measures of business performance: the amount of sales, level of profits, number of employees and a summary index of sales and profits. Standard errors are however quite large. This is particularly the case when we examine levels of profits or sales as an outcome, given the long tails in these variables. For example, a 95% confidence interval for the impact on profits is (CFAF -36,000, CFAF + 16,000), relative to a control mean of CFAF 54,000, so includes halving profits or up to a 30% gain in profits.

We therefore include other transforms of the data which are less sensitive to outliers, considering the inverse hyperbolic sine transformations of sales and profits and binary measures of profits and sales growth (Table A8), plotting the cumulative distribution functions of profits and sales in Fig. 2, and quantile regressions of the business profit effect in Fig. 3. These confirm a lack of impact on profits and sales across the distribution. Likewise, we see no significant impact on a summary standardized index of sales and profits, nor on employment.

However, formalization had a strong and significant negative impact on the likelihood of paying taxes, and on the amount of taxes paid. Newly formalized firms paid almost CFAF 19,000 (USD 32) less in taxes due to formalization. In practice, all newly formalized firms appear to have benefited from the tax exemption, not only those who were not paying any tax before they became formal as written in the law. One likely explanation for that is that about one year after the program started, the CGA had some discussion with the tax administration to clarify this aspect of the law. Because in practice it was very complicated to know if a firm was paying any tax before or not, the tax administration agreed to apply the tax exemption to all newly formalized firms. For this reason, this result is likely to hold only in the short term, with firms likely paying more taxes in the following years (qualitative work conducted in June 2017 with 36 newly formalized firms suggest that this is the case).

Should we expect this tax exemption to show up as higher profits in the short-term? There are two ways it could have an effect. The first is a direct effect, as one less business expense. The total reduction in taxes paid is equivalent to 2.9% of average monthly profits. Second, if we consider the tax reduction as a windfall cash grant for the business which they re-invest, then even at a monthly return to capital of 5% (c.f. De Mel et al., 2008), this would have a FCFA 950 (USD 2) impact on monthly profit, which is equivalent to only 1.7% of the control group profits. So the potential impact on profitability through the tax channel is of the order of 4.6%, which lies well within our confidence interval for the treatment effect and is too small to detect.

6.5. *Why don't more firms formalize?*

In the third treatment group, which combined all packages of incentives and in which the impact was the greatest, the formalization rate was 18.6% (16.3 percentage points more than in the control group). This impact is greater than for similar programs in other contexts (Bruhn and McKenzie, 2014) in which formalization is also linked to taxes. But it means that even though this type of program had a significant impact, the majority of the informal firms still remain informal.

Why do most firms remain informal? A first potential explanation is the presence of other legal barriers to formalizing. Data from our midline survey reveals that only 54% of informal business owners have

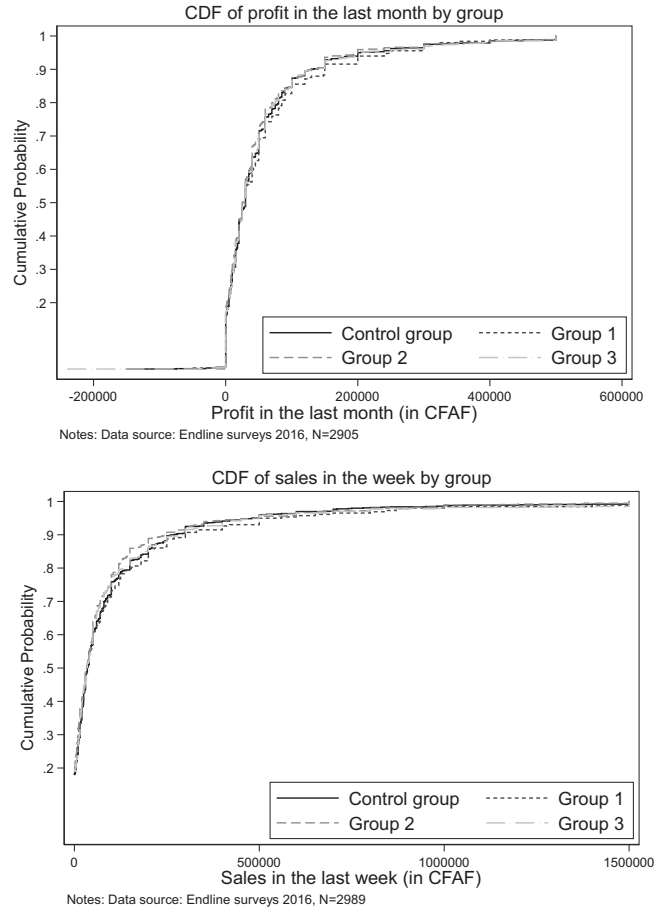

Fig. 2. Cumulative distributions of profits and sales at endline.

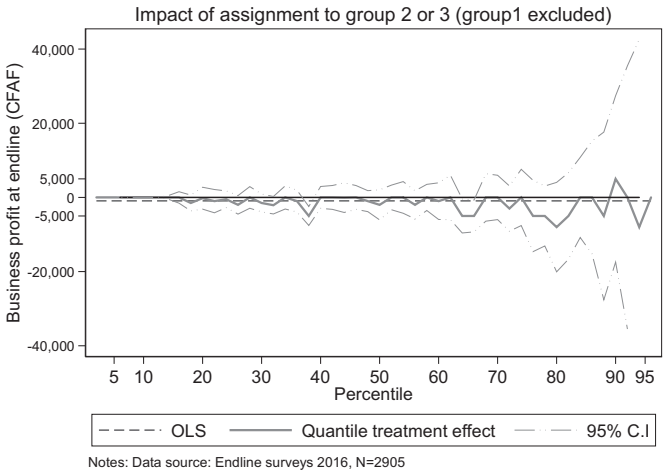

Fig. 3. Quantile regression on business profit.

the legal identification needed for formalization (either a passport or a Beninese ID card). In contrast, 85% have a birth certificate and 75% an electoral card, so amending the process to allow these alternative forms of identification to be used would alleviate this constraint for many firms. However, a lack of identification does not seem to be the binding constraint to formalizing for most informal firms: only 0.6% of the control group said this was one of the two main reasons for not formalizing (Table A9).

Our endline survey asked informal business owners the two main reasons why they were still informal (Table A9). The most common responses in the control group were that firms did not see any benefits from doing so (32%), which concurs with our empirical analysis of the limited effects of formalizing on firms; and that they do not want to have to pay more taxes (26%). The other main reason was that they viewed the process as too costly, complicated, or time-consuming (31%). These responses are similar among those who remain informal in the treatment groups, despite the visits by CGA advisors to explain the new simpler process of registration and the potential benefits of registering. It is consistent with the idea that many of these informal firms are so far from the formalization margin that they consider this information irrelevant – and indeed, as noted before, two years after program launch, only 20–25% of businesses in the treatment groups could even remember what the *entreprenant* program is.

7. The costs and benefits to government of formalizing these firms

The above analysis suggests that the first rationale for governments to attempt to bring firms into the formal sector – that it will benefit the firms – does not appear to be occurring in practice. Such a policy may still be warranted from a public finance viewpoint if it broadens the tax base and increases tax revenue. We therefore examine the costs of implementing these interventions, and the added revenue the government can expect from this.

7.1. The cost of inducing firms to formalize

Data on program costs during the two years of program implementation are presented in Table 6. Total program costs were high and the program as it was implemented for the 2399 firms in a treatment group costed around CFAF 370 million (USD 620,000). Out of this total, CFAF 50 million (USD 84,000) were used to made the *entreprenant* status available at the one-stop shop for business registration for any firm who wants to come along and do it, and CFAF 320 million (USD 537,000) to pay for the additional interventions to encourage take-up (in-person visits, business trainings, etc.). This corresponds to a total cost per business included in the program that ranged from CFAF 71000 (USD 119) for group 1 to CFAF 171000 (USD 288) for group 2, which was slightly more expensive than group 3.[22]

Using the program impact on formalization rates, we can then calculate the costs per formalization in each group. The costs per additional formalization were CFAF 737,000 (USD 1237) in group 1, CFAF 1.3 million (USD 2217) in group 2 and CFAF 1 million (USD 1678) in group 3. Even when only considering variable costs of the program, that is the costs that a government would face once all the initial investment will be amortized, the costs per formalization were also very high. For the first group, which shows the best ratio, the variable cost per formalization was CFAF 540,000 (USD 904), which represents more than 11 times the average of baseline monthly profits (CFAF 47,000 or USD 79) and 18 times baseline median monthly profits (CFAF 30,000 or USD 50).[23]

We can also benchmark these results with results from a program in Sri Lanka offering cash as an incentive to formalization. de Mel et al. (2013) found that directly paying firms the equivalent of one month of the median firm's profits leaded to registration of one-fifth of firms. This proportion increased to one-half when payments were increased to two months of the median firm's profits. The firms in their study were larger, and so may have been closer to the margin of formalizing to begin with. Nevertheless, this comparison suggests that directly paying

[22] Costs per firm included in the treatment were slightly higher for group 2 than for group 3 because each CGA advisor was allocated firms from a single treatment group only, which resulted in slightly more firms per advisor in group 3 than group 2 given the different sample sizes.

[23] These costs do, however, incorporate the fact that the experimental design involved some non-negligible tracking costs due to the fact that the CGA had to find and visit a sample of businesses selected by the research team and spread all over the city of Cotonou. Additional economies of scales could be attained if the CGA could target businesses located closer to one another.

Table 6
Cost effectiveness analysis.

	In CFAF			In USD		
	Group 1	Group 2	Group 3	Group 1	Group 2	Group 3
Program costs:						
Total Program costs	21,304,850	154,397,653	195,493,401	35,746	259,056	328,009
Costs by intervention						
One-stop-shop for formalization	6,325,293	18,975,879	25,301,172	10,613	31,839	42,452
Interventions to increase take up	14,979,557	135,421,774	170,192,229	25,133	227,218	285,557
Costs by types						
Total set up costs	5,728,222	36,001,489	45,733,290	9611	60,405	76,734
Total variable costs	15,576,628	118,396,164	149,760,111	26,135	198,651	251,275
Cost per formalization						
Number of businesses	301	899	1199	301	899	1199
Program impact						
Impact on formalization (in pp)	9.6%	13.0%	16.3%	9.6%	13.0%	16.3%
Number of firms which formalized because of the program	29	117	195	29	117	195
Total costs…						
per business included in treatment	70,780	171,744	163,047	119	288	274
per formalization	737,294	1,321,106	1000,289	1237	2217	1678
Variable costs…						
per business included in treatment	51,750	131,698	124,904	87	221	210
per formalization	539,058	1,013,059	766,283	904	1700	1286
Cost effectiveness						
Expected increase in tax revenue (see Appendix 5 for more details)	27,185	27,185	27,185	46	46	46
Number of years before tax revenue are greater than cost per formalization[α]	19	35	29	19	35	29

Table 7
Heterogeneous impact on formalization by baseline characteristics.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variables:	Formalized: GUFE data							
	Female owner	Operates in Dantokpa market	Trader	Doesn't look like formal species	Index of business size below median	Does not have secondary education	One visit or fewer from tax inspectors	Female owner (sample restricted[α])
Variable for heterogeneous analysis:								
Impact in group […] for heterogeneous variable = 0								
Group1	0.134***	0.105***	0.144***	0.125**	0.085***	0.140***	0.124**	0.168***
	(0.035)	(0.026)	(0.032)	(0.055)	(0.032)	(0.036)	(0.054)	(0.045)
Group2	0.192***	0.151***	0.178***	0.224***	0.139***	0.175***	0.176***	0.232***
	(0.024)	(0.016)	(0.021)	(0.035)	(0.020)	(0.024)	(0.036)	(0.031)
Group3	0.206***	0.179***	0.195***	0.231***	0.151***	0.218***	0.214***	0.216***
	(0.021)	(0.014)	(0.019)	(0.032)	(0.018)	(0.022)	(0.033)	(0.027)
Additional impact in group […] for heterogeneous variable = 1								
Group1 × Heterogenous variable (int1)	−0.063	−0.048	−0.089**	−0.036	0.022	−0.074	−0.035	−0.068
	(0.046)	(0.054)	(0.045)	(0.061)	(0.046)	(0.049)	(0.061)	(0.072)
Group2 × Heterogenous variable (int2)	−0.096***	−0.100***	−0.086***	−0.115***	−0.017	−0.073**	−0.056	−0.125***
	(0.029)	(0.034)	(0.028)	(0.039)	(0.029)	(0.033)	(0.041)	(0.047)
Group3 × Heterogenous variable (int3)	−0.070***	−0.080***	−0.058**	−0.083**	0.022	−0.096***	−0.064*	−0.052
	(0.026)	(0.031)	(0.025)	(0.036)	(0.026)	(0.031)	(0.038)	(0.042)
Observations	3596	3596	3596	3596	3596	3596	3596	1619
R-squared	0.395	0.395	0.396	0.394	0.392	0.400	0.393	0.399
Adjusted R-squared	0.090	0.089	0.090	0.088	0.085	0.097	0.086	0.088
Mean heterogenous variable	0.629	0.217	0.550	0.818	0.500	0.591	0.804	0.415
Mean dep. Var. in Control heterogenous = 0	0.034	0.021	0.022	0.049	0.033	0.039	0.038	0.029
Mean dep. Var. in Control heterogenous = 1	0.016	0.027	0.023	0.016	0.012	0.011	0.019	0.013
Pvalues of test: Heterogeneous = 0								
Group1 = Group2 = Group3	0.112	0.006	0.239	0.160	0.115	0.040	0.196	0.449
Group1 = Group2 = Group3 = 0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Pvalues of test: Heterogeneous = 1								
Group1 + int1 = Group2 + int2 = Group3 + int3	0.011	0.224	0.005	0.008	0.008	0.140	0.017	0.178
Group1 + int1 = Group2 + int2 = Group3 + int3 = 0	0.000	0.004	0.000	0.000	0.000	0.000	0.000	0.000

Note: Administrative data from GUFE and survey data March 2014. OLS regression of the outcome variable on treatment dummies and interaction terms (treatment dummies X variable for heterogeneous analysis), controlling for strata dummies (dummies for each triplet). α: sample restricted to non-traders outside Tokpa market.***, **, * indicate statistical significance at 1, 5 and 10%.

firms to formalize may be more cost-effective than the interventions here which instead provided services and support to firms.

7.2. The tax benefits to the government of bringing firms into the formal system

Formalization will result in a short-run reduction in tax revenue due to the initial tax exemption, but then should bring in increased tax revenue in future years. Since this future revenue will take time to materialize, and we were unable to gain access to tax administration data, in Appendix 5 we calculate the expected increase in annual tax revenue under different scenarios. Our base case assumes that formal firms have 100% compliance with taxation, in terms of all formal firms paying taxes, and them declaring 100% of the revenue they declare in our surveys. Under this assumption, they will pay CFAF 27,185 (USD 46) more in taxes per year, and it will take 19 years to recoup the costs of group 1, and 29–35 years to cover the costs of groups 2 and 3 (bottom panel of Table 6). Appendix Table A11 then considers three alternative scenarios, in which formality boosts the turnover of firms: a 20% level increase in turnover, a 60% level increase (the upper bound allowed by our confidence intervals for the formalization effect in Table 5); and a permanent 10% per year growth of sales. Even under these optimistic scenarios of full tax compliance and formalization boosting firm growth, it would still take at least a decade for the additional tax revenue generated to cover the costs of inducing these firms to formalize. Moreover, this assumes all firms survive. McKenzie and Paffhausen (2017) show that the half-life of a small firm in developing countries is 6 years, so the majority of firms are likely to die before their added tax revenue covers the costs of formalizing them.

7.3. Would better targeting help?

Our analysis shows that attempting to induce the average informal firm to formalize does not improve firm performance nor tax revenues. A potential solution then lies in attempting to better target the interventions at firms closer to the formalization margin.

Table 7 examines heterogeneity in the impact of our interventions on formalization rates according to pre-specified business characteristics. We find that male business owners were significantly more likely to formalize than female business owners: 9, 11 and 15% of businesses owned by women formalized in groups 1, 2 and 3 respectively (1.6% in the control group), compared to 17 for those owned by men in group 1 and almost 25% for those in group 2 and 3 (3.4% in the control group). This result could be correlated with the fact that a large majority of businesses operating in Dantokpa market are owned by women.[24] However, column 8 of the table shows that it is also true outside Dantokpa market for women not operating in trade.

In all groups, formalization rates were 5–10 percentage points higher outside Dantokpa market than inside the market. One potential explanation is that formalization could be less attractive in the market as businesses are already registered with the public company in charge of all markets in Cotonou (SOGEMA). They also usually have representatives in the market they can address in case of problems with the administration. Businesses operating in the trade sector had lower formalization rates than in other sectors. One possible explanation which was mentioned during qualitative interviews is that before the program implementation, traders already had access to a "trader card" that provides a formal status with specific benefits (see Appendix Table 1), whereas no such specific card existed for other sectors.

The program was more effective on businesses with an owner who went to at least secondary school, but is not significantly different with firm size per se. While we would expect larger firms to be more likely to be formal in the full population of firms, our sample only contains large firms who have chosen to remain informal. Such firms are likely to face the highest tax costs of becoming formal, and may not see commensurate benefits.[25] Using species classification techniques (de Mel et al., 2010) we classified 18% of the businesses in the sample as "looking more like formal businesses before the program".[26] Formalization rates were 4–12 percentage points higher among informal businesses that were similar to formal businesses before program implementation. Finally, businesses that received more than one visit from a tax inspector in the year prior to program implementation were more likely to formalize. This result, which is only significant for group 3, may suggest that the program was perceived as a way to limit tax harassment.

Appendix Table A12 then examines whether these firms that respond more to the interventions also benefit more from formalizing, by estimating the heterogeneous impact of formalization on business profits, an index of profits and sales, and employment. We do not find any significant heterogeneity in the impact of formalizing, although standard errors are large.

If the cheapest intervention (group 1) could be targeted to these sub-populations that respond most strongly, then appendix Table A11 shows the cost per formalization would drop to USD 695 if targeted at firm owners which look more like formal businesses before the intervention, or USD 620 for those with secondary education. Coupled with the fact that these firms also earn higher turnovers and therefore would have higher assessed taxes, this reduces the time taken to recoup the cost of formalization in our base scenario to 13 to 14 years, as opposed to 19 years under un-targeted assistance. Under our alternative scenarios in which formalization also increases firm revenues, this drops to between 6 and 12 years. Only with formalization yielding 60% growth in turnover and 100% tax compliance would we then see the cost of formalizing be recouped in tax revenue within the average lifespan of a small firm.

8. Conclusions

Informality is the most common form of business operation in Benin. The new *entreprenant* status was introduced with the goal of offering a faster, cheaper, and easier way for small firms to become formal for tax purposes, and to enable them to access many of the potential benefits of being formal. When this status was introduced, there was a question as to whether the legal change was enough, by itself, to get informal firms to formalize, or whether the government needed to also offer additional efforts and assistance to bring firms into the formal sector.

Our randomized experiment tested three such approaches to encourage informal firms to take up the new *entreprenant* status. While few informal firms registered for this new status after the legal status was launched, our interventions were successful in getting more informal firms to become formal.

However, such efforts are costly, and we find that firms which formalize do not appear to benefit much from this status in the first two years afterwards. They access more business training and pay lower taxes due to a tax exemption, but are not more likely to have business bank accounts, gain new customers, have higher profits or sales, or hire additional workers. Moreover, our calculations suggest that the additional tax revenue the government will collect from these firms over their lifetime is unlikely to cover the cost of inducing them to formalize. As such, these results cast doubt on the two most common reasons for governments attempting to bring informal firms into the formal sector. Justification for

[24] The correlation between female and being a trader is 0.40, and between female and operating in Dantokpa is 0.20.

[25] McKenzie and Sakho (2010) provide some evidence for this hypothesis in Bolivia, showing that larger informal firms appear to suffer a drop in profits upon formalizing.

[26] Looking like a formal business owner is based on the predicted probability of being formal from a logit of formality status on baseline characteristics, with 18.2% businesses out of the 3596 in the study sample classified as looking more like formal. See Appendix 3 for more details.

such efforts must then rely on other rationale, such as a desire to generate a culture of respect for the law (Bruhn and McKenzie, 2014).

Our analysis also highlights the potential importance of targeting. The rate of formalization can be doubled by focusing interventions on firms with characteristics which place them closer to the margin of formalizing on their own. In Benin, we find these to be male-operated firms, run by more educated owners, operating outside of the main market and not in retail, as well as firms which we would ex ante classify as looking more similar to formal businesses. However, even with our suggested targeting, we do not find significant impacts of formalizing on firm performance, and the cost per firm formalized will still take many years to be recouped in additional tax revenue. The key to cost-effectiveness therefore requires large reductions in the cost of getting firms to formalize. Rather than offering additional benefits and expensive personal assistance, it may be more cost effective to set in place the new, easy-to-register system, but then to directly pay firms to formalize, as suggested by de Mel et al. (2013), or to rely on enforcement efforts to get targeted firms to become formal (Andrade et al., 2016).

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpubeco.2017.11.004.

References

Alcãzar, L., Andrade, R., Jaramillo, M., 2010. Panel/tracer study on the impact of business facilitation processes on enterprises and identification of priorities for future business enabling environment projects in Lima, Peru – Report 5: impact evaluation after the third round. In: Report to the International Finance Corporation. World Bank Group, Washington, DC.

Anderson, M., 2008. Multiple inference and gender differences in the effects of early intervention: a reevaluation of the Abecedarian, Perry Preschool, and early training projects. J. Am. Stat. Assoc. 103 (484), 1481–1495.

Andrade, G.H., Bruhn, M., McKenzie, D., 2016. A helping hand or the long arm of the law? Experimental evidence on what governments can do to formalize firms. World Bank Econ. Rev. 30 (1), 24–54.

Benjamini, Y., Krieger, A.M., Yekutieli, D., 2006. Adaptive linear step-up procedures that control the false discovery rate. Biometrika 93 (3), 491–507.

Bruhn, M., 2011. License to sell: the effect of business registration reform on entrepreneurial activity in Mexico. Rev. Econ. Stat. 93 (1), 382–386.

Bruhn, M., McKenzie, D., 2009. In pursuit of balance: randomization in practice in development field experiments. Am. Econ. J. Appl. Econ. 1 (4), 200–232.

Bruhn, M., McKenzie, D., 2014. Entry regulation and formalization of microenterprises in developing countries. World Bank Res. Obs. 29 (2), 186–201.

Campos, F., Goldstein, M., McKenzie, D., 2015. Short-term impacts of formalization assistance and a bank information session on business registration and access to finance in Malawi. In: Policy Research Working Paper Series. vol. 7183 The World Bank.

De Giorgi, G., Rahman, A., 2013. SME's registration: evidence from an RCT in Bangladesh. Econ. Lett. 120 (3), 573–578.

De Mel, S., McKenzie, D., Woodruff, C., 2008. Returns to capital: results from a randomized experiment. Q. J. Econ. 123 (4), 1329–1372.

De Mel, S., McKenzie, D., Woodruff, C., 2010. Who are the microenterprise owners?: evidence from Sri Lanka on Tokman v. de Soto. In: Lerner, J., Schoar, A. (Eds.), International Differences in Entrepreneurship, pp. 63–87.

De Mel, S., McKenzie, D., Woodruff, C., 2013. The demand for, and consequences of, formalization among informal firms in Sri Lanka. Am. Econ. J. Appl. Econ. 5 (2), 122–150.

De Soto, H., 1989. The Other Path. Harper and Row Publishers, New York.

Farrell, D., 2004. The hidden dangers of the informal economy. McKinsey Q. 2004 (3), 26–37.

Galiani, S., Meléndez, M., Navajas, C., 2017. On the effect of the costs of operating formally: new experimental evidence. Labour Econ. 45, 143–157.

INSAE, 2009. Comptes Nationaux. INSAE, Cotonou.

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

La Porta, R., Shleifer, A., 2014a. Informality and development. J. Econ. Perspect. 28 (3), 109–126.

La Porta, R., Shleifer, A., 2014b. The unofficial economy in Africa (NBER Chapters) In: African successes: Government and Institutions National Bureau of Economic Research, Inc..

Levy, S., 2008. Good Intentions, Bad Outcomes: Social Policy, Informality and Economic Growth in Mexico. Brookings Institution Press, Washington.

Maloney, W., 2004. Informality revisited. World Dev. 32 (7), 1159–1178.

McKenzie, D., Paffhausen, A.L., 2017. Small Firm Death in Developing Countries. Mimeo, World Bank.

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

McKenzie, D., Woodruff, C., 2014. What are we learning from business training evaluations around the developing world? World Bank Res. Obs. 29 (1), 48–82.

McKenzie, D., Woodruff, C., 2017. Business practices in small firms in developing countries. Manag. Sci. 63 (9), 2967–2981.

Perry, G., Maloney, G., Arias, O., Fajnzylber, P. Mason, Saavedra, A., J., 2007. Informality: Exit and Exclusion. World Bank Latin America and Caribbean Studies, World Bank, Washington D.C.

World Bank, 2016. Doing Business 2016: Measuring Regulatory Quality and Efficiency.