

# REPORT ON YOUWIN! LONG-TERM FOLLOW-UP SURVEY<sup>#</sup>

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## Summary

This short note reports results from a survey taken in 2016 of individuals who applied in 2011 to the first round of the YouWiN! business plan competition. These individuals had been previously interviewed in 2012, 2013 and 2014 and the data used to estimate the impact of winning the competition over this time horizon. The new data enable longer-term impacts to be measured, although these impacts occur during a year where the Nigerian economy entered into recession, exchange rate restrictions were in place, and inflation had risen. The note shows that YouWiN! continues to have significant impacts five years after application and three years after all funding was received. Winning applicants are more likely to be operating a firm, have more employees, are more likely to have registered as a limited liability company, and are more likely to have a functioning website than similar firms that were not selected as winners. Overall, there are an estimated 4,239 jobs in 2016 attributable to the impact of winning the competition in the first round. The last section of the note discusses the challenges firms faced in operating in 2016, highlighting lower demand and rising input prices as key constraints to firm growth.

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## **1. Background**

The YouWiN! competition was launched in late 2011, and in its first year attracted almost 24,000 applications aiming to start a new business or expand an existing one. The top 6,000 applications were selected for a 4-day business plan training course, and then winners were chosen to receive awards averaging US\$50,000 each, paid out in four tranche payments conditional on achieving basic milestones. The top-scoring plans overall and within region were chosen as winners automatically, and then 729 additional winners were randomly selected from a group of 1,841 semi-finalists. Since this selection of US \$34 million in grants was done at random, comparing the winners (treatment group) to the losers (control group) in this lottery for selection as ordinary winners ensures that any differences in outcomes between the two groups is due to the impact of the program, and not to the winners differing on ability or other characteristics from the comparison group. Three annual follow-up surveys in 2012, 2013 and 2014 enabled tracking the trajectory of impacts, with the third survey occurring 27 months after winners received their first grant payment and 12 to 18 months after the last payment.

Analysis based on these first three rounds showed that winning this competition had large positive impacts on both applicants looking to start new firms as well as those aiming to expand existing firms<sup>1</sup>. Three years after applying, new firm applicant winners were 37 percentage points more likely than the control group to be operating a business and 23 percentage points more likely to have a firm with 10 or more workers (relative to a control mean of 11 percent), while existing firm winners were 20 percentage points more likely to have survived, and 21 percentage points more likely to have a firm with 10 or more workers (relative to a control mean of 17 percent). The winners are also innovating more, and are earning higher sales and profits.

In order to measure longer-term impacts of the competition, a longer-term follow-up survey was fielded between July and November 2016. This timing corresponds to five years since firms applied for competition, and just over three years since the winners had received all payments.

## **2. Context**

In 2016, Nigeria suffered its worst economic performance in thirty years, driven by a contraction in the oil sector which is the main export and accounts for 70 percent of government revenues. The government imposed currency controls and import restrictions, which led to a parallel exchange rate and inflation reaching 18.5 percent, the highest in over a decade. The longer-term follow-up survey is therefore measuring firm performance during a difficult time for firms in the economy. The survey had additional questions added to measure the extent to which firms were affected by some of these conditions.

## **3. Survey Details and Response Rate**

The sample frame for the survey consisted of 3,139 firms which had already been the sample frame for the previous three survey rounds. This included 1841 firms (729 winners, 1112 control) that form

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<sup>1</sup> See David McKenzie (2015) "Identifying and Spurring High-Growth Entrepreneurship: Experimental Evidence from A Business Plan Competition", World Bank Policy Research Working paper no. 7391.

the experimental sample; 475 firms that were competition winners but were not chosen by lottery (national and zonal winners); and 823 firms that were not winners, but had first round application scores on either side of the cut-off for selection for the four-day business plan training.

Surveying was carried out by TNS RMS Nigeria Limited, which had also conducted the previous survey rounds. With the longer passage of time, more of the target sample had relocated to other states, or out of the country, and some firms were reluctant to participate. The main mode of surveying was face-to-face surveying, which took place at the business for those operating a business, and typically at the household for those without a business. 2,075 firms were interviewed with the full survey using this approach. A second phase of CATI (computer-assisted telephone interviews) was carried out to collect data for firms which could not be interviewed using the face-to-face method. The survey was shortened for this group to make it possible by phone, with 404 firms interviewed using this method. This resulted in a total of 2,479 firms being interviewed (79.0%). Finally, for individuals who were unable to be interviewed, a final attempt was made to ascertain whether or not they currently operated a business, with 338 individuals providing operating status in this way.

The survey was answered by 79.7% of treatment and 74.5% of control firms, and operating status was obtained for 92.5% of treatment and 90.9% of control firms. A joint orthogonality test cannot reject balance on baseline characteristics for the sample answering the survey for either new firms ( $p=0.857$ ) or existing firms (0.985). This suggests that the sample of those responding is comparable for the treatment (experimental winners) and control groups, enabling continued measurement of the impacts of winning.

## **4. Long-Term Impacts**

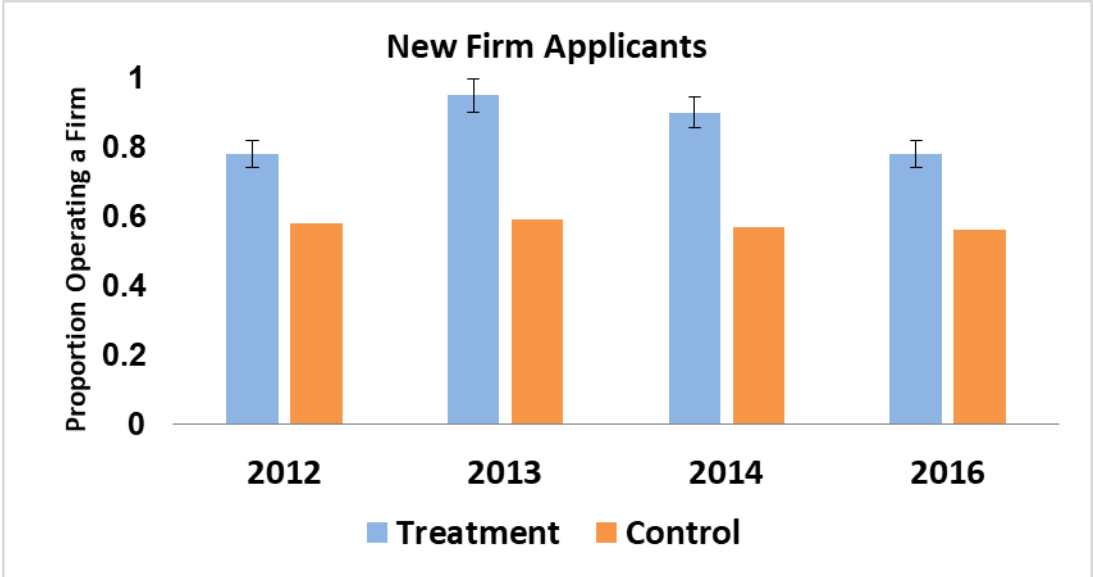
### **4.1 Impact on Operating a Business**

Figure 1 shows the proportion of new firm applicants that are operating a firm at the time of the survey by treatment status. Just over half of the control group are operating a firm in any given follow-up survey round. This rate is higher for the treated firms, and in 2013 and 2014, 91-93 percent of them were operating firms. This has fallen to 77 percent in 2016, which is still 24.2 percentage points higher than in the control group. Of those in the treatment group who were operating a firm in 2014, but have closed down in 2016, 47 percent are now employed as wage earners, while 53 percent are not working.

Figure 2 shows the equivalent comparison for applicants who applied as existing firms. 76 percent of the control group are still operating a firm five years after applying (Note that this need not be the same firm, they may have closed down one firm and opened another) . By comparison 85.6 percent of the treatment group are operating a firm in 2016, 9.5 percentage points higher than the control group. While significant, this is approximately half of the difference between groups in 2014, when 95 percent of existing firm applicants in the treatment group were operating a firm. Of those in the treatment group who have closed down between 2014 and 2016, 36 percent are now employed in wage work, while 64 percent are not working.

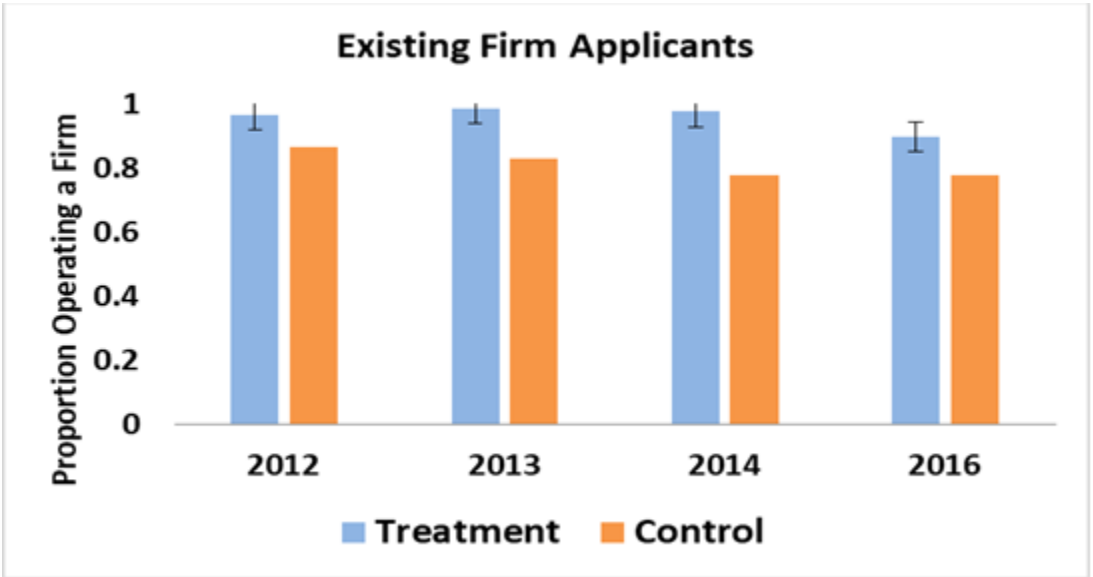
The long-form survey asks business owners why they closed. 80% of winning firms say they closed because of poor sales or because the firm was making a loss.

Figure 1: New Firm Applicants Are More Likely to Be Operating a Firm After Winning



Note: 95% confidence intervals around treatment effects shown.

Figure 2: Existing Firm Applicants are Also More Likely to Be Operating a Firm After Winning



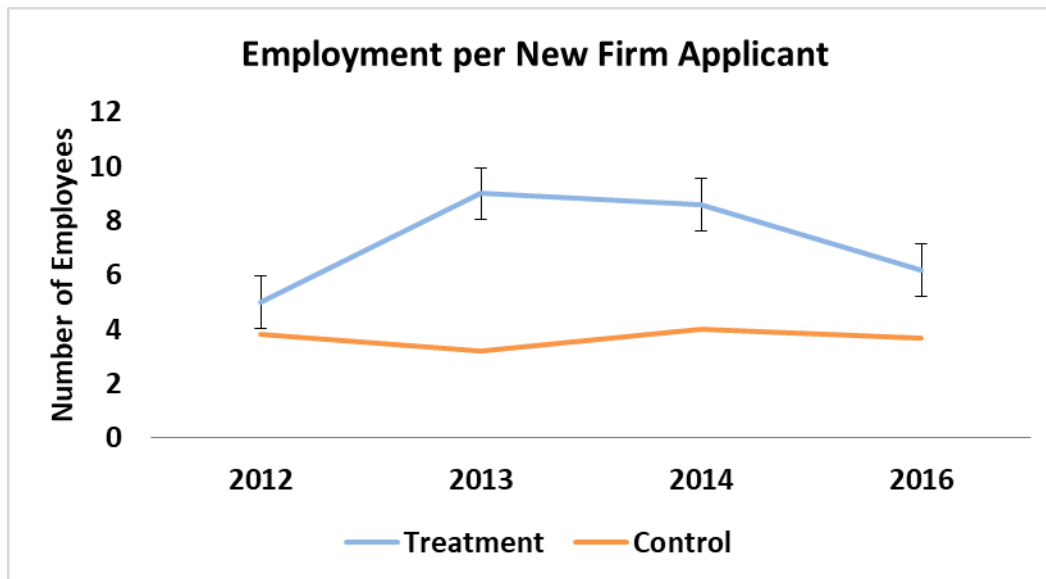
Note: 95% confidence intervals around treatment effects shown.

## 4.2 Impacts on Number of Employees and Likelihood of Having 10+ workers

One of the principal objectives of the YouWiN! Program was job creation. Figure 3 shows that the average new firm applicant in the control group had created between 3 and 4 jobs, with this relatively constant over time<sup>2</sup>. In contrast, in 2013 and 2014, the average new firm applicant was employing 9 workers after winning. This has fallen to 6.4 workers in 2016, which is still 2.6 workers more per firm than in the control group.

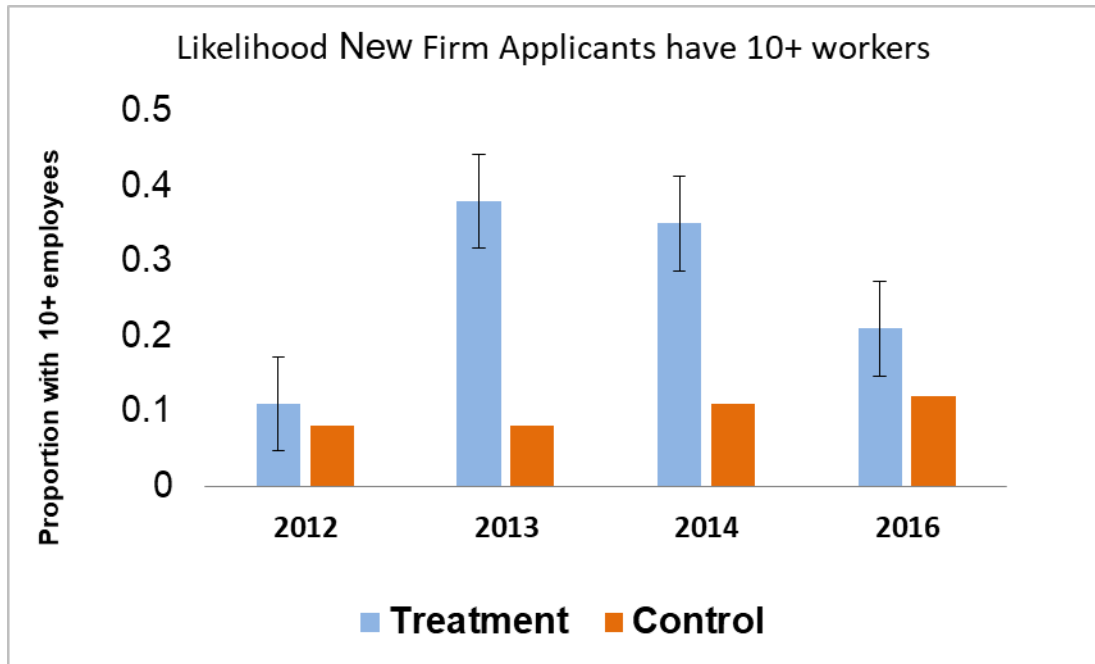
A key achievement of the YouWiN! program has been to generate firms with 10 or more employees, which are rare in most developing countries. 99.6 percent of all firms in Nigeria have fewer than 10 workers. Figure 4 shows the program was successful in selecting the types of individuals who were more likely to generate firms of this size anyway, with 11 percent of the control group having 10 or more workers in 2014 and 12 percent in 2016. Winning results in a large increase in this likelihood: in 2014 new firms were 22.9 percentage points more likely to have 10+ employees as a result of winning. This has fallen in 2016 to an 11.1 percentage point effect, but this is still twice the likelihood of the control group having this many workers.

Figure 3: New Firm Applicants Have More Employees After Winning



<sup>2</sup> Note these numbers include those applicants who are not operating firms, who are coded as having zero workers. Conditional on a new firm applicant operating a firm, the control group has a median of 5 and mean of 7.7 workers employed in 2016, while the treatment group has a median of 7 and mean of 8.7 workers employed in 2016.

Figure 4: New Firm Applicants Are More Likely to Have Grown to 10+ workers after winning



Figures 5 and 6 examine the analogous impacts on the number of workers employed and the likelihood of having 10+ workers for those individuals who applied with existing firms. The winners average 8.2 workers employed per applicant in 2016, compared to 10.0 in 2014. This represents a treatment effect of winning of 3.0 workers, compared to 4.4 workers in 2016. These are again unconditional estimates, which code closed firms as having zero employees. Conditional on operating a firm, the treatment group has a mean of 9.6 and median of 7.0 workers, compared to a mean of 7.0 and median of 5.0 workers in the control group. As a result, the winning firms are still 13.1 percentage points more likely to have 10 or more employees than the control group.

Figure 5: Existing Firm Applicants Have More Employees After Winning

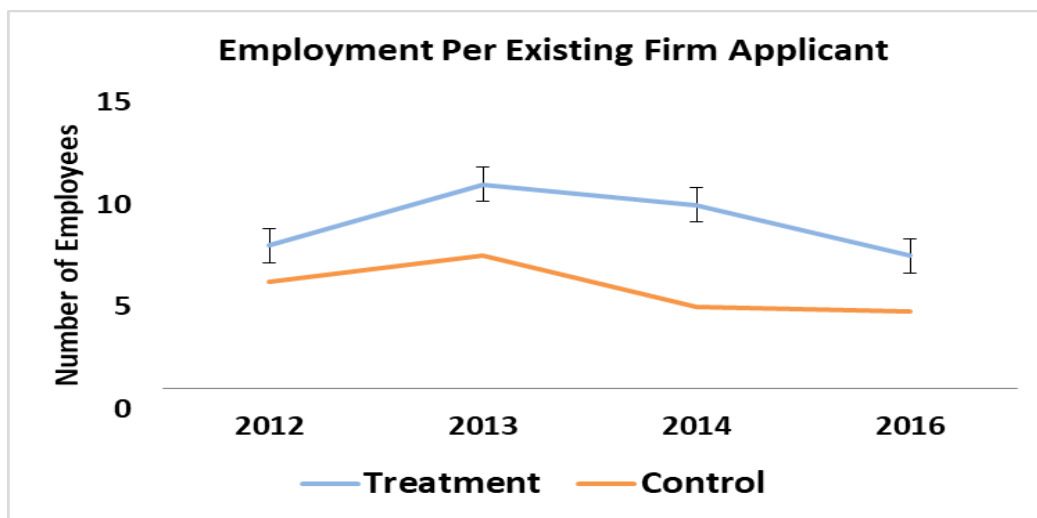
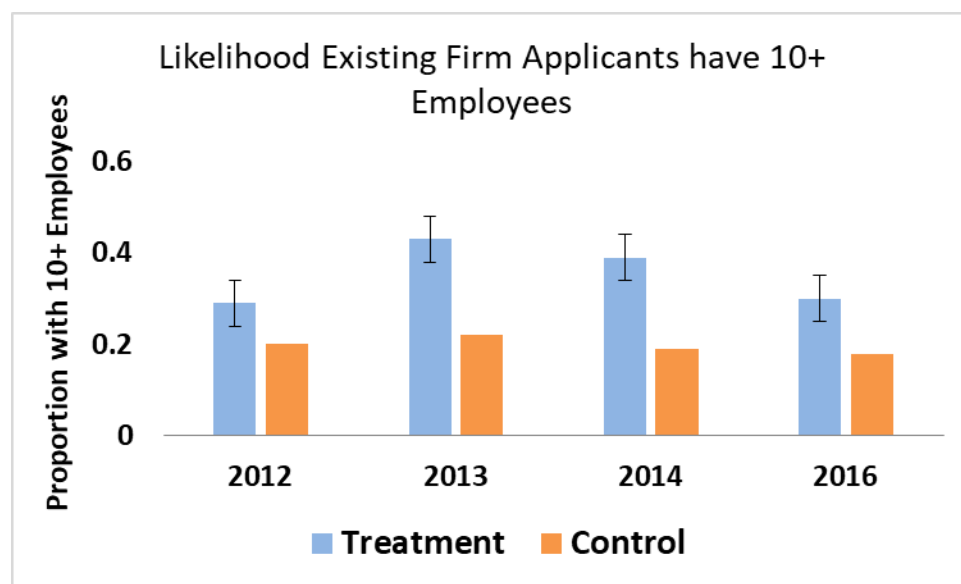


Figure 6: Existing Firm Applicants Are More Likely to have 10+ Employees After Winning



We can use these experimental estimates of the number of jobs created, along with non-experimental estimates of the impacts for national and zonal winners to obtain an estimate of total number of jobs created by the round 1 YouWiN! program<sup>3</sup>. This is shown in Table 1. In total the winning firms had 9,769 workers (including the owners) employed in them in 2016, down from 12,728 in 2014. Of this 9,769, the estimated causal effect of the program is 4,239 jobs (43% of the total), with the remainder being jobs that the firms would have created even if they had not won. This estimate of 4,239 jobs is down from the 7,027 jobs created in these firms in 2014. Based on the first five years, the estimated cost per-job-year created from \$60 million in funding is \$2,287.

**Table 1: Total Workers Employed in YouWiN! Winning firms and Program Effect**

	Number of Firms	Total Employment in Winning Firms				Treatment Effect on Total Employment			
		Round 1	Round 2	Round 3	Round 4	Round 1	Round 2	Round 3	Round 4
Randomly selected winners	729	4588	7183	6858	5186	1051	3411	3579	2020
New Firms	451	2289	4209	4099	2895	645	2711	2359	1177
Existing Firms	278	2299	2974	2759	2291	406	701	1220	844
National and Zonal winners	475	4439	6762	5870	4583	1444	3366	3448	2219
New Firms	118	744	1712	1273	917	320	1317	827	475
Existing Firms	357	3695	5050	4597	3666	1125	2049	2620	1744
All winners	1204	9027	13945	12728	9769	2495	6777	7027	4239

<sup>3</sup> Note that the non-experimental estimates use propensity-score matching and may be an over-estimate of the jobs created by these firms if the national and zonal winners differ in unobserved ways from those with lower scores on their business plan. See McKenzie (2015) for more discussion on this.

### 4.3 Impacts on Profits and Sales

Table 2 examines the impact of winning on sales and profits in 2016. As discussed in the research paper (McKenzie, 2015), a key issue with examining impacts on these outcomes is that the set of firm is very heterogeneous. As a result, there is a large degree of variability in the sales and profit levels of the firms, lowering statistical power for detecting impacts on these outcomes. As a result, transformations of profits like the inverse-hyperbolic sine (similar to logarithms), or using an index measure, can be less affected by outliers. We continue to see some impacts of winning on these measures, although again the magnitudes are smaller than they were in 2014.

Table 2: Impact on sales and profits in 2016

	Monthly Sales	Monthly Profits	IHS of Profits	Sales & Profits Index
<b>Panel A: New Firms</b>				
Impact of Winning	85.168 (60.33)	-0.581 (14.95)	2.376*** (0.38)	0.082* (0.05)
Sample Size	1085	1085	1085	1085
Control Mean	294	84	5.055	-0.019
<b>Panel B: Existing Firms</b>				
Impact of Winning	198.577* (119.10)	26.049 (24.42)	1.555*** (0.52)	0.104 (0.07)
Sample Size	450	450	450	450
Control Mean	424	109	7.768	-0.046

Notes:

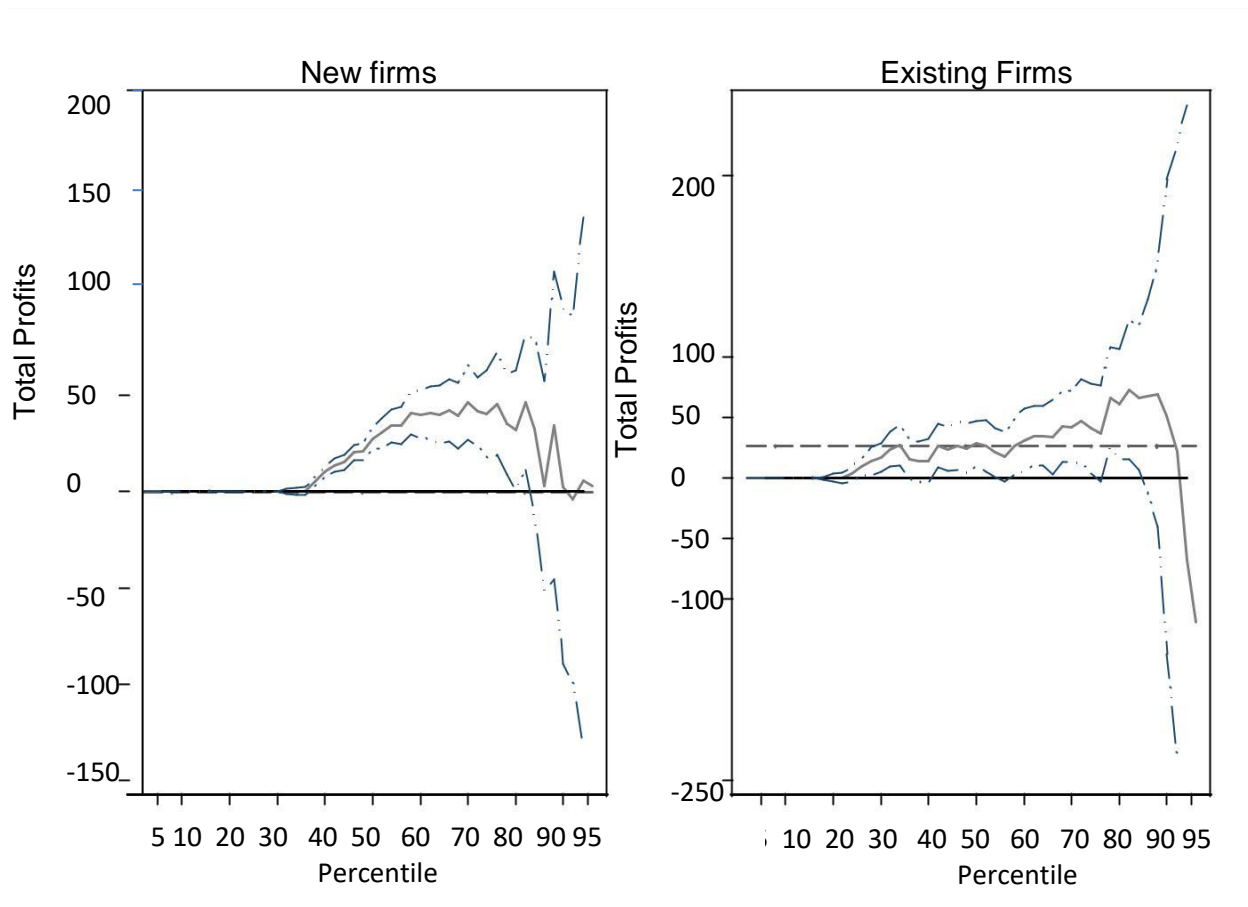
Robust standard errors in parentheses. \*, \*\*, \*\*\* indicate significance at the 10, 5, and 1 percent levels respectively.

Sales and Profits in 1000s of Real Naira.

Another approach that is less sensitive to outliers and can show impacts across the distribution is quantile treatment effects. Figure 7 presents quantile treatment effects for monthly profits for the new and existing firms respectively. We see positive treatment effects in the middle of the distribution. At the bottom of the distribution there is no impact since both treatment and control firms are closed and are earning no profits. At the top of the distribution the confidence intervals become extremely wide and we have no statistical power to measure impacts. But we see positive impacts between the 30th and 80th percentiles of the distribution for new firms, and the 20th and 80th percentiles for existing firms.



Figure 7: Quantile Treatment Effects for Monthly Profits



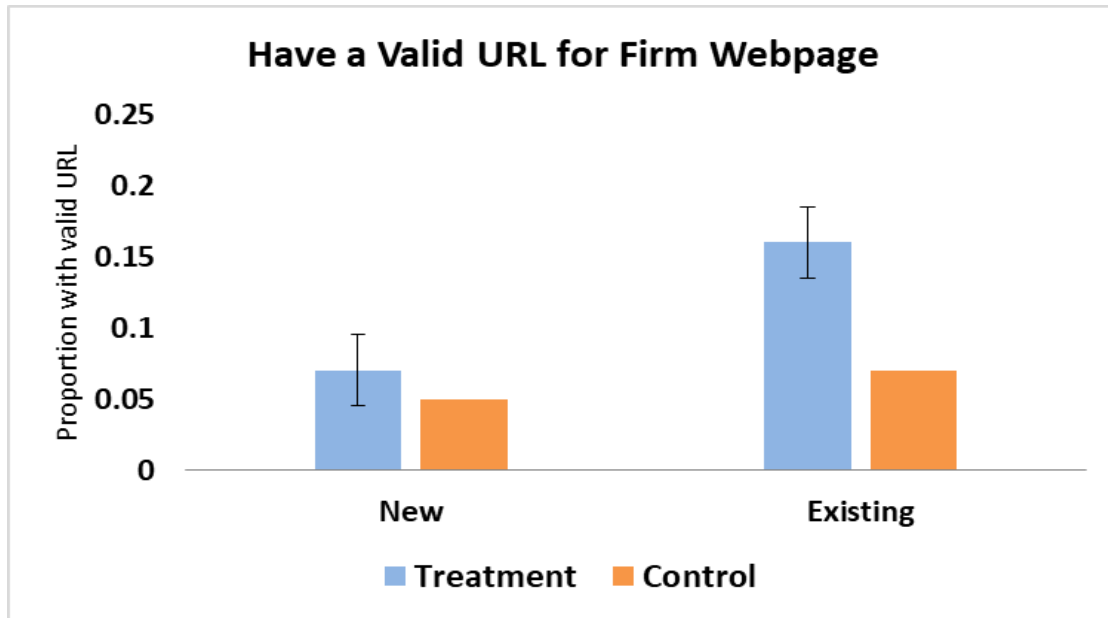
Notes: Quantile treatment effects on real monthly profits (in 1000s of Naira). Dashed horizontal line shows OLS treatment effect for mean. 95% confidence intervals displayed around quantile effects.

#### 4.4 Other Indicators of Winning Firms Continuing to be Larger

Over the four rounds of surveys we collected the website addresses of the firms for those firms which had a website. In January 2017, we checked to see if each firm has a valid and working URL for these websites. This measure has two useful features. First, it is not dependent on the firm answering the last round survey, since we can use the website information collected in any of the different surveys and see if this website still exists. Secondly, it is less subject to concerns about potential misreporting, since the check on whether the website works is an objective and independent measure. It therefore provides a useful check and proxy for whether the winning firms are more serious firms in this one dimension.

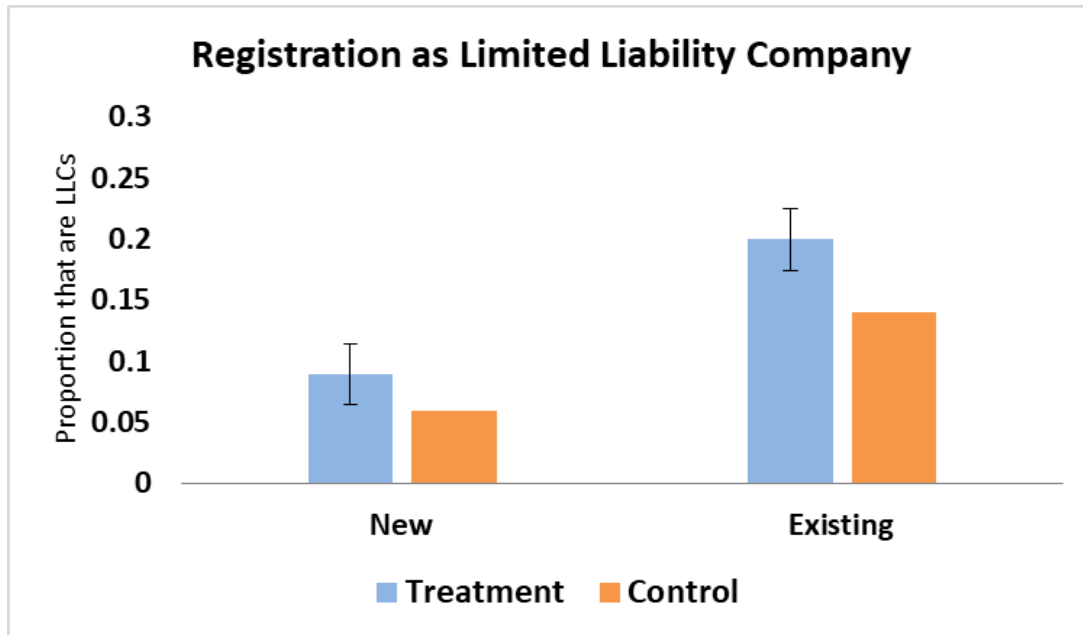
Figure 8 shows that the winning firms are more likely to have valid and working webpages than the control firms. The impact is 2.3 percentage points for new firms and 9.7 percentage points for existing firms.

Figure 8: Winning firms are more likely to have working webpages in January 2017



Finally, Figure 9 examines another metric of firm seriousness – whether the firm is legally operated as a limited liability company instead of as a sole proprietorship (or partnership). New firm applicants are 3.3 percentage points more likely to be registered as companies in 2016 if they won than the control group, and existing firms 6.6 percentage points more likely.

Figure 9: Winning firms are more likely to be registered as companies



## 5. Descriptive Evidence on How the 2016 Economy Affected Firms

The analysis above therefore shows that winning firms continued to do better in 2016 than similar firms in the control group, but that the magnitudes of the differences were smaller than in 2014. The long-form of the survey asked additional questions that provide some insights on how the economy was affecting firms.

### 5.1 Comparison of Sales to Previous Year

Firms which were still operating were asked directly how their sales compare to sales one year earlier. Table 3 shows the responses in 2014 and 2016. In 2014, the majority of firms in both treatment and control groups report their sales to be growing, with only one-quarter of firms saying sales were lower than one year ago. In contrast, in 2016, two-thirds of treated firms that remain in business say their sales were worse than one year ago<sup>4</sup>. This is lower for the control group (whose sales hadn't risen as high to begin with), but it is still the case that more of the control group report having had sales fall than report having had sales rise.

Figure 10 provides a scatterplot for sales in 2016 against sales in 2014 (in real terms) for the winning firms in the treatment group, combining the new and existing firms. We see the majority of data points are below the red 45-degree line, confirming that sales have fallen for many of these winning firms. When I break this down further by industry, 84% of winning trade firms have had sales fall, compared to 75% of crop and animal industry firms, 67% of manufacturing, and 58% of IT firms. If I consider all firms interviewed, and not just the winners, these differences among industries become smaller, and it is still the case that more than half the firms in all four industries have had sales fall. Considering other industries with at least 50 firms, the least -affected were education (32% had sales fall) and food and beverages (39% had sales fall). Looking by region, sales fell for the majority of winners in all six regions, with the South-Eastern region having the lowest share of winning firms with sales fall (59%) and South-Western region the highest share (71%). Overall, this shows the drop in performance is not unique to one state or sector, but was widespread in the economy.

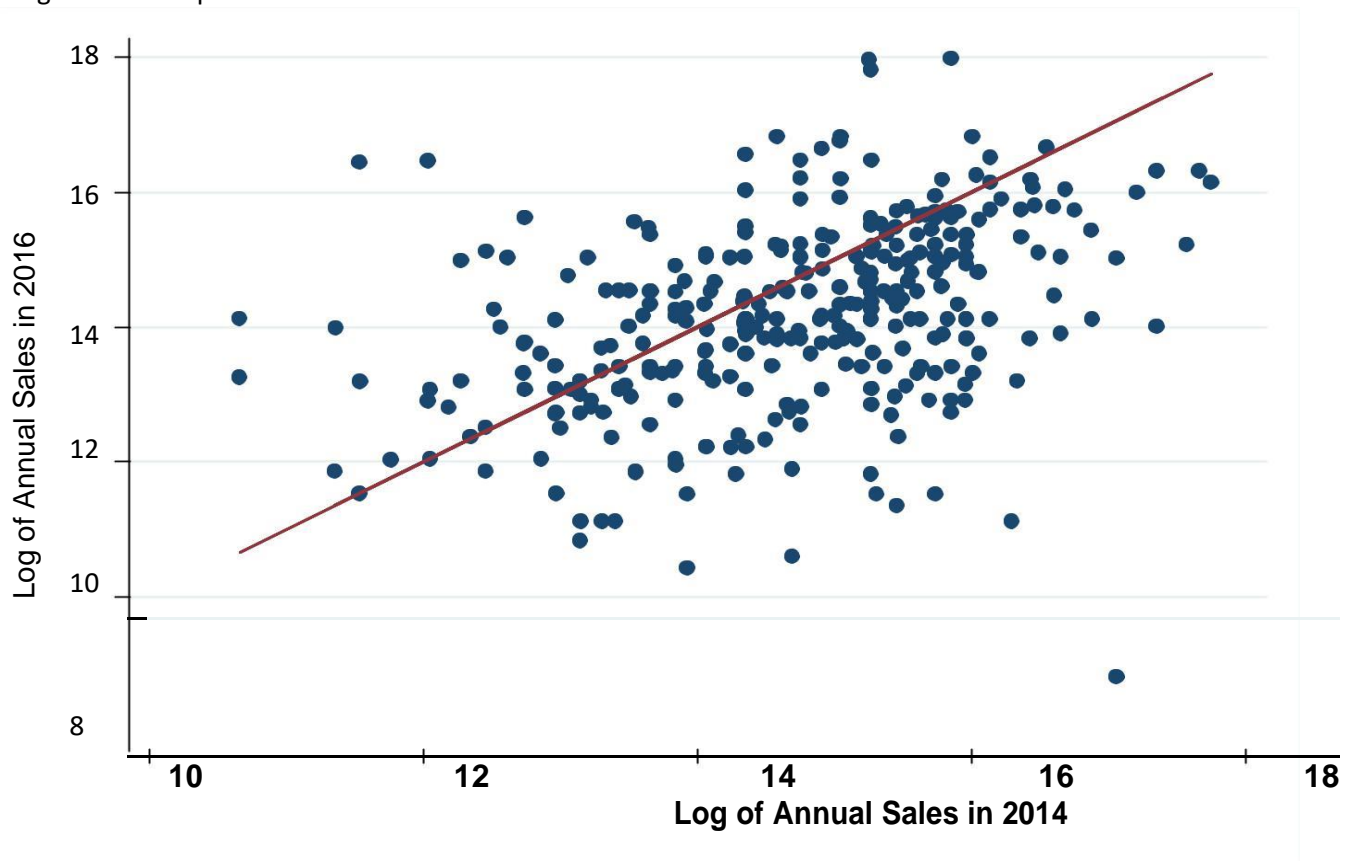
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<sup>4</sup>If instead of using the direct response of firms to this comparison I compare annual sales reported for 2014 to those in 2016, in real terms, 67% of the treated firms still in operation have lower sales in 2014.

**Table 3: Comparison of Sales to Previous Year**

	Treatment		Controls	
	2014	2016	2014	2016
<b>Panel A: New Firms</b>				
Lower than one year ago	27.8	63.5	20.6	47.8
Same as one year ago	13.2	7.7	11.2	10.2
Higher than one year ago	59.1	28.9	68.2	42.0
<b>Panel B: Existing Firms</b>				
Lower than one year ago	29.2	67.3	23.5	58.2
Same as one year ago	5.9	8.8	6.8	4.8
Higher than one year ago	64.8	23.9	69.8	37.0

Figure 10: Comparison of Sales in 2016 to Sales in 2014 for Treated Firms



Note: 45-degree line shown in red

## 5.2 Other Economic Factors Affecting Firms

Table 4 examines how firms were affected by three other macroeconomic factors taking place in 2016. The first is the exchange rate. The Naira was pegged at 197 Naira to the US dollar until June 20, 2016. With oil revenue down and pressure on this peg, exchange rate restrictions were put in place. Only 18 percent of firms in our sample directly use foreign currency in their businesses, but of those that do, only 26 percent of the winning firms and 20 percent of the full sample of firms were able to access funds at the official rate prior to June<sup>5</sup>. However, after June and during the time of the survey, the central bank attempted to hold the exchange rate in the 315 Naira to the dollar range, when the parallel exchange rate had reached 425 to 475 Naira<sup>6</sup>. We see that firms that use foreign currency found it just as hard to get currency at the official rate after the float as beforehand.

**Table 4: Percent of Firms Experiencing Different Economic Events**

	Winners	Control	Full Sample
Need to use foreign currency	18.2	17.2	18.4
<i>Conditional on using currency</i>			
Was able to get currency at official rate pre-June 2016	26.4	22.7	19.7
Can currently source forex needs through bank	19.4	30.3	22.4
Was unable to import input or equipment due to foreign exchange restrictions	22.3	12.5	17.6
Not able to import due to other restrictions	11.7	6.8	9.5
Price of main inputs has risen since 2015	99.7	99.2	99.6
Median increase in input prices (%)	40	30	40
Mean increase in input prices (%)	42.3	37.7	42.3

A second, related set of restrictions which occurred were restrictions on imports, which were imposed as part of an effort to conserve foreign exchange. We see that 22 percent of surviving winning firms were not able to import an input or piece of equipment as a result of these restrictions.

The third, and also related, economic factor was rising inflation. Inflation reached 18.5 percent in the year to November 2016, the highest in a decade. Almost every firm said the price of their main inputs had risen since 2015, with a mean of 42%<sup>7</sup> and median of 40% amongst winning firms.

<sup>5</sup> Note these rates are conditional on firm survival. Firms which shut down because of lack of access to currency are not included

<sup>6</sup><https://www.bloomberg.com/news/articles/2016-10-06/free-float-flounders-as-nigeria-s-naira-hits-black-market-record>

<sup>7</sup> The mean increase may be conservative, since the maximum response provided in the data appears to have been capped at a 100% increase.

## **6. Summary**

This short note shows that YouWiN! winners continue to perform better than similar firms which were not selected as winners (the control group) during this longer-term period of five years after applying and more than three years after all payments had been received. In 2016, the winning applicants are more likely to be operating firms than the control group, have more employees, are more likely to exceed a 10 or more worker threshold in firm size, have more profits and sales in much of the distribution, are more likely to be limited liability companies, and are more likely to have a working website. However, a number of the winning firms have closed down since 2014, and the majority of those remaining in business have seen their sales fall and input prices rise. As a result, the magnitudes of the impacts of winning relative to being in the control group are smaller than was seen in 2014.