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Using monetary incentives to support female entrepreneurship: An experimental test of
monetary incentives in Abuja, Nigeria

Keywords: Monetary incentives, Entrepreneurship, Goals, Field experiment

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ABSTRACT

Gender gaps in entrepreneurship are a major problem everywhere, but especially in developing countries like Nigeria. Women across the world face high levels of discrimination and abuse. The process of empowering women in a society has the potential to boost economic growth and development. Inspired by the success of the Family Independence Initiative (FII), we designed a field experiment to estimate the impact of using monetary incentives to motivate female entrepreneurs in achieving their goals in collaboration with the National Center for Women development (NCWD) in Abuja, Nigeria. Our results suggest that being in a peer support group, setting a goal and being issued cash reward does not increase a subject's probability of achieving a selected business goal.

1. INTRODUCTION

Despite Nigeria's rapid economic growth (GDP) which overtook South Africa to become Africa's largest economy in 2014 (Corral, P., & Oseni, G 2014), the life for women in Nigeria is hard (Garba 2011), In most cases women are less likely to achieve economic success than men due to the problem of the term gender bias or discrimination, and therefore this problem has been tackled by organizations and individuals around the world to find out ways to empower women. There are various ways through which a woman can be empowered which ranges from; education, teaching them job skills, providing a microfinance loan for business startups, establishing networks to support each other, building self-esteem and confidence among women as well as providing a microfinance loan for business startups.

The United Nations Population fund (UNFPA) in 2012 records that female population in Nigeria makes up about 80.2 million which represents 49% of the total population. Figures show that 63% of women in Africa in the non-agricultural labor force are self-employed in the informal sector (hairdressing, garment making, etc), but worldwide the figure is at least 30%. Businesses managed by women are mainly home-based and concentrated in the areas of small-scale entrepreneurship. Women haven to operate their businesses from home allows them to share their time across other responsibilities ranging from childcare, housework etc. Beneria, Lourdes (2009).

One of the constrained factors affecting women entrepreneurship is the access to Land and Property Rights and even if they have access to such rights, the law would not still favor women. Jessica Campese (2011) have shown that despite the land act and village land act of 1999 in Tanzania (an act established for women to be treated equally as men in terms of rights to acquire, hold, use and deal with land), the law still does not favor women and the application of this law were the issues play a role in undermining women's economic empowerment. For instance, a widow cannot inherit her deceased husband's property. Another factor affecting women entrepreneurship is the lack of access to microfinance loan. As a case study most Pakistani microfinance organizations place trong requirements on women obtaining loans, this may range from a written permission from their husband/family or having a male guarantor to accompany the borrower to apply for a loan (World Development Report 2012).

In collaboration with the National Center for Women development (NCWD), our experiment studies a program we implemented in Nigeria among a group of female entrepreneurs which was inspired by the Family Independence Initiative (FII).

This approach employs the use of goals setting, incentive and support groups to alleviate poverty. Maurice Lim Miller developed the FII approach and won the 2012 MacArthur Genius Award for innovating this poverty alleviation approach.

This method has shown positive results in the United states and through replications across various countries. The results from the FII study carried out among 35 families in Boston to test the program suggests a 13% increase in average household income, a 22% increase in savings and an increase in school attendance among a sample of children in the study (FII, 2011). Previous study using the same model has been studied in Medellin, Colombia showed positive results in increasing total number of sales among micro entrepreneurs, therefore we would like to extend this work and test similar model among a group of female entrepreneurs in Abuja, Nigeria.

We tested the various arms and the overall effectiveness of the FII model in a one-month controlled experiment, so this study focuses on one branch of the Family Independence Initiative (FII) model, which involves the use of incentives. We conducted an experiment with 167 female entrepreneurs, subjects were randomly assigned into three treatment and two control groups. Subjects in the treatment arm established set goals which were mostly: creating a business plan, opening and maintaining a bank account, buying a new machine for needed for a business, attending business seminars and saving a certain amount of money at the bank over a period of time. The analysis makes use of the following data sources: a baseline survey, orientation survey, a follow up survey, goals survey, goals follow up survey after intervention and an endline survey. Although we failed to find statistically significant effects on the use of cash rewards to motivate female entrepreneurs in achieving their selected goals, results suggest that perhaps incentives did reveal to have been a motivator in goal achievement rate.

Therefore, The purpose of our study is to estimate the effectiveness of monetary incentive and how it motivates female entrepreneurs in achieving their business goals so as to

provide field practitioners of poverty reduction and the Federal government of Nigeria with tested tools to improve the lives of women in Nigeria and policies centered around the strengthening of their developmental programs. Furthermore, our study contributes to the existing literature about the use of monetary incentives is not a potent factor in motivating individuals to carry out a particular task for their self interest. Section 2 covers a review of the relevant literature. Section 3 describes the subject pool and location, experimental design and survey instruments. Section 4 shows the model and hypothesis. Section 5 covers the empirical method used in data analysis and presents the results and Section 6 concludes.

2. RELEVANT LITERATURE

Incentives

Do incentives work all the time? Which works best, Monetary or Nonmonetary incentives?

Over the years Economists have focused attention on the use of incentives. The law of behavior states that higher incentives will lead to more effort and in turn increase performance among a group of individuals. For example, in a prisoner's dilemma game, subjects might cooperate, and this might not be because subjects are trying to be nice to each other, but because they do not recognize the dominance structure of the game and they are not well motivated to realize the structure. But in turn, if the subjects are being given an incentive for thinking about it, they will realize that structure and then defect (Wilcox 1993).

The idea that cash rewards improve performance has both pros and cons. The proponents suggest cash rewards to be the most effective way to influence employee performance and other desired behaviors (Baker, Jensen, & Murphy, 1988). The critics on the other hand argue that money or monetary incentives is not a motivator (Kohn, 1993b). Herzberg (1968) also suggests that monetary incentives may arguably decrease job unhappiness but it is not a motivator.

Monetary Incentive

The use of incentives has to be one of the most researched aspect of the Family Independence Initiative. There is a large body of work on how incentives motivate people and (James Buchan 2000) adds to the literature by stating that incentives can either be in monetary and non monetary form, which refers to a form of compensation given to achieve some specific change in behaviour. Prior studies report the effect of monetary incentive in increasing return for tuberculosis (TB) skin test reading in a sample of newly recruited active injection and crack cocaine users. Subjects were randomly assigned to 1 of 5 treatment condition: \$10 cash, grocery store coupons, bus tokens/fast-food coupons, motivational education, or usual encouragement to return (C.Kevin Malotte et al. 1999). One of the early work on monetary incentives, although it lacked scientific rigor (Jenkins, 1986; Marriott, 1957; Opsahl & Dunnette, 1966), revealed improvements in productivity when monetary incentives was present and with the absence of incentives the level of productivity declined (Jacques, Rice, & Hill, 1951).

The authors report that 95% of subjects who received \$10 returned for TB skin test reading compared to 86% of subjects who had received grocery store coupons and 83% of subjects who received either bus tokens or fast-food coupons. Therefore, they suggest that although monetary and non-monetary incentives increased the return rate for TB skin test reading, non-monetary incentives were less effective than monetary incentives. (Corgnet et al. 2015) studies the interaction between monetary stakes and goal setting policies. Findings suggests that goals are more effective when monetary stakes are large and then to be less effective when stakes are small. Jenkins (1986) from 1960 to 1985 conducted a qualitative review of empirical research and suggested that laboratory and field experiments showed positive effects of monetary incentives on the level of performance quantity but a similar effect was not present with level of performance quality. Thus far, it has been discussed that monetary incentives are seen as a good tool to motivate individuals, but Gneezy and Rustichini (2000) conducted an experiment in Israel that involved charity box gathering by children. The study states that two (2) groups of children were set up: the first group was given a cash reward for the work which led to an increase in performance. On the other other the second

group was not paid at all for their efforts, but the children in this group gathered bigger amount of donations than the group 1.

Gneezy and Rustichini (2000) argue that where monetary incentives are being introduced to motivate participants to achieve their selected goals, it may lead to a reduced effort because the monetary incentive crowd-out the motivation. They add that even in situations where the objective of the task is good, the cash prize could send the wrong signal that the task is either boring, hard or be viewed as not good enough in the self interest of a the subject. They conclude that in such cases like this, the incentives are insufficiently large and such change could lead to undesired effects on behavior.

Non-monetary Incentive

Economists are hesitant to recognise the fact that non-monetary incentives are successful in most cases and can play an equivalent success rate as monetary incentive, this is because they believe firmly that individuals are interested mainly in money (Ignacio 2000). (Bénabou and Tirole 2003) reports negative effect of monetary incentives on agents' intrinsic motivation. They reports this finding in a setting in which an informed principal holds private information about the agent's ability level. In their model, the crowding out of intrinsic motivation arises because giving strong monetary incentives provides a negative signal on the agent's ability level which, in turn, may lead the agent to exert low effort.

Ashraf et al (2014) also report negative effect of monetary incentives in their field experiment on the effect on monetary vs non-monetary incentives in increasing sales of female condoms to protect against the spread of HIV in Zambia. Results suggest that non-financial incentives induced higher performance (sales) than the monetary ones. In their experiment to determine the variables that would give small businesses an edge over larger businesses in attracting and maintaining workers while optimizing workers performance. The study suggests that non-monetary incentives such as employee recognition and job enrichment affect job satisfaction in small businesses. The authors also suggest that employee's income was the least factor with regard to the success of non-monetary incentives as listed above.

Incentives as Conditional Cash Transfers (CCTs)

Over the past decade, conditional cash transfer programs has been used as a means of reduce poverty. When an individual's' action does not match societal preferences, conditional cash transfers provide incentives to subjects to make structural changes to their behavior. This change in turn increases the combined welfare of all the subjects. For example, when schooling decisions is made by a parent for their child, they might not take into account the long-term benefits of education but rather the short term rewards. In such cases, giving an incentive to parents only if they agree to send their child or children to school, reconciles the different interests of parents and children (Jishnu Das et al 2005).

Miguel and Kremer (2003, 2004) study a program that provided free deworming drugs to 65 children in rural primary schools in Kenya. The program showed a positive impact of children in the treatment group in terms of health impact and school participation effects than for the children in the control group with no treatment. Foster and Rosenzweig (1995) in their study, find that farmers are more willing to use a new technology when their neighbors do, But they are less willing to make the first move to adopt a new technology and would prefer to wait for their neighbors to make the move first.

Goal Setting

Locke & Latham (1990) in his paper gives a broad definition of goal setting as an object of an action set to attain a particular standard of proficiency usually within a specified period of time. He further stated that the theory of goal setting was formulated on the basis of empirical research which was carried out over four decades. Locke et al (1981) stated that overtime psychologists have identified the importance of stating well-defined and difficult goals of interest to elicit more effort and achieve higher performance. Gneezy et al (2011) adds that giving small incentives in other to motivate people in other to take actions for their own interest as well as trying to fully grasp under which conditions giving people rewards help achieve a desired outcome. They also state that this has become an important interest to experimental and behavioral economists.

Female Entrepreneurship and constraints

O'Connell, (1994) adds to the literature by stating that women are considered mothers who do not take on risky responsibilities and are financially dependent while in their patriarchal home. Fathers/ husbands are then considered the bread winners of the family, who then take on risky activities/investments to provide for them, while restricting their wives/daughters to take on opportunities and portray their potentials in the business world. The reason given to the restriction is that of providing protection for them with amongst men in business arena, Ghosh et al (1998). Another contribution to this literature is that of family derived difficulties which can be tagged as lack of family support, further noted that more working hours will be needed due to the demands from the small business and therefore there is a difficulty of making ends meet at home and at work, Zanakis et al, (2012). Borges et al (2005) goes beyond family derived difficulties to add that sometimes the reason is due to lack of management experience (lack of knowledge on how to draw up a business plan) and training are barriers linked with unsuccessful female businesses, also adds that this is also associated with male entrepreneurs. The world development report (2012) records that in Pakistan, as a requirement in most microfinance organizations, Women must obtain permission from their husband's/family as well as having a male guarantor to accompany the borrower to apply for a loan. Lastly, Shragg et al (1992) adds to this by stating that some of the difficulties faced by female entrepreneurs are that of decreased self-awareness and low self-esteem.

Risk and Women Entrepreneurship/Empowerment:

Entrepreneurship is in a way linked together with risk, that entrepreneurs must be willing to take a risk either to invest or not invest into a project at some point. A lot of study has been carried out and was found that women are more risk averse and this affects them and their business. Garba (2011) adds to this literature by stating that there are linkages between Risk aversion and women empowerment and therefore the effect of a female entrepreneur's behavior to risk affects her lack of business expansion as well as lack of capital as they are not willing to take on risky investments. Elizabeth Arch (1993) concludes that males see a risky situation more as a challenge and this call for participation, on the other hand females see a

risky situation as a threat which then encourages avoidance and this problem affects decisions made by both genders. Rachel Croson et al (2013), stated that there is a common stereotype that women are more risk averse than men and the belief in this stereotype may by itself have implications for what jobs women are offered and how much they are paid. This is especially relevant for jobs requiring risky decision making e.g., investment management, entrepreneurs.

Self-determination theory (SDT)

The whole idea of human needs is important as it provides a means of understanding how various social forces and interpersonal environments affect autonomous vs controlled motivation. It considers whether a particular contextual factor such as a monetary reward, etc is likely to support versus thwart satisfaction of the basic psychological needs, people are able to predict the effects of that factor on such outcomes as motivation, behavior, and well-being. In addition the assumption of basic needs helps explain why only some behaviors actually enhance well-being, whereas others do not.

Kasser & Ryan (1996) A large body of empirical work within the SDT tradition has focused on the long-term goals that people use to guide their activities. These goals fall into two categories that are called intrinsic and extrinsic aspirations. Life goals like affiliation and personal development fall under the category of intrinsic aspirations, whereas extrinsic aspirations include such goals as wealth, fame, and attractiveness. (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004), numerous empirical literatures have suggested that an emphasis on intrinsic goals relative to extrinsic goals is linked with greater health, well-being, and performance.

Deci & Ryan, (1985) the idea of aspirations have been studied in terms of their strength or importance. They bear certain similarity to what other researchers refer to as needs and motives. However we do not consider them to be needs, but instead aspirations are acquired as a function of the degree to which the basic needs for competence, relatedness, and autonomy have been satisfied versus thwarted over time. When needs have been thwarted, people tend to take up extrinsic goals that will result to external indicators of worth, rather than the internal satisfaction of worth that result from need satisfaction. Consequently, extrinsic aspirations are one type of need substitute, they provide little or no direct need satisfaction but people pursue

these goals because they provide some substitute or compensation for the lack of true need satisfaction. Ultimately the authors add that as extrinsic goals are being pursued they tend to crowd out pursuit of basic need satisfaction.

3. Subject Pool, Experimental Design, and Survey Instruments

3.1 Subject Pool and Location

The experiment took place in Abuja the capital city of Nigeria, which is located in the centre of the country within the Federal Capital Territory (FCT) as shown in figure 1. To promote higher levels of development and the activity for women in Nigeria, the National Centre for Women Development (NCWD) was established as an agency of Federal Ministry of Women Affairs and social development. One of the major goals of the centre is providing vocational training in skills development, and different income generation activities, it also serves as a training ground for managers and leaders.

The experiment was implemented through collaboration between the National centre for women development and our research team between June and August 2017. The subjects in the experiment were mostly female entrepreneurs receiving training at the centre between 20-55 years of age. In order to encourage participation, we made the subjects know that there would be a show-up fee to compensate for their time in the study. This information was made known to the subjects during the initial orientation meeting. Therefore, the analysis of the effectiveness of monetary incentives should be unbiased. At the initial orientation meeting subjects were required to sign a consent form in which they agreed to:

- 1) attending weekly meetings.
- 2) being randomly assigned to one of the five treatment groups.
- 3) fill out regular surveys.
- 4) receiving a show fee to compensate for their time in the study.
- 5) receiving refreshments.

At the initial orientation meeting the subjects were required to fill out an orientation survey that included information concerning contact details, demographic data, household and

business characteristics. The total participants with available data are 167 female entrepreneurs. Table 1 in the appendix report the characteristics of our subjects at baseline. With regards to the age variable, the average age of our subjects was varying from 26-35 years of age. In our subject pool, 58% of our participants have attended university or college. 53% of our subjects on an average are single 45% report to be married. With regards to self employment, 45% of our subject pool report to be self employed, while 22% of report to be employed. Self Esteem is mean (0-4) generated from survey self esteem questions, and a 2.09 tells us that the average population agree that they are capable of the same things that other people can do. And that could be the same for the vast majority of the subjects across all group except control II with a 1.75, which tell us they totally agree.

3.2 Experimental Treatment: Monetary Incentives

This field experiment was designed to estimate the effectiveness of monetary incentive and how it motivates female entrepreneurs in achieving their business goals. It consists of 3 treatment conditions: a 2x2 design involving four (4) treatment arms (Group I: goal/no cash prize/group; Group II: goal/cash prize/ group; Group III: goal/no cash prize, no group plus two (2) control groups (Group IV: interviewed at the beginning, mid and endline and Group V: interviewed only at endline of the field experiment). The experimental design can be seen in Figure 2.

Goal Treatment

A list of 8 business goals was developed in cooperation with the National centre for women development and principals through surveys with the subjects in our project. A list of the 8 business goals is shown in the appendix. All subjects, excepting those in the two (2) control groups, were required to set a goal every week. All goals were chosen from the list the eight (8) business goals which can be found in the appendix section. Goals needed to be verifiable, reasonable to accomplish in one (1) week.

A follow-up survey was completed every week, where subjects were asked if they achieved their selected goal or any other goals chosen from the goal list.

Monetary Incentives Treatment

The subjects that were assigned the financial incentive treatment received a cash prize of 4,500 Nigerian Naira (US \$14) whenever they achieved their selected business goal and showed a required evidence at every weekly meeting. Subjects could achieve more than one selected goal, as recorded in their weekly goals survey, but subjects were only paid for the achievement of the selected goal in the previous meeting. The beneficiaries of this cash prize were subjects in treatment group 2 which consists of goal/incentive/support group.

We obtained a 2 x 2 design matrix plus two control groups with the six experimental cells which is described in figure 2. The subjects in both the control groups received only a show up fee of 2,000 Nigerian Naira (US \$6) for answering the survey questions during the time of this study. They did not choose a goal and did not have group meetings.

Group I: Goal, No cash prize, Group. Subjects in treatment group I met on a weekly basis and was required to choose a goal they would achieve. During our weekly meetings the subjects were required to choose a goal and discuss with their fellow members whether they had achieved their previous selected goal, or encountered problems while achieving their goal or could not reach their goal, they were also required to discuss the challenges they faced owning a business in Nigeria. A show up fee of 2,000 Nigerian Naira (US \$6) regardless of whether they achieved their goal or not.

Group II: Goal, Cash prize, Group. Subjects in treatment Group II choose one or more goal every week during the time of the study and received a cash prize if they achieved their selected goal. The subjects received a payment of 4,500 Nigerian Naira (US \$14) if they showed a required evidence at every weekly meeting.

Group III: Goal, No cash prize, No group. The subjects in treatment Group III chose a goal or more every week during the time of the study and a show up fee of 2,000 Nigerian Naira (US \$6) regardless of whether they achieved their goal or not. The meeting for this group was mainly for the completion of survey since subjects were not in a support group.

(Control) Group IV. Subjects in this group were required to fill three (3) surveys; orientation, midline and endline survey at the beginning, in the middle and at the end of the study.

(Control) Group V. The subjects in this group were required to only fill an endline survey at the end of the study.

3.3 Survey Instruments

Depending on which treatment group the subjects were assigned into, they completed between one (1) to six (6) sets of survey throughout the study period: a baseline survey, an orientation survey, a midline survey, an endline survey, a goal survey and a goals follow-up survey. The orientation survey was first administered at the first meetings to all subjects except subjects in (control) Group V who was scheduled at the end of the study. The orientation survey included questions on: age, ethnicity, religion, marital status, occupation, the relationship to the head of the household, their current level of education, whether or not they had saved some money in the past two (2) weeks, current mode of savings and some business related questions. This survey was followed by the baseline survey that asked questions on income, success of their business, self esteem, risk, patience level, number of meals missed, income and migration. The midline survey asked questions on if subjects had established some type of relationship with other people in the study during the program, if subjects were willing to borrow from people in the program if they faced an economic hardship, patience level and risk.

The goal survey included eight (8) business related questions ranging from updating or creating a business plan, attending a business or entrepreneurship seminar, keeping accounting of their business, purchasing a machine for their business, apply for a business license or registration, attend a course on adult literacy/ communication skills and saving a minimum of 5,000 Nigerian Naira (US \$14). In the same survey they were required to rate the level of difficulty of each goal and select one (1) of the eight (8) goals they could achieve within a week.

This survey was followed by a goals follow-up survey the following week. The survey asked subjects to rate the difficulty to achieve their selected goal. Our research team and the enumerators conducted every meeting, survey, and payment throughout the experiment period, to limit the level of attrition. All meetings were held at the National center for women development. We called and texted each participant reminding them of their upcoming meeting, we also scanned all the surveys, receipts, and the sign up sheets.

4. Model and Hypothesis

The goal of the experiment is aimed at evaluating the effect of the conditional monetary incentive aspect and how it pertains to goal achievement among female business owners in Nigeria.

4.1 Model :

$$Achievement_{it} = \alpha + \beta_1 \text{Incentive} + \beta_2 \text{SHG} + \gamma \mathbf{X}_i + \epsilon_i$$

Where the left hand side (LHS) variable *Achievement* represents whether the subjects assigned to the treatment group achieved their specific goal in session t. Incentive is a variable that equals one (1) if a subject was assigned to the treatment arm that was required to form a support network, received a cash reward upon the completion of their selected goals. The support group takes on the value of one (1) if a subject was in the treatment arm that had a support group network and was not given a cash reward for goal achievement

X represents a vector of the subjects covariates that may have been a likely contribution to whether the subjects achieved their goal. These include Age, Head of household, Education, ethnicity, religion, marital status, meals missed, number of children and self esteem estimates.

4.2 Hypothesis:

We assume that giving subjects incentives will have a positive effects on the probability of subject goal achievement. A significant β_1 on the interaction term would suggest that the subjects with both support group and monetary incentives do better at achieving their selected business objectives compared to those with only one or the other. Our research question seeks

to test the hypothesis, in this case whether incentives motivates or increases goal achievement rate among female entrepreneurs.

H_0 : Monetary incentives have no effect on average goal achievement rate.

H_1 : Monetary incentives do have an effect on average goal achievement rate.

5 Experimental Results

5.1 Average Achievement of Selected Goals by Treatment arm

Figure 5 shows the mean of the average achievement of selected goals by only the treatment arm. The control groups are not reflected because they are not selecting goals. The bar chart shows that subjects in Group II (Self-help group and cash prize) achieved their selected business goals 68% of the time which shows the highest coefficient (see Figure 5), but there is no significant difference between Group II and Group III (No Self-help group and no cash prize) were subjects achieved their goals 63% of the time. It is worth stating that 59% of participants in Group I (Self-help group and no cash prize) achieved their goal. These findings illustrate the fact that monetary incentive is not a good motivator in making subjects to achieve their goals.

The experiment was conducted within 1 month. In the first week subjects were required to set a goal to be achieved within a week. In the second week (period 2), a proof of goal achievement was required based on the set goal chosen in the previous week. After this was done, subjects were also required to set a new goal in which a proof of goal achievement was required the following week (period 3). Therefore, the experiment had 2 time periods in which goal was achieved. So figure 3 displays the achievement of chosen goals in period 2. Interestingly, there is still no significant difference between all treatment at this time period. It is worth noticing that subjects with no self-help group and no cash reward still achieved their selected business goals 75% of the time. Comparing this treatment arm to Group II (Self-help group and cash prize) who only achieved their goals 63% of the time. The difference is clear when comparing to subjects in Group I (self-help group and no cash prize) with a 46% of achievement rate.

Figure 4 represents the achievement of chosen goals in period 3 (last time period). The subjects in Group III (No Self-help group and no cash prize) did significantly worse in period 3 than in period 2. Also compared when compared to subjects in other groups (73%-74%). Although there is no significant difference between Group I and II, it is worth stating that subjects in Group I achieved their selected goals 73% more in this period than in the second period.

5.2 Logit regression of Goal Achievement by Treatment arm

Table 2 displays output of a logit estimation for period 2. This was done to estimate the probability of our subject pool achieving a selected goal in one week for the first time period the selected goals were achieved. The dependent variable is defined as whether or not participants achieved their goal selected at our meeting in period 2. By doing this, it assumes a logistical distribution which makes the logit model appropriate. As seen on the table, separating the effect of Self-help group and incentives on goal achievement separates the effects of the treatment arms. It is worth noting that for the purpose of this research, the base group in our regression is treatment group 1. Both treatment I and II were required to set goals and form a support network but only treatment group II was given a cash reward for goal achievement.

From table 2, the incentive treatment which showed the subjects in treatment group II who received a cash prize for goal achievement suggests that the incentive did have a positive effect on whether subjects achieved their selected business goal. Although the coefficient shows that it is statistically insignificant across all specifications. The same could be said for the age and university variable when controlled for. They both show a positive effect on goal achievement rate. The married variable represents the subjects who were married in our experiment. The results showed a positive effect on goal achievement rate in period 2. The coefficient also report that it is statistically significant at the 5% level even across different specifications.

From table 3, the incentive treatment which shows the subjects who received cash rewards, showed to have a positive impact on goal achievement but the coefficient report that it is statistically insignificant throughout different specifications. The standard errors seems to be

biased upwards, and this could be due to the small sample size in the experiment. Even adding more controls, the standard error stays in the same range. When the age variable was added to the regression, it showed to have a negative effect on whether subjects in the incentive group achieved their goal or not, thereby reporting statistically insignificant coefficient. Interestingly, when the university variable was added to the regression the results seems to be an insignificant determinants of goal achievement rate, then the coefficient changes to negative as we increased the number of specifications.

The risk index was created by calculating the mean of the answers to risk questions we asked subjects in the survey. The coefficient shows that the risk index is an insignificant determinants of average goal achievement rate. The goal difficulty variable is an estimate of how difficult (whether the goal was easy, normal, difficult) the specific goal would be to achieve. The coefficient shows a positive impact on goal achievement rate.

We present in table 4 a panel logit estimation where the dependent variable takes a form of 1 or 0 as whether or not participants achieved their goal selected at our meeting in time t . As seen on the table, the first specification report that the effect of giving cash rewards is statistically insignificant even when controls are included in different specifications but results also reveal that giving monetary incentives has a positive impact on average goal achievement rate.

Our specifications across the columns subsequently add controls such as: Age, college, number of meals missed, and risk mean. Where the age variable has a impact on the average goal achievement rate. The coefficients are statistically insignificant all through when other controls were added. That is the same for college (where subjects chose university as their highest level of education in the survey) and number of meals missed. It is also noteworthy that in specification (7) both the average the risk mean and goal difficulty variable are insignificant determinants of average goal achievement rate.

6 Conclusion

The idea of the Family Independence Initiative model potartys a low cost treatment that involves the use of three (3) behavioral mechanism: goal-setting, monetary incentives and peer support group in other to alleviate households out of poverty. Evidence from our experiment among a sample of female entrepreneurs in Abuja, Nigeria, studies the FII approach by separating the different components of this framework into three experimental treatment arms. Being in a peer support group, setting a goal and being issued a cash reward does not increase a subjects probability of achieving a selected business goal. Also, being in a peer support group, were a subject had to set a goal but not issued a cash prize for achievement showed insignificant determinants of average goal achievement rate.

Our experiment suffered from a few problems which may have affected the outcome of our results. The first being short period of time. Prior studies have conducted this experiment between 6 months to a 1 year to actually see the effect of the Family Independence Initiative model, whereas our experiment was conducted within one (1) month. The second is a larger sample size was needed. Previous study using the same model has been studied in Medellin, Colombia showed positive results suggesting that the combination of goal setting, issuing monetary incentive, and group support resulted in the highest outcome for both achieving individual outcomes and increasing total business sales, Alessandra Cassar et al, (2016). Future studies should take these into account as they could possibly bias results.

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Figure 1: Location of the field experiment labelled.
 Source of original map: Wikipedia

Control Groups: No goal, No cash prize, No group		Support Group	
Control group 1: survey at base/mid/end line (39)		No Group	Group
Control group 2: survey at end line (48)			
Monetary incentives	No Prize	Treatment group 3 Goal, no prize, no group (24)	Treatment group 1 Goal, no prize, group (31)
	Prize		Treatment group 2 Goal, prize, group (25)
Figure 2: Experimental design			

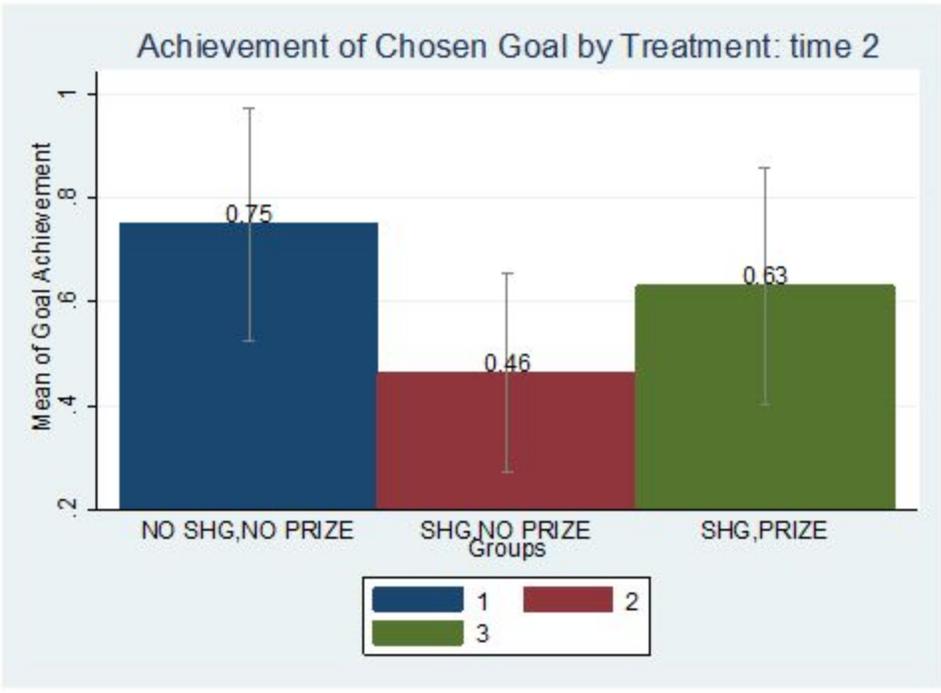


Figure 3: Achievement of chosen goal by treatment group in period 2

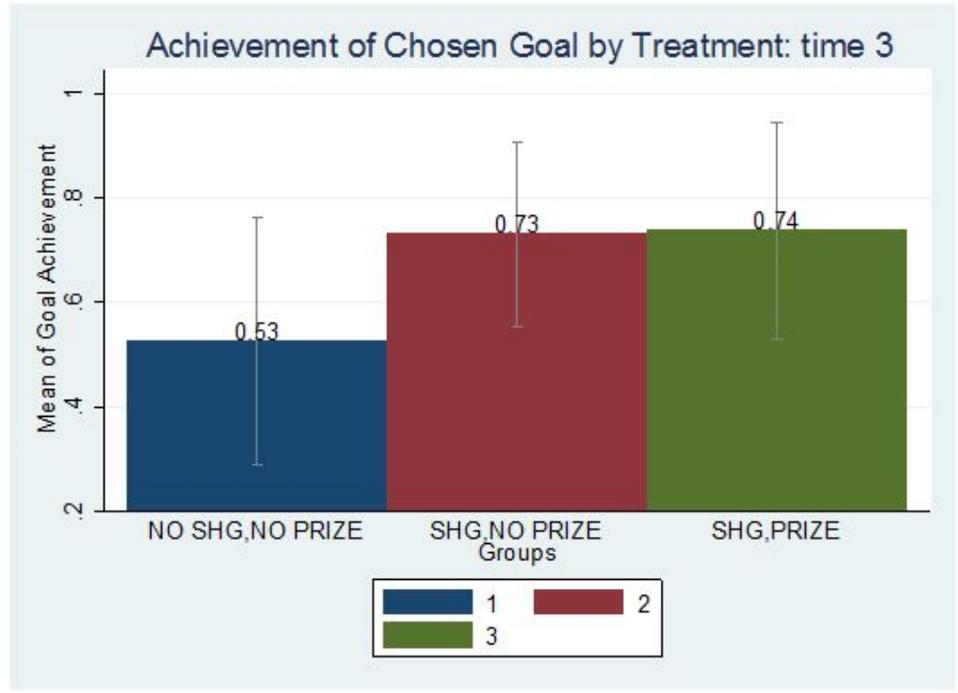


Figure 4: Achievement of chosen goal by treatment group in period 3

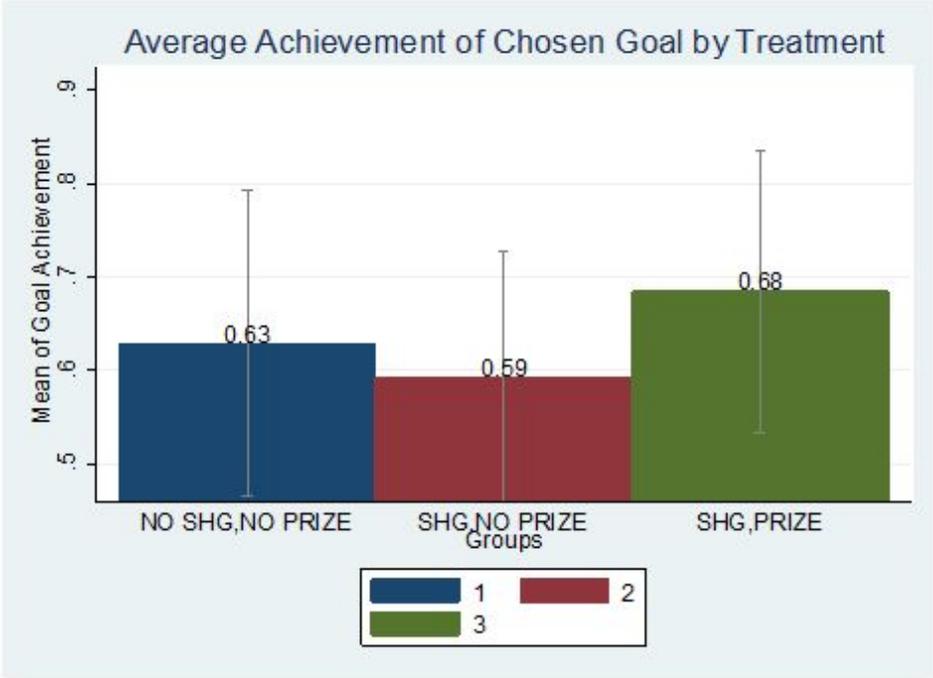


Figure 5: Average achievement of chosen goal by treatment arm.

Table 1. Summary Statistics at Baseline: Balance check

	ALL (N=167) Mean (Std. Dev)	Treatment I (N=31) Mean (Std. Dev)	Treatment I 2 (N=25) Mean (Std. Dev)	Treatment 3 (N=24) Mean (Std. Dev)	Control I (N=39) Mean (Std. Dev)	Control II (N=48) Mean (Std. Dev)
Age	2.11 (0.82)	2.06 (0.60)	2.30 (0.84)	2.05 (0.76)	2.06 (0.92)	2.12 (0.91)
College Education	0.58 (0.50)	0.61 (0.50)	0.62 (0.50)	0.43 (0.51)	0.61 (0.50)	0.60 (0.50)
Unmarried	0.53 (0.50)	0.60 (0.50)	0.47 (0.51)	0.43 (0.51)	0.46 (0.50)	0.62 (0.49)
Married	0.45 (0.49)	0.39 (0.49)	0.43 (0.51)	0.56 (0.51)	0.54 (0.50)	0.37 (0.49)
Self Employed	0.452 (0.49)	0.285 (0.46)	0.5 (0.51)	0.636 (0.49)	0.567 (0.50)	0.354 (0.48)
Employed	0.229 (0.42)	0.142 (0.35)	0.181 (0.39)	0.136 (0.35)	0.108 (0.31)	0.437 (0.50)
Base esteem	2.09 (0.51)	2.25 (0.52)	2.10 (0.48)	2.24 (0.46)	2.32 (0.36)	1.75 (0.51)
Base risk	7.76 (2.29)	7.85 (2.32)	7.55 (2.21)	7.09 (2.42)	7.86 (2.53)	8.05 (2.08)

Notes: Education is coded as having completed 1=none, 2=primary, 3=Secondary school, 4=HND/OND, 5=University, 6=Vocational training, 7= Technical. Age is coded as being in an age group between 1=18-25, 2=26-35, 3=36-45, 4=45-65. Marital status is coded as subjects being 1=single, 2=Married, 3=Civil union, 4=Widow, 5=Separated, 6=Divorced. Sufficient income is self assessment whether household has 1=insufficient, 2=sufficient, 3=more than sufficient income to cover basic needs. Self Esteem is mean (0-4) generated from survey self esteem questions. Risk is mean (1-10) generated from survey risk questions.

Table 2: Achievement of Selected Goal by Treatment arm: Period 2

VARIABLES	(1) GoalAch	(2) GoalAch	(3) GoalAch	(4) GoalAch	(5) GoalAch	(6) GoalAch	(7) GoalAch
Incentive	0.682 (0.608)	0.309 (0.643)	0.0718 (0.672)	0.182 (0.710)	0.335 (0.755)	0.202 (0.769)	0.300 (0.807)
Age		0.517 (0.447)	0.789 (0.500)	0.423 (0.543)	0.771 (0.602)	0.725 (0.625)	0.323 (0.703)
University			0.874 (0.721)	0.762 (0.757)	0.677 (0.813)	0.863 (0.844)	0.703 (0.850)
Married				1.496** (0.750)	1.651** (0.804)	1.373 (0.836)	1.435* (0.870)
Numofmeals					0.499 (0.722)	0.673 (0.746)	0.481 (0.764)
Riskmean						-0.176 (0.177)	-0.190 (0.179)
Goaldifficultymean							1.144 (1.491)
Constant	-0.143 (0.379)	-1.074 (1.009)	-2.149 (1.347)	-1.876 (1.392)	-3.323* (1.958)	-2.044 (2.277)	-3.212 (3.609)
Observations	47	44	43	43	42	41	38

Standard errors in parentheses

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

Logit, dep. var. = 1 if subject achieved her/his goal, 0 if not

Table 3: Achievement of Selected Goal by Treatment arm: Time 3

VARIABLES	(1) GoalAch	(2) GoalAch	(3) GoalAch	(4) GoalAch	(5) GoalAch	(6) GoalAch	(7) GoalAch
Incentive	0.0311 (0.683)	0.349 (0.788)	0.255 (0.800)	0.277 (0.814)	0.333 (0.859)	0.381 (0.856)	0.395 (0.874)
Age		-0.651 (0.530)	-0.597 (0.556)	-0.633 (0.594)	-0.372 (0.669)	-0.353 (0.667)	-0.627 (0.726)
University			0.0994 (0.825)	0.0956 (0.827)	-0.241 (0.905)	-0.231 (0.897)	-0.326 (0.905)
Married				0.140 (0.803)	0.0746 (0.856)	0.0285 (0.881)	0.0623 (0.895)
Numofmeals					1.009 (0.829)	0.986 (0.845)	0.659 (0.862)
Riskmean						-0.0619 (0.187)	-0.0634 (0.186)
Goaldifficultymean							0.957 (1.649)
Constant	0.999** (0.442)	2.410* (1.241)	2.233 (1.528)	2.240 (1.532)	0.507 (1.952)	0.948 (2.449)	-0.0257 (3.828)
Observations	45	40	39	39	38	37	34

Standard errors in parentheses

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

Logit, dep. var. = 1 if subject achieved her/his goal, 0 if not

Table 4: Achievement of Selected Goal by Treatment arm

VARIABLES	1 GoalAch	2 GoalAch	3 GoalAch	4 GoalAch	5 GoalAch	6 GoalAch	7 GoalAch
Incentive	0.538 (0.745)	0.483 (0.790)	0.260 (0.775)	0.324 (0.756)	0.431 (0.692)	0.401 (0.743)	0.450 (0.740)
Age		-0.0177 (0.507)	0.175 (0.525)	-0.148 (0.544)	0.198 (0.509)	0.142 (0.548)	-0.260 (0.599)
University			0.743 (0.833)	0.668 (0.811)	0.382 (0.727)	0.481 (0.780)	0.337 (0.764)
Married				1.336 (0.862)	1.234 (0.776)	1.111 (0.835)	1.116 (0.825)
Numofmeals					0.745 (0.679)	0.886 (0.754)	0.590 (0.726)
Riskmean						-0.147 (0.175)	-0.157 (0.170)
Goaldifficultymeans							1.291 (1.418)
Constant	0.504 (0.476)	0.636 (1.166)	-0.216 (1.417)	-0.0411 (1.377)	-1.670 (1.651)	-0.569 (2.162)	-1.949 (3.359)
Observations	92	84	82	82	80	78	72
Number of SubjectID	52	47	46	46	45	44	41

Standard errors in parentheses

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

Logit panel, dep. var. = 1 if subject achieved her/his goal, 0 if not

ROUND 1

0	1	LOCATION			T/C			ID NUMBER:		
		0	0	1	T	0	3			
DATE: 7/20/2017		TIME:		BEGIN:		END:		DURATION:		

1. Please mark with an X the level of difficulty that you consider each of the following activities to have:



NUMBER	ACTIVITY	LEVEL OF DIFFICULTY
1	Update or create a business plan for your business (whether you have a business or not)	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3
2	Attend a business or entrepreneurship seminar	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3
3	Begin or continue to keep accounting of your business, and show the gains and losses statement (record keeping)	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3
4	Purchase a machine, tool, or equipment for your business	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3
5	Create and implement a marketing strategy for your business (website, social networking sites (Facebook), etc. for those businesses that apply or those about to begin)	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3
6	Apply for any of the following licenses or registrations that you do not currently have (only if required for your business): - Registry with tax board - Operation - Sanitation - Food handling - Public space	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3
7	Attend a course for adult literacy course/ communication classes (how to interact in a business setting)	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3
8	Save a minimum of #5000 naira every week for the next week in a savings account -- If you do not have a savings account, we suggest you open an account in a cooperative or an informal institution of your choice	<input type="radio"/> Easy = 1 <input type="radio"/> Normal = 2 <input type="radio"/> Difficult = 3