Can Boosting Savings and Skills Support Female Business Owners in Indonesia? Evidence from a Randomized Controlled Trial

Mayra Buvinic, Hillary C. Johnson, Elizaveta Perova, and Firman Witoelar

Abstract

There is broad evidence of gender gaps in the productivity of microenterprises, which are in part linked to financial and human capital constraints. Existing literature suggests that interventions simultaneously addressing skills and capital constraints can be effective, but there is little evidence to date exploring the combination of skills and savings interventions. This study tests the relative effectiveness and cost effectiveness of providing supply-side incentives to promote agent banking savings accounts, business and financial literacy training for female entrepreneurs, and the combination of the two on women's businesses and agency in Indonesia. The study took place in 401 villages in East Java in which agent banking products were recently introduced. Although the trial found only small positive effects on the take-up of branchless banking services, both interventions had significant positive impacts on women's profits. The impacts of the training and mentoring intervention seem to come in part from improved business practices, greater savings, increased business assets, and increased decision-making power. Because the high incentives treatment impacted women's profits but not any intermediate outcomes the mechanisms are less clear—potentially coming either from a more woman-friendly business environment or through using their husbands' savings or their existing savings to support their businesses. Although the high agent incentives are more cost-effective than the training and mentoring, policy makers may still prefer the demand-side intervention, as it has more positive implications for women's overall empowerment and stronger impacts for the poorest quintile of female entrepreneurs.

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Mayra Buvinic
Center for Global Development

Hillary C. Johnson
The World Bank

Elizaveta Perova
The World Bank

Firman Witoelar
Australian National University

Center for Global Development
2055 L Street NW
Washington, DC 20036

202.416.4000
(f) 202.416.4050

www.cgdev.org

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Center for Global Development
2055 L Street NW
Washington, DC 20036

202.416.4000
(f) 202.416.4050

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Contents

1. Introduction

There is broad evidence that there is a gender gap in productivity and earnings among entrepreneurs, and differences in endowments, such as financial and human capital, contribute to this gap (World Bank, 2012). Current evidence on the effectiveness of different interventions targeting such skills and capital constraints have shown mixed evidence for female entrepreneurs, suggesting the importance of specific program design features and in some cases context specificity. While some business training programs have not led to statistically significant increases in women's profits (Berge et al. 2011, Gine and Mansouri, 2011), others have improved their business performance (Calderon et al., 2012; McKenzie and Puerta, 2017). In some cases, training that focused on simple rules of thumb has proven more successful (Drexler et al. 2012), while in others, psychology-based business training such as personal initiative have proven effective (Campos et al. 2017). Alternatively, some skills development programs have proven more effective when combined with capital injections in the business (de Mel et al. 2012). Nevertheless, there is some evidence that cash grants on their own may not support the development of female-owned businesses because the cash is diverted into other household businesses (Bernhardt et al., 2019).

Savings promotion has been shown to support the growth of female-owned businesses (Ashraf, Karlin and Yin, 2006; Burgess and Pande, 2005; Dupas and Robinson, 2013; Schaner, 2018). However, there is little evidence on whether savings promotion combined with skills training can be an effective policy alternative to more costly interventions targeting both skills and capital constraints. This study aims to fill this knowledge gap. In addition, it sheds light on what works (or not) to promote a specific type of savings product that may have benefits for female entrepreneurs—agent banking savings accounts. Agent banking brings formal financial services closer to entrepreneurs, which may be particularly important for female entrepreneurs who may face more mobility constraints or demands on their time. While digital financial services have been identified as a promising intervention for supporting female entrepreneurs (Buvinic et al., 2017), there is limited evidence on how to promote these products among female entrepreneurs.

This study explores the extent to which alleviating different constraints that female entrepreneurs face improves their businesses' performance and their agency. First, it explores whether savings promotion can alleviate capital constraints that women face. Savings were promoted both through the introduction of agent banking products in the village and through a business and financial literacy training and mentoring program that emphasized the importance of savings. Second, the study addresses skills gaps between male and female entrepreneurs by offering financial and business literacy training and mentoring to selected female entrepreneurs. Finally, it examines how effective supply-side and demand-side incentives are at promoting agent banking products among female business owners in Indonesia.

The study took place in 401 villages in East Java, Indonesia, and the research team partnered with an Indonesian bank that was beginning to roll out agent banking products in these

villages.[1] In all villages, a branchless banking agent was identified according to the partner bank's criteria, and they received training and mentoring on how to use and promote the product, with an emphasis on promoting the product among female entrepreneurs. All agents typically receive financial incentives for each new client they enroll in the product, as well as for transactions like withdrawals and deposits. However, in approximately half of the study villages, agents were randomly selected to receive five times the typical incentive for each new client they enrolled. These high incentives were expected to motivate agents to put more effort into promoting the product among potential clients and thereby increase the take-up and use of the product among villagers.

After listing male and female business owners in each village, the research team randomly selected half of the sample female business owners to be invited to a business and financial literacy training and mentoring program delivered by MercyCorps Indonesia. The training and mentoring program covered topics regarding financial management and planning, bookkeeping, saving, and branchless banking products. The lessons focused not only on the importance and value of each of these tools but included detailed steps for implementing related good practices in the business. The mentoring sessions reinforced the material covered in the training and enabled female entrepreneurs to discuss and find solutions to the challenges they encountered when applying the lessons. The training and mentoring intervention was expected to alleviate skills constraints and to promote savings development, including take-up of the new branchless banking product.

We find convincing evidence that alleviating skills constraints can support women's business development and agency in Indonesia. The business and financial literacy training and mentoring program led to a 15.2% increase in women's profits and increased women's decision-making authority over household purchases. The increase in profits is likely driven at least partially by an increase in savings, the value of their business assets, use of good business practices, and decision-making authority. The intervention is also cost effective, generating increases in profits that are more than five times the cost of the intervention. These results show that a well-designed and implemented training and mentoring program can boost the productivity of women's businesses.

This program may have been successful for several reasons. The training was delivered by experienced trainers and well adapted to the context and the needs of the entrepreneurs. Mentoring sessions also supported the entrepreneurs in applying the training to their businesses. Alternatively, the training program was offered in villages where agent banking products were recently introduced. Perhaps greater access to financial services could have also supported the success of the training program, even if actual take-up of these financial services was low.

The results also provide evidence that savings can support the growth of women-owned businesses in Indonesia. The training and mentoring increased the total amount women business owners saved over the past 12 months by approximately 11.3%, and this contributed to the increase in their profits. Moreover, the high agent incentives designed to promote the agent banking savings products led to an increase in the profits of women's

[1] At the beginning of the study, there were limited other branchless banking options available in these villages.

businesses by 11.8%. Although the high agent incentives did not lead to a statistically significant increase in entrepreneurs' savings, the promotion of these products may have created a signaling effect related to the importance of savings.

Neither the supply-side nor the demand-side incentives led to a consequential increase in the adoption of the agent banking products. The interventions were designed to address constraints related to entrepreneurs' knowledge of the products and agents' motivation to promote the products. The training and mentoring increased female entrepreneurs' knowledge of branchless banking products; however, this increased knowledge did not translate into meaningful impacts in take-up of the products. Although the supply-side incentives did lead to an increase in women's profits, there was no impact on their take up or use of the agent banking product. Additional research is needed to understand the main constraints to the adoption of the product.

The next section discusses the literature review and knowledge gaps this paper tries to address. The following section discusses the context of the study, including details on the agent banking products that were offered in all study locations and the characteristics of the targeted female entrepreneurs. After discussing the study design in section 4, we present the methodology in section 5 and the results in section 6. Finally, we conclude with a discussion of these results in section 7 and implications for policy and future research in section 8.

2. Literature review and knowledge gaps

Savings are important not only as a source of funds for investment and growth of businesses but also because of their role in smoothing spending over time and providing protection from shocks. Evidence from several studies suggests that improved access to savings accounts, through lowering transactions costs, leads to increased savings and, ultimately, to increased business investment and higher incomes among female business owners (Ashraf, Karlin and Yin 2006, Burgess and Pande 2005, Dupas, Green and others 2012, De Mel, McIntosh and Woodruff 2013, Dupas and Robinson 2013, Prina 2015, Suri and Jack 2016, Schaner 2018). However, there are important constraints to the use of savings accounts and other financial services, including both pecuniary and non-pecuniary transactions costs, lack of trust in financial institutions, regulatory barriers, information and knowledge gaps, social constraints and behavioral biases (Karlan, Ratan and Zinman 2014, World Bank Group 2019). Several of these constraints affect women in particular, who tend to have less free time and reduced mobility, less schooling, and whose financial resources are more vulnerable to competing demands from spouses. Although many women save, they are more likely to use informal channels, such as ROSCAs, or to save in the form of assets (e.g., jewelry, livestock) that provide lower returns and greater risks. Digital banking (i.e., use of mobile phones and agents) to access savings accounts is viewed as an effective way to address several of these constraints for women, low-income and rural segments (Karlan, Ratan and Zinman 2014, Women's World Banking 2015, Barry 2018, World Bank Group 2019).

Little is known currently about the most effective ways to promote branchless banking services to WBOs or whether doing so is likely to reduce gender differentials in savings, business assets and business incomes. However, supply-side incentive schemes that reward good performance (bonus, promotion based on performance) have been shown to be

effective in many contexts. In Rwanda, for example, higher performance pay was found to increase health workers' effort and performance (Basinga and others 2010, Gertler and Vermeesch 2012, Ashraf, Bandiera and Jack 2014, de Walque and others 2015). However, there are no trials testing the effectiveness of supply-side incentives in financial services. One RCT conducted in India included a treatment arm providing a one-percent commission to agents enrolling customers in a long-run savings product (Basu and Bisht 2015). However, during initial piloting of the treatment, it was determined that agents would make no effort to promote the product in the absence of the one-percent commission. Accordingly, the commission was provided to all agents, thereby removing the possibility of measuring its separate effects.

On the demand side, the effects of short-term financial literacy training on account take-up, utilization, savings and income were not well established in early studies (Karlin, Ratan and Zinman 2014, Fernandez, Lynch and Netemeyer 2014). In Indonesia, a carefully designed two-hour financial literacy training delivered in the home villages of the trainees with the specific goal of teaching households about bank accounts (but which also treated additional topics, such as the power of compound interest and the advantages and costs of saving) by itself had neither short-term nor longer-term effects on the take-up of a formal bank account (Cole, Sampson and Zia 2011). Similarly, an RCT conducted in western India found that providing two days of financial literacy training to women working in the informal sector had no effect on their probability of saving (Field, Jayachandran and Pande 2010). However, meta-analysis of the effects of financial training programs, including many recent studies, suggests that they have significant positive effects on both financial knowledge and downstream financial behavior, including savings, in both developed and developing countries (Kaiser and Menkhoff 2017, Kaiser, Lusardi, Menkhoff and Urban 2019).

RCTs providing business training, which vary greatly in the length and type of training provided as well as in the characteristics of the trainees and their firms, have found few significant effects on business profits unless the training is combined with other interventions such as capital grants (McKenzie and Woodruff 2014, Cho and Honorati 2014, Ismail 2018). However, some more recent business training trials targeting poor micro-entrepreneurs have shown positive effects on profits (Calderon, Cunha and de Giorgi 2013, Valdivia 2015, Bruhn, Karlan and Schoar 2018, Anderson-MacDonald and others 2018). Although most business training RCTs have found significant positive effects on business practices, the estimated effects have been relatively small and have not been accompanied by significant effects on profits (McKenzie and Woodruff 2015). It is also possible that traditional business training has focused on the wrong types of skills, for example, standard business skills (e.g., marketing, accounting) rather than "personal initiative" (Campos and others 2017) or simpler rules of thumb (Drexler, Fischer and Schoar 2014) or that it neglects potentially important peer group effects (Karlan, Ratan and Zinman 2014, Field and others, 2015).

This study draws on the existing knowledge and fills some gaps. The study's interventions are designed to promote savings as a potentially effective substitute for the cash grants that previous studies have found to be an effective complement to business training. The study

also uses training and mentoring as a nudge to save in formal bank accounts as a substitute for the financial incentives that have been used for this purpose in several recent studies. At the same time, the study fills some gaps, including providing evidence on the potential effectiveness of supply side subsidies to promote the adoption of a new financial product among female entrepreneurs.

3. Context

3.1 Branchless banking in Indonesia

As discussed in the introduction, the study took place in villages in which agent banking products were recently introduced. Although the adoption of the agent banking products was low both overall and as a result of the treatments, the effectiveness of skills development and the increase in savings may have been enhanced by the availability of new financial services in the village. As such, this section describes the branchless banking products in more detail as well as the targeted study population.

To promote full financial inclusion, the Indonesian Financial Service Authority (OJK) issued a regulation in 2014 to establish banking services not through branch networks, or "branchless banking."[2] The Indonesian model of branchless banking (*Laku Pandai* or LP)[3] uses village-based agents and mobile communications (including both SMS and internet access) to provide basic banking services, including basic savings accounts, credit and financing for micro businesses, micro insurance and other government-approved financial products (Lytle 2018).[4] The agents are mostly existing shop-owners who are authorized to assist customers with functions that are normally performed at more distant branch offices or ATMs, such as account opening, deposits, and withdrawals.

Although the LP regulation includes several products, the study was particularly focused on promoting the LP basic savings account. The LP basic savings accounts do not have opening or maintenance fees and are interest bearing. They have a maximum balance of Rp. 20 million (equivalent to US$1,500) and a monthly maximum cash withdrawal or transfer of Rp. 5 million. Only the account holders and their banks have access to account balances, which makes them less vulnerable to the demands of spouses and other social claimants. The LP basic savings accounts are intended to supplement digital wallet (LKD) products already offered by several banks and retail firms that provide a narrower range of services. LKD is an Indonesian acronym for "digital financial services," an electronic payment and transfer system. Unregistered LKD accounts have a maximum balance of Rp. 1 million and can only

[2] OJK Regulation No. 19/POJK.03/2014 dated 18 November 2014 ("*Laku Pandai* Regulation").
[3] "Laku Pandai" is an Indonesian acronym for the provision of banking and other financial services without branch offices.
[4] Credit and financing for LP customers have a maximum loan period of one year and a maximum loan value of Rp. 20 million.

be used for payments. However, when registered by an agent, the maximum balance is Rp. 5 million, and the account can also be used for transfers and withdrawals.

3.2 Description of the study population

This study focuses on microbusinesses due to their prevalence in the Indonesian economy and the focus of the LP products on promoting financial inclusion. Only 8% of female businessowners in the sample have any paid workers, and their average monthly profits are Rp. 1.6 million (approximately USD 119). Consistent with the global evidence described in the introduction, the female entrepreneurs have smaller and less profitable businesses than the male entrepreneurs in our sample. Women business owners (WBO) earn about half as much as men business owners from their primary and secondary businesses, have fewer paid employees, and have only about a third of the business assets (Table 1). Moreover, sample WBO are using fewer good business practices than men businessowners and are only using about one fourth of the good business practices measured at baseline, suggesting the relevance of skills constraints. There are also notable gender differences regarding loans and savings. Indeed, WBO are about half as likely as men business owners to have borrowed money during the past 12 months. Moreover, their total savings during the last 12 months are about half as large in value, despite that 84% of WBOs report having saved during the last 12 months, compared to only 69% of men.

Although most WBO are saving, informal savings mechanisms are prevalent. Just under half of sample WBO have a bank account registered in her own name (47.7%), which is similar to the Global Findex 2017 estimate of account ownership for women in Indonesia (51%). Although 50% of women in the control group at endline have any savings in formal mechanisms (including formal bank accounts, LP accounts, LKD accounts, or other electronic savings accounts), only 31% have used any of these mechanisms to save during the past 12 months. Even among those who do use formal mechanisms, these savings are complementary to informal mechanisms, such as saving with friends or family, through arisans[5], informal savings networks, or at home. On average, among those who have formal savings balances, only 46% of their savings balances are in these formal accounts. This suggests that there could be a viable market for agent banking products. Most entrepreneurs are familiar with formal savings mechanisms but rely still heavily on informal savings systems. This is a signal that the formal financial products available at baseline only partially meet the needs of female entrepreneurs.

As discussed above, the targeted LP products have a maximum account balance of Rp. 20 million and a monthly maximum cash withdrawal or transfer limit of Rp. 5 million. These limits would likely not be restrictive for the majority of the WBO in our sample. Total savings balances for control women are on average Rp. 7.3 million, well below the maximum account balance. Moreover, average total monthly savings of the control group at baseline are approximately Rp. 500,000, which suggests that transaction limits of 5 million would not

[5] Informal rotating savings and credit associations

pose a significant barrier. Moreover, WBO have a relatively positive perception of the product and the agent. The vast majority of WBO find the transaction costs of the LP and LKD products to be reasonable—only 6% of women disagree with this statement at endline. On a scale of 1 to 10, they perceive the safety of banks' mobile savings products as 6.5 and the reliability as 6.6. At baseline, 59% of WBO know the partner bank's agent, and they perceive the agent as competent (rating them 7.3 on average on a 10 point scale).

4. Description of the trial

4.1 Interventions and theory of change

The trial villages are rural or semi-urban villages in which the study's partner bank planned to establish branchless banking services. In each sample village, the partner bank recruited a branchless banking agent using its standard selection criteria (the selected agents were in many cases clients with a good credit history).[6] All agents were trained and mentored by Mercy Corps Indonesia (MCI), an organization with extensive experience providing financial and business literacy training to Indonesian business owners and farmers. The agent training was provided to all agents in one personal (one-on-one) session that averaged about 3 hours in length (but that varied from 2.5 to 4 hours) in which the agent learned how to use the partner bank's on-line branchless banking software and the features and relative advantages of its branchless banking products. The agent training also included a module on marketing that emphasized the potential value of marketing to under-banked groups, particularly women. Following the agents' initial training, MCI and partner bank staff provided one-on-one mentoring in three subsequent visits during which monitoring data were also collected.

In addition to the training and mentoring provided to all agents, the supply-side treatment included financial incentives to randomly assigned agents.[7] All agents earn a fee for each new LP savings account client enrolled as well as a fee for each client's deposits and withdrawals. The standard agent fee for identifying a new LP client that deposits at least Rp. 20,000 (approximately US$1.50) and who maintains an average savings balance of Rp. 20,000 over two weeks is Rp. 2,000 (about US$0.15). This is the "low-incentive treatment" in the trial. The randomly assigned "high-incentive treatment" is five-times larger at Rp. 10,000 (about US$0.75) for each new client enrolled.[8] As discussed in the literature review section,

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[6] The standard criteria are: (1) the owner is a previous borrower from the bank, (2) the business is in a central location in the village, (3) the owner is mostly present at the business premises, (4) the owner has a good reputation among villagers (as confirmed by the village chief), (5) the owner is able to demonstrate sufficient financial liquidity, (6) the owner is not an agent for another bank, and (6) the owner is willing to participate as an agent.

[7] The trial also provided a village-level informational treatment (orthogonal to the main agent incentive treatment) that varied information about the level of incentives agents received in randomly selected villages. The effects of this informational treatment are analyzed in a separate study (AEA RCT Registry ID AEARCTR-0003 167).

[8] In addition, all agents earn Rp. 1,000 for each cash deposit of minimum Rp. 10,000 and Rp. 2,500 for cash withdrawals under Rp. 200,000 and Rp. 4,000 for cash withdrawals of Rp. 200,000 and above.

incentive schemes have been shown to improve performance in several contexts but have yet to be proven for the promotion of financial services.

The theory of change behind this intervention is that the high incentives will motivate agents to exert more effort to promote the product to clients and that this increased effort on the part of the agents could translate into increased adoption of the product. Adoption of branchless banking products could support the development of women's businesses by providing a safe, convenient, and confidential way to save money. Because this intervention is relatively simple and low-cost to implement, if effective, it could be easily scaled.

The demand-side treatment was provided to randomly selected WBOs in all 401 villages. Seven women business owners were randomly selected in each village from a list of all business owners operating in the village, four of whom were randomly assigned to receive training and follow-up mentoring from MCI with the remaining three women business owners and five randomly selected male business owners not receiving any training or mentoring.[9] The sample WBOs had to be between 18 and 55 years of age, have a currently operating business in a sector other than agriculture, reside in the sample village, and have an operational mobile phone. The WBO training focused on financial and business literacy (tracking income and expenses, setting priorities, the importance of saving, financial planning, basic bookkeeping, cash flow planning, record-keeping) and information on the partner bank's branchless banking products (LP and LKD). Apart from marketing (not included in the training modules though a topic of discussion in the mentoring) and the focus on saving and use of the branchless banking products (included), the topics covered are typical of those covered in business training trials (McKenzie and Woodruff 2014). The initial training was conducted in village groups and lasted for about 3 hours (but ranging from 1 to 4 hours) and was followed up by three group mentoring sessions that focused on addressing any questions from the trainees and on actual practices using their own individual businesses as cases. Each group mentoring session lasted approximately one to one and a half hours. More information on the training and mentoring intervention is in Appendix B.

The training and mentoring could support women's businesses through several channels. On the one hand, the training and mentoring could bolster women's business and financial literacy skills. By applying lessons from the training, female entrepreneurs might implement better business practices or better manage their finances. They may also be better able to mobilize capital, either through lowered costs, increased savings, or an increased ability to seek external financing. On the other hand, the training and mentoring included a module about the agent banking products being promoted in the village, so the intervention may lead to increased demand for these products. As theorized with the supply-side intervention, adoption of agent banking products may offer a more safe, convenient, and confidential way for female entrepreneurs to develop their savings to support their businesses.

[9] In addition to the 1,554 randomly assigned women business owners, MCI monitoring data indicate that 1,228 non-sample WBOs were trained and mentored by MCI together with the randomly assigned sample WBOs.

4.2 Random assignments

Villages (and the agents working in them) were randomly assigned to their treatments in 21 groups of varying numbers as soon as agents were recruited in the sample villages and prior to the initiation of their training. All villages in each of the 21 randomization groups were assigned a random number between zero and one. Villages were sorted on the basis of their random numbers and then assigned on a quota basis to one of the supply-side treatments. Accordingly, the random assignment of agents was stratified by village randomization group.[10] One hundred and ninety-six villages (48.88%) were randomly assigned to the high-incentive treatment, while 205 villages (51.12%) were randomly assigned to the low-incentive treatment.

The random assignment of WBOs to the training and mentoring treatment was done in two steps. First, all 2,840 sample WBOs were assigned a random number between zero and one. Second, the WBOs were sorted by their village location and then by their random numbers within each village. The four WBOs with the lowest random numbers in each village were then assigned to the treatment. The remaining WBOs in each village were assigned to the control group, regardless of their number (most often three). Accordingly, the random assignment of WBOs to the training/mentoring treatment was stratified by village. One thousand six hundred and three of the 2,840 WBOs (56.4%) were randomly assigned to the training and mentoring treatment, while the remaining 1,237 WBOs (43.6%) were assigned to the control group.

4.3 Take-up of treatments

MCI monitoring data indicate that in August 2018 currently active agents in 362 of the 401 sample villages had completed their initial training and three mentoring visits. However, there is some uncertainty about these data. When 189 responding "primary"[11] agents were asked in the Midline Survey (conducted in a non-random sample of 200 of the 401 sample villages in which the training and mentoring was reportedly completed) whether they had ever received any training visits "before" becoming a partner bank agent, only 127 (67.2%) responded "yes." However, when the same group of 189 primary agents were asked if they had ever received any "mentoring" visits to help their performance as an agent, 186 (98.4%) responded "yes." As both the agent training and mentoring was done one-on-one, the agents may not have distinguished between the initial training and the follow-up mentoring.

According to the MCI monitoring data (N=1,554), the percentages of WBOs randomly assigned to the training and mentoring treatment who participated in the initial training and

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[10] It was originally planned to stratify the randomization of agents by three village characteristics (i.e., village size, distance to the nearest bank branch, and presence of competing branchless banking agents). Although this was done for the first two groups of villages, the multiplicity of village randomization groups and the small number of villages in each group made stratification within village groups impractical.

[11] "Primary" agents are agents who were designated by the survey team as actually doing the agent job, as distinct from "secondary" agents (usually other family members) who met the partner bank's criteria to become agents but who did not actually work as agents.

each of the three successive mentoring sessions are 88.6%, 81.3%, 80.2% and 79.0% respectively, indicating a relatively high continuation of treatment. The Endline Survey (ES) asked WBOs whether they had participated (yes-no) in any financial literacy training since 2017 and, if so, the identity of the trainer. Only 62.6% of the responding WBOs (N=1,496) reported that they received any financial literacy training from MCI or the partner bank, compared to a participation rate of 88.6% for the same WBOs in the initial training session, according to the monitoring data. The survey-reported participation rate is also similar to the average participation rate of 65% in several studies reviewed in McKenzie and Woodruff (2014).

Table 4 presents the results of multiple regression analysis of three indicators of WBO participation in the training and mentoring based on the MCI monitoring data (columns 1-3) and one indicator based on the Endline Survey (ES) data (column 4). The results, which indicate only associations between the variables, indicate that several variables are significantly related both to the MCI and survey data on participation (columns 1 and 4), including: "WBO's agency" (positively), "Number of children in the WBO's household" (positively), "Number of paid workers in the WBO's primary business" (negatively), and "WBO belongs to business-related associations or groups" (positively). However, there are also some differences. The MCI participation indicator is also significantly related to "Use of a smart phone" (negatively), whereas the ES participation indicator is significantly related to the WHO's highest level of schooling completed and to her cognitive ability score (both positively, with the latter significant at the 0.01 level).[12] The strong positive relationship between membership in a business-related association or group and both measures of participation is interesting as a possible peer-group effect, as is the strong positive relationship in the monitoring data between the proportion of other sample WBOs in the same village known to the WBO at baseline and the likelihood of completing the training and mentoring sessions.

The results in Table 4 do not resolve the question of which data source on participation in the training is more reliable. Although the monitoring data on participation do not show a significant relationship between schooling and cognitive ability and participation as the survey data do, consistent with possible over-reporting of participation, it is also possible that WBOs with less schooling and lower cognitive ability may have either misunderstood the survey question on participation in the training or failed to recall their participation. However, TOT estimates that use the endline survey participation data are about 60% higher than the corresponding ITT estimates, providing additional evidence that the lower survey-reported rate is more accurate.

[12] The joint hypothesis that the estimated coefficients do not vary between the regressions reported in columns 1 and 4 is rejected at the 0.01 level.

4.4 Data

A Baseline Survey (BS) was conducted in two phases (November 2016-February 2017 in 107 villages and July-November 2017 in 294 villages).[13] The BS collected extensive data on both agents and business owners. BS agent data were collected for 476 agents from 400 villages.[14] BS household data were collected for 4,828 business owners, including 2,852 WBOs and 1,976 male business owners in 401 villages. However, only 4,809 of the 4,828 business owners (including 2,840 WBOs) were randomly assigned to the demand-side treatment and included in the analysis reported in this paper.[15] The business owner data were collected in a single household questionnaire that required about 1.5 hours to administer and that included modules on: (1) location, (2) basic background characteristics (e.g., age, sex, education, marital status, number of children), (3) mobile phone usage, (4) any connections with the branchless banking agents, (5) trust in financial institutions, (6) knowledge and use of mobile and other financial services, (7) savings and credit, (8) economic activities, (9) business assets, (10) household asset ownership, (11) intra-household decision-making, (12) business practices, and (13) and cognitive skills.

A Midline Survey (MS) was conducted in February 2018 with a non-random sample of 200 villages in which the training and mentoring of agents and WBOs had been completed prior to the survey. The MS collected more detailed data on business income, saving and borrowing and also included questions on household income, general happiness, satisfaction with current job, assertiveness and positive attitudes. However, no data were collected in the MS on business practices or housing characteristics.

An Endline Survey (ES) was conducted in all 401 sample villages in November-December 2018. The ES household questionnaire administered to business owners includes modules on: (1) mobile phone ownership and use, (2) knowledge and use of financial services, (3) connections with the agent, (4) savings and credit, (5) economic activities, (6) business assets and investment, (7) business practices, (8) household decision making, and (8) household asset ownership. One hundred and sixty-seven of the 4,809 female and male business owners interviewed at baseline (3.47%), including 113 WBOs (3.98%), could not be re-interviewed at endline (this is referred to in the discussion below as "overall sample attrition").[16] Although this is a relatively low level of sample attrition, attrition rates in some key outcomes (e.g., profits, savings, capital inputs) were substantially higher.

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[13] The 401 BS sample villages included one village in which the agent refused to be interviewed.

[14] The 476 surveyed agents included both 401 "primary" agents (those actually doing the agent job) and 75 "secondary" agents (usually other family members who met the partner bank's criteria to become agents but who did not work as agents).

[15] Of the 19 business owners who were not randomly assigned, 12 are women and 7 are men, with the interviews of 16 of the 19 reported to have been only partially completed (the only partially completed interviews in the BS). Only two of the 19 (both WBOs) were from the same village.

[16] The reported reasons for attrition of the 113 WBOs were: no longer matched the criteria for inclusion (N=1), refused to be interviewed (N=83), could not be contacted (N=2), were too sick to be interviewed (N=1), moved out of the village (N=24), or other (unspecified) reasons (N=2).

Possible attrition bias in WBO outcomes was assessed using the following linear regression model:

$$A_{ij} = \beta_0 + \beta_1 High_j + \beta_2 Train_{ij} + \mathbf{X}_{ij}\boldsymbol{\delta} + \varepsilon_{ij} \quad (1)$$

where A_{ij} indicates that an outcome for individual i in village j in the baseline sample is not reported in the ES, $High_j$ is a dummy variable indicating that the agent in village j was randomly assigned to receive high incentives, $Train_{ij}$ is a dummy variable indicating that WBO i in village j was randomly assigned to receive training and mentoring, $\mathbf{X}_{ij}$ is a vector of 13 baseline covariates and ε_{ij} is a random disturbance clustered at the village level. The results in Table 2 indicate that neither overall sample attrition (column 1) nor the attrition of several other key outcomes for which attrition rates are higher than in the overall sample (columns 2-7) are significantly related to the randomized treatment assignments. However, the results in Table 2 also indicate that attrition is significantly related to several of the covariates, which are jointly significant at the 0.05 level or lower for 5 of the 6 other outcomes in columns 2-7. The WBO baseline characteristics most strongly and consistently related to attrition are age (positively), number of children in the household, the proportion of other sample WBOs in the same village known to the WBO, and the WBO belonging to a business-related association or group (all negatively). The key issue, however, is not whether attrition is higher in one treatment arm or another or whether it is related to the baseline characteristics of WBOs but rather whether the characteristics of attriters differ *across* the treatment arms (Bell and others 2013). Accordingly, equation (1) was re-estimated for each treatment arm separately (with the treatment dummies omitted) both for overall sample attrition in column 1 of Table 2 and for the outcomes with higher attrition than in the overall sample (columns 2-7 of Table 2). The hypothesis that the predictors of attrition are the same across treatment arms could not be rejected at even the 0.10 level for any of the outcomes.[17] Because WBO attrition is not linked with the treatment assignment and the sample remains balanced despite attrition, attrition bias is not a major concern for the WBO analysis. Nevertheless, we used Lee bounds to test whether the results were robust to controlling for potential differential attrition and found that the conclusions of the study do not change.[18]

5. Methods

The hypotheses to be tested, the outcomes involved, and the methods used in the study are described in detail in a pre-analysis plan (PAP) that was prepared and uploaded to the study's registration site prior to the data analysis.[19] For outcomes for which baseline values are available, intention-to-treat (ITT) effects are estimated using the following linear regression model:

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[17] The results are available upon request.

[18] Because they are aligned with the main results, the tables including Lee bounds have not been included in this draft. However, they are available upon request.

[19] RIDIE-STUDY-ID-5c999b9e2beaf. Any departures from the pre-analysis plan and the rationale for these changes are described in Appendix A.

$$Y_{ij} = \beta_0 + \beta_1 high_j + \beta_2 train_{ij} + \beta_3 high*train_{ij} + \gamma Y(t=0)_{ij} + \mathbf{Z}_{ij}\boldsymbol{\delta} + \varepsilon_{ij} \quad (2)$$

where Y_{ij} is the post-treatment outcome of individual i in village j.

$high_j$, $train_{ij}$ and $high*train_{ij}$ are dummy variables referring respectively to the high agent incentives treatment, the WBO training and mentoring treatment, and the interaction term of both treatments combined.

β_1, represents the intention-to-treat effects of the high incentives treatment in absence of the training

β_2 represents the intention-to-treat effects of the training and mentoring treatment in low-incentive villages

β_3 measures the interaction effect between the two treatments. If $\beta_3=0$, the treatments are considered additive, with the combined impact equal to the sum of the two parts. If β_3 is positive, the treatments are complements, and the combined impact is greater than the sum of the two parts. If β_3 is negative, the treatments are substitutes, with the combined effect being lower than the sum of the two parts.

$Y(t=0)_{ij}$ is the baseline value of Y_{ij}. Baseline values of some outcomes are not available. In such cases, the baseline value of a substitute outcome believed to be highly correlated with the unobserved baseline value is specified when available (e.g., savings during the past 12 months as a substitute for the unavailable baseline value of current savings balances).

γ is the fixed coefficient of the baseline value of Y_{ij}

$\mathbf{Z}_{ij}$ is a row vector of covariates, including dummy variables referring to the original randomization strata and other baseline covariates[20]

$\boldsymbol{\delta}$ is a column vector of fixed coefficients of the covariates

ε_{ij} is a random error term clustered at the village level

Equation (2) is estimated by OLS with the estimated standard errors adjusted for heteroskedasticity and for clustering at the village level (reflecting the village-level treatment of high agent incentives). In addition to the statistical significance of the individual coefficients (β_1, β_2, and β_3), the following joint hypotheses are tested and reported for each estimated model:

1. There is no treatment effect ($\beta_1=\beta_2=\beta_3=0$)
2. The high agent incentives and WBO training and mentoring treatments have equal effects ($\beta_1=\beta_2$)

In addition to calculating the intention-to-treat effects, estimates of the treatment effects on the treated (TOT) are also obtained by instrumenting endogenous dummies referring to the WBO training and mentoring only treatment arm (T2) and the both treatments combined

[20] These additional covariates include the WBO's age and age-squared, categorical variables referring to her highest completed level of schooling, the baseline household asset index (i.e., the first principal component of indicators of housing characteristics, durable goods ownership and food sufficiency), and baseline household size.

treatment arm (T3)[21] with assignment dummies referring to the random assignments to the high agent incentives treatment (T1) and to the WBO training and mentoring treatment (T2). The results of the TOT analysis are similar, though with expected differences in magnitude, to those of the ITT analysis.[22]

There are two challenges when analyzing a large number of outcomes, as in this study. First, the volume of outcome variables can make it more difficult to interpret the results. Second, analysis of multiple outcomes can increase the risk of Type I errors (rejecting the null hypothesis of no effect when it is true) if the significance tests are not adjusted appropriately. Two alternative strategies are used to address these risks:

1. The PAP clearly identifies a set of primary and secondary outcomes
2. The methodology of Kling, Katz and Liebman (2007) is used to test the significance of related groups of outcomes using a single aggregate outcome measure (a standardized z-score index of the related outcomes).[23]

As discussed above, sample attrition was relatively low for most WBO outcomes (4.0%, according to Table 2, column 1). Although some WBO outcomes have higher attrition rates (e.g., profits, capital inputs, and savings), neither the likelihood of attrition nor the characteristics of WBO attriters vary significantly across treatment arms. As such, and in accordance with the pre-analysis plan, no corrections for attrition were made.

To test for heterogeneity of effects, the moderator of interest (e.g., gender) is interacted with treatment arm dummies (T1, T2 and T3):

$$Y_{ij} = \beta_0 + \beta_1 T1_j + \beta_2 T2_{ij} + \beta_3 T3_{ij} + \mathbf{M}_i\boldsymbol{\beta_4} + T1_j*\mathbf{M}_i\boldsymbol{\beta_5} + T2_{ij}*\mathbf{M}_i\boldsymbol{\beta_6} + T3_{ij}*\mathbf{M}_i\boldsymbol{\beta_7} + \gamma Y(t=0)_{ij} + \mathbf{Z}_{ij}\boldsymbol{\delta} + \varepsilon_{ij} \quad (3)$$

where Y_{ij} refers to a z-score index (limited to final outcomes for most moderators, but including intermediate outcomes in the case of gender), $T1_j$, $T2_{ij}$, and $T3_{ij}$ are three mutually exclusive dummies indicating the three treatment arms: high agent incentives only, training and mentoring only, and the combination of high agent incentives and training and mentoring, respectively. $\mathbf{M}_i$ refers to a vector of indicators of the discrete values of the moderator variables (e.g., gender, quintiles of the household asset index), $\boldsymbol{\beta_4}$, $\boldsymbol{\beta_5}$, $\boldsymbol{\beta_6}$ and $\boldsymbol{\beta_7}$ are

[21] The participation variable is defined on the basis of the survey data.

[22] Results available upon request.

[23] This methodology involves: (1) converting all outcomes so that the sign of the effect of all variables in a family goes in the same direction (e.g., improving the outcome), (2) calculating the standardized z-score of each variable by subtracting the control group mean and dividing by the control group standard deviation, (3) replacing unreported values by the treatment arm sample means, (4) taking an average of the standardized z-scores in each family. In cases where the standardized z-score is subject to additional variable-specific attrition (i.e., profits, savings, capital), the z-score index is calculated only for a sample defined by the reported values of the main indicator. In addition, the z-score indices do not include standardized z-scores for indicators referring to secondary businesses since these are reported for only about 20% of the sample. The estimated effects of the treatments on the standardized z-score indices are expressed in terms of standard deviations of the indices.

vectors of fixed parameters and the other variables are defined as in equation (2). In this example, the hypothesis of overall homogeneity (including possible shifts in the intercepts) is equivalent to a joint test of the hypothesis that $\beta_4=\beta_5=\beta_6=\beta_7=\mathbf{0}$, whereas homogeneity in the treatment effects alone is equivalent to a joint test of the hypothesis $\beta_5=\beta_6=\beta_7=\mathbf{0}$. Gender is a special case where the moderator is a scalar and where there is only one treatment (high agent incentives) since the training and mentoring was only randomly assigned to WBOs. Some other moderators have a limited number of discrete values, i.e., stated interest in enrolling in branchless banking (3 values), completed level of schooling (3 values), district of residence (5 values), number of children in the household (up to 7, but with the rarely reported values of 5-7 recoded to 4). Other moderators are continuous (household asset index, baseline profitability) or have multiple discrete values (work experience, adherence to 16 business practices, ability of agents and WBOs to connect to a mobile signal and the internet) and are formed into discrete quintile or quartile indicators, depending on the distributions of the values.

6. Results

6.1 Impacts of supply and demand side interventions on business performance

Both the supply (high agent incentives) and demand side (training and mentoring for female entrepreneurs) interventions had positive impacts on the profits of female-owned businesses. As specified in the registered pre-analysis plan, the primary specification for profits is the winsorized profits of the primary business. According to this primary specification, Table 10 column 7 shows that the high agent incentives alone led to a 11.8% increase in the profits of female-owned businesses, whereas the training and mentoring alone led to a 15.2% increase in profits. Although the interaction term of both treatments is not significant, the negative coefficient suggests that the two treatments do not have an additionality impact. In other words, the impact of the combined treatment is similar to the impact of the training and mentoring treatment alone or the high agent incentives treatment alone. Indeed, the impact of the combined treatment on WBO profits is 16%. While the magnitude of the impact of the training and mentoring alone is slightly larger than that of the high agent incentives alone, this difference is not statistically significant.

As shown in Table 10, the impacts of the training and mentoring on profits are relatively robust in both significance and magnitude to various alternative definitions of profits, in particular to specifications focusing on the primary business. However, the impacts of the incentives are sensitive to the definition of profits used. None of the other specifications included in the pre-analysis plan show significant impacts, and the coefficient size is also smaller. Moreover, the difference between the impacts of the high incentives alone and the training and mentoring alone is statistically significant and larger for the training and mentoring when considering the IHS specifications. Although we focus on the primary definition of profits as laid out in the pre-analysis plan throughout most of this paper, the results on the high agent incentives should be interpreted with caution, given the lack of robustness to alternative specifications of profits.

Although the supply and demand side interventions both lead to a similar increase in the winsorized profits of women's primary businesses, the channels through which this increase takes place and the impacts on other outcomes of interest, such as household welfare and women's empowerment, are different.

6.2 Impacts of the demand-side intervention on intermediate and additional outcomes

There are two possible ways through which the training and mentoring of female entrepreneurs could impact their business performance. On the one hand, the training was expected to promote uptake of the branchless banking products, which could provide women with easier access to financial services and thereby support their business growth. On the other hand, the training provided WBO with additional financial literacy and business skills that could boost the performance of their businesses. Although there is evidence supporting both channels, it is more likely driven by the knowledge that WBO gained and behaviors they adopted through the training than through adoption of branchless banking products.

Table 5 shows that the training and mentoring generally increased WBO's knowledge of branchless banking products and take-up of these products. Table 7 shows that the training and mentoring led to impressive impacts on WBO's awareness of the branchless banking products. It approximately doubled the number of women who knew about the existence of branchless banking services more generally, and increased awareness of the partner bank's LKD and LP products by 38 and 43 percentage points, respectively, up from a control group average of 4%. Although the training and mentoring had a statistically significant impact on the take up of the branchless banking products (Table 5, column 3) and the partner bank's LKD product in particular (Table 8), the magnitude of these impacts is of limited practical significance. Even among those offered the training and mentoring, only about 2% of WBO have registered the partner bank's LKD product and only one percent use it to save money. Several practical concerns may have hindered the transition from knowledge about the banking product to adoption of the banking product, which are detailed in the discussion section below. However, due to the fact that the impacts of the training on take up and use of the products was limited, it is more likely that the training and mentoring increased WBO's profits by enhancing their skills and promoting savings more generally.

The WBO training and mentoring had positive impacts on WBO's business practices, savings, capital and decision-making authority, which likely supported improved business performance. Business practices are an important mediating variable between business training and increased profits (McKenzie and Woodruff 2015). We find that WBO implement better business practices after the training and mentoring. The training and mentoring increased the share of 16 good business practices that WBO use in their businesses by two percentage points, compared to women in the control group who used 25.8% of the 16 good business practices measured (Table 9, Column 4). This represents a 7.8% change in overall business practice use. Table 13 shows that these impacts are driven by asking suppliers which products are selling well and practices related to record keeping.

Notably, WBO are much more likely to be able to use their records to know how much cash they have on hand, which was one topic covered in the training.

In addition to improving their business practices, the training and mentoring had impacts on women's savings. Table 14 shows that the WBO training and mentoring increased the likelihood that the WBO had any savings whatsoever, which is notable given the relatively high share of women in the control group who have any savings—89% of control women at endline have non-zero savings. Moreover, the training and mentoring increased the total amount the WBO saved over the past 12 months by approximately 11.3% (Table 14, Column 5[24]).[25] This result is not robust to other specifications of savings, such as the raw or winsorized amount saved; however, the IHS is a more appropriate measure of amount saved because it better controls for outliers and is defined for 0 values. We do not see increases in the total savings balance. However, this does not contradict observed increases in savings over the past 12 months, as female entrepreneurs likely used their increased savings to reinvest in their businesses. Because the training and mentoring emphasized the importance of savings, it is not surprising that it increased overall savings while only a few WBO took up and used the promoted LP and LKD products. Savings may support improved business performance through two channels. On the one hand, they can enable the business owner to invest in their business capital or inventory. On the other hand, savings can act as a buffer to alleviate liquidity constraints in the face of shocks or unexpected events (Dupas and Robinson, 2013). For example, WBO may use savings to renew their inventory or maintain their current production level when sales have been lower than expected.

Consistent with an increase in savings, the training and mentoring increased the capital of WBO by 15.7%, as measured by the log of the total physical assets of their businesses (Table 11, column 7).[26] Increased investment in the business could come partially through financial savings; however, the increase in the total value of savings is less than one fourth of the increase in the value of business assets. In addition to investing accumulated savings, WBO may also have reinvested their profits in their businesses, contributing to the increase in the value of their assets. Although they may have found external sources of financing to support their capital increase, we do not see any evidence of increases in bank or non-bank financial institution loans (Table 15).[27]

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[24] The pre-analysis plan specified that we would use an average z-score index of several variables as the primary specification of savings. However, we have focused instead on whether they save and the IHS of the total amount saved because the index included several variables related to e-savings accounts. Given we did not see the expected take-up of the accounts, relying on the index would mask the effect on more general savings impacts.

[25] Although this semi-log elasticity should ideally be transformed, Bellemare and Wichman (2019) demonstrate that the approximation is reasonably accurate when the initial variable has an average above 10, which is the case in our savings variable.

[26] We deviate from the specification of capital as defined in the pre-analysis plan because the value of assets is highly skewed. Log transformations are a common way of dealing with this issue when the number of 0 values is low.

[27] This does not rule out informal sources of external funding, such as loans or gifts from friends or family, however.

Women's decision-making power in the household, which is often used as an indicator of empowerment, is both an outcome of interest in its own right and a potential mediator of the impacts of the training on profits. Table 9 column 8 shows that the training and mentoring alone had a positive impact on an index of women's participation on different household decisions. However, there is a significant and negative interaction term when the training is combined with the incentives, which shows that the positive impacts of the training on women's decision-making authority are canceled out when combined with the high agent incentives. A deeper look at the components of this index shows that the training supports women's involvement in decisions to purchase appliances for the home, whether to save for the future, and whether to sign up for a new banking product (Table 16). Because the training had an emphasis on savings and the availability of branchless banking products, it is notable that women felt particularly empowered in their ability to make decisions alone or jointly with their spouse on these domains. Theoretically, the relationship between decision-making power and profits could go in both directions. Decision-making authority can enable women to make timely decisions that are aligned with their vision for their businesses and to control the flow of household resources toward their businesses. On the other hand, greater profits may give women more bargaining power in their household, which can increase their decision-making authority. We find suggestive evidence of the former channel. Although the midline survey was not conducted on a representative sample, the analysis of the midline data shows impacts of the training and mentoring on women's decision-making authority but not on their profits (Knowles, 2019).

Taken together, the positive impacts of the training and mentoring on profits may be coming through improved business practices—in particular using records to better manage their money and discussing products with suppliers—greater savings, increased business assets, and greater decision-making authority. Indeed, controlling for these intermediate variables reduces the magnitude of the treatment coefficient on profits, with the greatest decrease in coefficient coming from controlling for savings. This suggests the importance of savings as a channel for supporting women's business growth. Nevertheless, even when controlling for these intermediate outcomes, the training and mentoring has a positive and statistically significant impact on profits. This suggests that there are additional mediators of the program's impacts that have not been captured. One potential additional channel of training impacts could be through the development of WBO's networks. The training and mentoring were delivered in group sessions, which connect WBO to other WBO in their community. These connections may help support WBO in overcoming challenges, developing strategies to grow their business, and improving access to information. Indeed, other training programs have demonstrated peer reinforcement effects (Karlan, Ratan and Zinman 2014, Field and others 2015, Woodruff 2018, Ismail 2018).

In addition to impacts on intermediate business outcomes and decision-making authority, the training and mentoring generates a statistically significant increase in household welfare, as defined by an index of durable household assets (Table 9, column 10). This result is consistent with an increase in WBO's profits and with their reported increase in decision-making authority over household appliance purchases. It suggests that the program may

have positive impacts not only for the WBO themselves, but also for the other members of their households.

6.3 Impacts of the supply-side intervention on intermediate and additional outcomes

While it is relatively clear how the training and mentoring led to an increase in profits, the mechanisms behind the impacts of the high agent incentives on profits is less evident. The high agent incentives did not lead to an increased knowledge of branchless banking products among sample WBO or increase their take up or use of the products (Table 5). Moreover, there are not statistically significant impacts on any other intermediate business outcomes, including savings, credit, or capital.[28] The impacts of the high incentives treatment are limited to WBO's profits (Table 10, column 7). We offer four potential explanations for this puzzling result.

One potential channel is that the presence of branchless banking services in the village sends a signal of a woman-friendly business environment. Branchless banking services have the potential to decrease the opportunity cost of using banking services by bringing banking services closer to female entrepreneurs. As women often face greater time constraints due to their greater contributions to domestic work in the household, they may place more value on the proximity of banking services. Moreover, the privacy of agent banking may be particularly valuable to women to enable them to avoid the "kin tax" (Jakiela and Ozier, 2015). Because the high incentives did not raise women's awareness of branchless banking products (Table 5), the signaling effect may be weak. However, the training of the agents explained the importance of promoting the products to female entrepreneurs. This information may have interacted with the high incentives in a way that led agents to treat female entrepreneurs differently.

An additional potential channel is that the high incentives generate household-level impacts that support WBO and enable them to invest in their businesses. Bernhardt, Field, Pande and Rigol (2017) show that ignoring household-level dynamics can mask the true impacts of cash grants for business-owners. While female entrepreneurs in India, Sri Lanka, and Ghana have lower returns to cash grants in their businesses than men, low returns are due to investments being made in their husbands' businesses, and the household-level income gains are equivalent regardless of the grant recipient's gender. Perhaps in a similar manner, the high incentives may shift the savings behavior of other household members, which could be used to support women's businesses. We find some suggestive evidence supporting this hypothesis. Table 18 shows that the high agent incentives did have significant impacts on male entrepreneurs' take-up and use of branchless banking products and their savings.[29] However, increased use of branchless banking and increased savings did not translate into capital investments or increased profits for male entrepreneurs. Moreover, we see that in the

[28] Credit is shown in Table 9. Capital is shown in Table 11, column 7. Savings is shown in Table 14, column 5.
[29] Although the coefficient for the impact of the program on take-up of branchless banking is statistically significant for men, it is small in magnitude.

absence of training, the high agent incentives led WBO to be more open about their earnings with their spouses (Table 17, column 6). WBO may have requested support from their husbands to invest in their businesses or buffer a shock and shared more information on their current earnings and their business plans during the discussions. Greater involvement of their spouses could be consistent with the fact noted above that in high incentive villages, the training and mentoring did not lead to positive impacts on women's decision-making authority like it did in low-incentive villages. It is not likely such support comes from sources outside of the household, as overall credit impacts are not statistically significant (Table 9, column 7). Moreover, WBO in high incentive villages are less likely to borrow from money lenders (Table 15, column 4). Alternatively, WBO may have invested their own individual savings in their businesses in the expectation that they could more easily access bank products in the future. There is suggestive evidence that WBO in villages with agents under high incentives depleted their savings (Table 14, col. 18).

Finally, as described in section 6.1, the impacts of the high agent incentives on the profits of WBO are not robust to alternative specifications of profits. Although we do see a positive impact that is statistically significant at the 10% level for the primary specification (winsorized profits of the primary business),[30] we do not see statistically significant impacts on the raw variable, IHS transformation or log transformation. The impact of the high agent incentives on profits is 12% according to the primary specification, but it ranges in magnitude depending on the specification 8% for the raw variable, 4% for the IHS transformation, and 7% for the log transformation. As such, it is possible that the impact of the high agent incentives is a result of type I error and that there is no true impact of the high agent incentives on profits.

6.4 Heterogeneity of impacts

Although the sample size is too small to support heterogeneity analysis in many studies (McKenzie and Woodruff 2014), the endline survey is sufficiently powered to assess possible heterogeneity in treatment effects for many moderators. The pre-analysis plan identified the following moderators for use in heterogeneity analysis: (1) gender, (2) stated interest at baseline in enrolling in branchless banking, (3) baseline work experience, (4) baseline adherence to recommended business practices, (5) baseline profitability, (6) WBOs' highest completed level of schooling at baseline, (7) baseline household assets, (8) district of residence (as a proxy for local demand shocks), (9) baseline women's agency, (10) number of children in the household and (11) baseline ability of agents and WBOs to connect to a mobile signal and the internet.

The results indicate that only two of the moderators had more than one significant interaction with the aggregate treatment effects: gender and the household asset index. The average estimated marginal treatment effects for each value of these two moderators, together with joint tests of the hypothesis of homogeneity across the moderators, are

[30] as defined in the pre-analysis plan

presented in Table 18 (gender) and Table 19 (household asset index).[31] As discussed in the previous section, the results for the gender moderator in Table 18 indicate that high agent incentives increased men's savings and take-up and use of branchless banking products but not those of women, with differences significant at the 0.10 level.

The results for the household assets index moderator in Table 19, which are reported separately for each treatment arm, indicate that the training and mentoring generated the greatest impacts for women from the poorest quintile. The poorest women saw the greatest impacts on their profits. They also experienced large impacts on savings, access to credit, and capital inputs. Aligned with the greater productivity of their businesses, women in the poorest quintile also saw large statistically significant gains in household welfare, as measured by the asset index.

6.5 Cost effectiveness

Of critical importance to policymakers is not just whether or not an intervention is effective but whether it is cost-effective, or in other words whether the benefits outweigh the costs of the intervention. Moreover, when there are different policy alternatives that can achieve the same objective, comparing the relative cost-effectiveness of different options can enable policymakers to maximize the impact of each dollar invested.

Because agents were trained and mentored in all three treatment arms (as well as in the control group), the costs in all three treatment arms include the cost of training and mentoring one agent per village. According to project records, the cost of training and mentoring one agent was US$64.66 (or US$81.53, including an estimate of the opportunity cost of the agents' time).[32] There are no additional costs associated with the "high agent incentives alone" treatment arm since the additional cost of the agent incentives is a transfer if the analysis is done from the perspective of society as a whole.[33] The additional costs of training and mentoring one randomly selected WBOs in connection with the "WBO training

[31] The values reported in Tables 18 and 19 are the estimated marginal effects of each sample WBO averaged over all sample WBOs. They can be interpreted as the effect of the treatment for the population that has the given value of the moderator, holding all other covariates constant at the means. The estimated coefficients for all 11 moderators are available upon request.

[32] The training costs include the development of the training modules, trainers' fees, the cost of training the trainers, communications, motorbike fuel for the trainers, and other operational support. The opportunity cost of the agents' time is based on the average baseline total earnings per day from all sources of both female and male business owners ($8.44), while the opportunity cost of the WBOs' time is based on WBOs' average baseline total earnings per day from all sources ($5.80). The opportunity cost of agent time accounts for 20.7% of the total agent training and mentoring cost and 22.3% of the total WBO training and mentoring cost.

[33] From the perspective of society as a whole (which is usually the same as that of a prospective donor), the cost of the agent incentives to the partner bank are offset by the benefit received by the agent. Similarly, any profits earned by the partner bank that can be attributed to the high agent incentives are offset by the additional interest and fees paid by the bank's customers (Dhaliwal and others 2012). From the perspective of the partner bank, however, the cost of any incentives paid by the bank (net of related bank profits earned) would be relevant.

and mentoring alone" and "both treatment combined" treatment arms was $40.36 (or $51.95 including an estimate of the opportunity costs of the WBOs' time).[34]

When considering the benefits, one can choose from several different outcomes, such as profits, savings, or empowerment, among others. Because the ultimate goal of the study was to have downstream impacts on the welfare of female entrepreneurs, we use profits to approximate the benefits. Although this is a simplification that may underestimate the benefits of the program, it has the convenience of easily being compared with costs, whereas the benefits of outcomes of interest such as empowerment can be difficult to monetize. The cost-effectiveness analysis is based off of the primary specification of profits, as defined in the pre-analysis plan and shown in Table 10, column 7. It is assumed that the estimated impact of each treatment arm continues at the same level for at least 24 months, with the monthly net benefits discounted to the base period (month 0) using a relatively conservative social discount rate of 1% per month (12% annually).[35]

Table 21 compares the cost effectiveness of the three treatment arms. First to note is that all of the interventions are cost-effective, with benefits accumulated over a 24 period that far outweigh the costs. Indeed, the benefit-cost ratios are all well above one: 21.4 for high incentives only, 5.1 for training and mentoring only, and 5.2 for the combination of treatments. Comparing the different alternatives, the high agent incentives alone is more cost-effective than the training and mentoring alone or in combination with the incentives. The high agent incentives alone cost $0.041 per additional dollar of profits after 24 months, compared to $0.197 for the WBO training and mentoring alone treatment arm and $0.193 for the combined treatments. The main reason is that the costs of the high agent incentives are limited to the cost of training and mentoring one agent, whereas multiple entrepreneurs benefit.[36]

It is important to note that the cost-effectiveness analysis may understate the impacts of the training and mentoring treatment arm, in particular in comparison to the high agent incentives. On the one hand, as discussed in section 6.1, the impacts of the high agent incentives alone on profits is not robust across multiple specifications. Alternative specifications suggest lower impacts that are not statistically significant. On the other hand, the training and mentoring had positive impacts on other outcomes of interest, including business practices, savings, capital, and empowerment, which have not been monetized and included in the cost-effectiveness analysis. Because only the training and mentoring and not the high agent incentives impacted these additional outcomes, including a multi-dimensional analysis of benefits would increase the relative cost-effectiveness of the training and

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[34] By comparison, the cost of delivering a single two-hour session on financial literacy in the home villages of the trainees was $17 per trainee in the Indonesia study of Cole, Sampson and Zia (2011).

[35] J-PAL recommends using a lower discount rate of 10% annually (Dhaliwal and others 2012)

[36] The cost-effectiveness analysis is conducted at the entrepreneur level, as the benefits considered include the average WBO profits. As such, the costs of training the agent are divided by the number of sample WBO in the village (7)

mentoring compared to the high agent incentives.[37] Sensitivity analysis using a lower assumed impact of 4% increase in profits for the high agent incentives treatment still shows that the high agent incentives treatment is more cost-effective than the training and mentoring, with a CE ratio of $0.137. However, the difference between the alternative treatments is much smaller, and if other benefits of the training and mentoring were monetized, it is likely that the training and mentoring would be as cost-effective if not more cost-effective than the high agent incentives.

7. Discussion

Our results show that both high incentives for branchless banking agents and training and mentoring for female entrepreneurs can boost the profits of WBO, and both have benefits that outweigh the costs over a period of 24 months, assuming sustained impacts. The promotion of savings through supply side interventions, such as high incentives for branchless banking agents, may be a more cost-effective solution to promote the profits of WBO. Nevertheless, the impacts on women's empowerment more broadly may push policy makers to prefer an approach focused around financial literacy and business training. There is suggestive evidence that the high agent incentives may improve women's profits by improving their husband's savings, which are in turn invested in women's businesses. Such a channel may inadvertently reinforce more traditional notions of intra-household dynamics and does not support women's financial independence. Similarly, we do not find gains in women's decision-making authority in villages where high incentives were offered. The training on the other hand may be a more promising avenue for promoting women's overall economic empowerment. This demand-side intervention also increases WBO's earnings, and in addition, it promotes their decision-making authority. Because the training reinforces women's skills and develops their savings practices, it can lead to greater empowerment gains in the long run by enabling them to better understand and manage their businesses and by providing more financial independence in the form of increased savings. The fact that the business training had the largest impacts on the poorest female entrepreneurs may further motivate policy makers interested in poverty reduction to prefer the demand side intervention despite its comparatively lower cost-effectiveness.

The study also shows that financial literacy and financial management group training of short duration, including practical sessions, can be effective in addressing basic business knowledge gaps that women face. That this business training program helped increase the profits of WBO while many others have not is likely the result of a combination of factors: the high quality of the MCI trainers, the follow-on practical training that was done through the mentoring sessions, and the fact that the businesswomen were actual (not prospective) business owners. An additional key factor is that the financial literacy curriculum included a session on the importance and benefits of savings and another promoting the partner's bank saving products, as an effective and possibly cost-effective substitute for the capital grants sometimes provided in other successful business training trials. The training, which was done

[37] Unfortunately, there are major challenges in conducting a multi-dimensional benefit analysis that make it impractical to do so. For example, what is the monetary value of an increase in decision making power?

in groups, may have also benefited from positive peer reinforcement effects, as some other studies have found (Karlan, Ratan and Zinman 2014, Field and others 2015, Woodruff 2018, Ismail 2018). Consistent with this possibility, the analysis found that women who knew more sample business women at baseline were more likely to complete the training and less likely to attrit.[38] Lastly, this study had a sufficiently large sample size able to pick up comparatively small training effects (percent increases in the teens) while the average business training study has a much smaller sample size.

While both supply and demand side interventions did increase WBO's profits, this improvement did not come through the adoption of the branchless banking products that were promoted. Both interventions were expected to promote the take up and use of branchless banking services, which are financial products designed to promote financial inclusion and to facilitate women's access to formal financial services. While the training and mentoring intervention did lead to a statistically significant increase in take-up of the products, the practical significance of the impacts is low, as the intervention did not promote a widespread adoption. Only 2% of women in the group receiving training and mentoring took up the product.

Adoption of the product may have been lower than expected for a few different reasons: technical issues, trust, a need for additional incentives, or the adequacy of product features. Early monitoring in connection with the agent mentoring visits found that the products encountered numerous technical and logistical problems (Knowles 2019). These may have discouraged both the agents and prospective customers. However, technical problems with the product (i.e., "The product is too complicated to use" or "Internet is unreliable") are not among the most frequently cited reasons given at endline for not having taken up the partner bank's branchless banking products (Table 20).[39] Alternatively, anecdotal evidence from the field suggests that trust is an essential factor in women's decisions to sign up for a new banking product. Some entrepreneurs said they would feel comfortable signing up for the product if their friend was the agent, as they need to feel that their money is secure. However, less than 3% of WBO at endline cited lack of trust as a reason not to sign up for the partner bank's LP or LKD products. Instead, the most frequently cited reason (with multiple reasons permitted) is "No money to save" (56% of the reasons cited for both products), followed by "Don't know about the product" (44% LKD and 38% LP) and "Already have similar product with another bank" (17% of the reasons cited for both products). Under these conditions, a demand-side *financial* incentive may have been helpful in overcoming initial inertia in shifting to more formalized saving practices. Such incentives have been found to be effective in some previous studies, with lasting effects even if provided for only a short time (Cole, Sampson and Bia 2011, Schaner 2018). Finally,

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[38] Most of the sample WBOs in each village (89.8%) knew at least one of the other sample WBOs at baseline and those who did, knew an average of 3.34 of the 6 other sample WBOs and reported that 20.1% of the other sample WBOs they knew were either close friends, family members or business partners, that they met 50.7% of them at least weekly and talked business with 23.8% of them when they met.

[39] Heterogeneity analysis also indicates that treatment effects did not vary significantly with agent and WBO mobile and internet connectivity at baseline for most aggregate outcomes (results available upon request).

although the characteristics of the sample WBO suggest that the balance and transaction limits associated with the product would likely not be a limiting factor, more research would be needed to understand the product features that are important to female entrepreneurs. Perhaps modifications to the product design could make it more attractive to female entrepreneurs and thereby increase product adoption.

8. Implications for future projects and research

This study adds to the body of evidence that alleviating financial and human capital constraints can support the productivity of female entrepreneurs. Even when it is short in duration, training and mentoring that is adapted to the needs of the entrepreneurs and delivered by experienced trainers can lead to changes in good business practices, savings, capital investments, agency, and profits. The study also points to the possibility of improving the effectiveness of business training by including a module on the importance of saving, possibly a cost-effective substitute for the capital grants that have sometimes been used to enhance the effectiveness of business training interventions (De Mel, McKenzie and Woodruff 2014).

Most business training trials involve training that is provided to business owners free of charge. However, if the training is found to be effective, as in this trial, business owners should be willing to pay for it (McKenzie and Woodruff 2014, Woodruff 2018). In fact, the training might be found to be more effective if business owners pay for at least some of the cost. This suggests the need for follow-up trials that would involve an initial step of presentations to generate demand among business owners for a given type of training, followed by an offer to provide it for a (possibly randomized) price.

In addition, business training is often provided in different ways (e.g., individual versus group training, with or without follow-up mentoring or technical assistance). Some studies on business training suggest that inter-actions among trainees (peer group effects) are an important moderator of the effects of business training (Karlan, Ratan and Zinman 2014, Field and others 2015, Woodruff 2014, Ismail 2018, Woodruff 2018). In this study, all training and mentoring provided to WBOs was provided to randomly assigned groups of four WBOs, in some cases with additional non-sample WBOs participating. Many of the WBOs reported that they knew other sample WBOs in the same village and frequently interacted with them. However, follow-up data were not collected on subsequent interactions between sample WBOs from the same village and how this may have differed by treatment arm. Future research might want to give more attention to potential peer-group inter-actions.

Our results also suggest the importance of considering the mechanisms through which programs impact ultimate outcomes of interest. While we find that the high agent incentives improve women's profits, the different hypothesized mechanisms for these impacts have very different implications for women's overall economic empowerment. If the incentives boosted profits through the promotion of a woman-friendly business environment, the ultimate impacts on empowerment would likely be positive. However, if the impacts were generated through a reliance on husbands' savings to invest in the business, the intervention

may unintentionally reinforce more traditional norms and household dynamics without supporting women's financial independence or decision-making authority.

Finally, additional research is needed to understand how to best motivate women business owners to take-up and use branchless banking products and to measure the impact of these products on their businesses. With the low take up of the agent banking product in our study, it is not possible to say whether the product would have had a positive effect on women's businesses or not. Future research should also further explore whether Laku Pandai and LKD products meet the needs and expectations of female entrepreneurs in Indonesia, and if so, whether other types of demand-side incentives, such as financial incentives, could promote take-up of the products.

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Table 1. Means and standard deviations of selected business owner indicators by sex

	All business owners			Females		Males		Test (p):
	N	Mean	Std. dev.	Mean	Std. dev.	Mean	Std. dev.	Female = Male
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female business owner	4809	0.591	0.492	1.000	0.000	0.000	0.000	0.000**
Age	4809	38.290	8.057	37.551	7.816	39.356	8.279	0.000**
Highest completed level of schooling (0-4)	4809	2.235	0.887	2.189	0.875	2.301	0.902	0.000**
Willingness to take risks (0-10)	4808	4.324	2.598	3.995	2.420	4.798	2.769	0.000**
Cognitive ability score (0-4)	4809	3.092	0.865	3.078	0.849	3.113	0.888	0.121
Currently married (0-1)	4809	0.908	0.289	0.913	0.282	0.901	0.299	0.180
Number of children	4809	1.467	0.898	1.507	0.869	1.410	0.934	0.000**
Household size	4806	4.292	1.430	4.273	1.425	4.319	1.437	0.254
Urban resident (0-1)	4809	0.117	0.322	0.116	0.320	0.119	0.324	0.081
Household head (0-1)	4809	0.397	0.489	0.076	0.265	0.861	0.346	0.000**
Household asset index (see notes below)	4809	0.001	1.836	0.050	1.787	-0.071	1.903	0.025*
Has smart phone (0-1)	4808	0.401	0.490	0.370	0.483	0.445	0.497	0.000**
Uses smart phone to access internet (0-1)	4809	0.285	0.452	0.229	0.420	0.366	0.482	0.000**
Uses mobile phone for banking (0-1)	4809	0.048	0.214	0.035	0.183	0.068	0.252	0.000**
Knows partner bank's branchless banking agent (0-1)	4809	0.596	0.491	0.592	0.492	0.601	0.490	0.584
Any voluntary activities in past 12 months (0-1)	4809	0.160	0.367	0.131	0.337	0.202	0.402	0.000**
Trust in state-owned banks (1-5)	4809	3.923	1.251	3.934	1.209	3.906	1.309	0.486
Trust in other banks (1-5)	4809	3.206	1.349	3.248	1.316	3.145	1.394	0.011
Has bank account registered in own name (0-1)	4808	0.532	0.499	0.477	0.500	0.612	0.487	0.000**
Knows about mobile money (0-1)	4809	0.079	0.270	0.074	0.262	0.087	0.282	0.091
Safety of bank's mobile savings product (1-10)	4809	6.555	2.627	6.536	2.642	6.582	2.606	0.534

Reliability of bank's mobile savings product (1-10)	4809	6.507	2.492	6.550	2.508	6.444	2.469	0.141
Agent's competence (1-10)	4809	7.195	2.162	7.311	2.123	7.028	2.206	0.000**
Primary business registered (0-1)	4809	0.131	0.338	0.107	0.310	0.166	0.372	0.000**
Primary business started more than 5 years ago	4809	0.612	0.487	0.595	0.491	0.635	0.481	0.000**
Years worked in primary business	4809	8.248	7.232	8.086	7.206	8.481	7.265	0.073
Number of unpaid workers in primary business in a typical month	4809	2.024	1.152	2.129	1.317	1.872	0.838	0.000**
Number of paid workers in primary business in a typical month	4809	0.436	1.954	0.192	1.212	0.787	2.645	0.000**
Number of customers in primary business in a typical month	4804	250.9	561.8	220.3	452.1	295.0	687.9	0.000**
Average monthly profit in primary business during past year (Rp. millions)	4789	2.060	3.961	1.552	3.017	2.793	4.929	0.000**
Index of adherence to recommended business practices (0-8)	4809	2.093	1.442	2.017	1.363	2.203	1.542	0.000**
Has second business	4809	0.170	0.376	0.155	0.362	0.192	0.394	0.002**
Total average monthly earnings from all sources during past year (Rp. millions)	4787	2.786	5.131	1.915	3.293	4.043	6.782	0.000**
Value of total business assets (Rp. millions)	4809	36.672	122.968	20.938	72.088	59.365	169.037	0.000**
Any savings in last 12 months (0-1)	4809	0.779	0.415	0.838	0.369	0.694	0.461	0.000**
Total savings in last 12 months (Rp. millions)	4795	8.126	29.088	6.101	13.242	11.037	42.386	0.000**
Any money borrowed in last 12 months	4809	0.308	0.462	0.235	0.424	0.414	0.493	0.000**
Index of business owner's intra-household decision-making power (0-5)	4809	1.984	1.824	2.014	1.847	1.941	1.789	0.143
Spouse is present in household	4809	0.908	0.289	0.913	0.282	0.901	0.299	0.183
Other person is involved in deciding how to spend business earnings (0-1)	4809	0.350	0.477	0.290	0.454	0.437	0.496	0.000**
Has sole control over some money (0-1)	4809	0.472	0.499	0.500	0.500	0.432	0.496	0.000**

** significant at 0.01 level * significant at 0.05 level (estimated standard errors adjusted for clustered sampling)

Notes: The indicators in this table have their reported values (i.e., no winsorized values or inverse hyperbolic sine transformations). The baseline household asset index is the first principal component of indicators of housing characteristics, consumer durable ownership and household food sufficiency.

Table 2. WBO attrition

	Outcomes with higher attrition rates than in the overall sample						
Dependent variables →	WBO overall sample attrition	Average monthly profit in the primary business during the past year	Total savings in the last 12 months	Total current balance of savings	Total value of capital stock in both primary and second businesses	Number of days worked by WBO in her primary business in a typical month	Index of adherence to recommended business practices
	Most outcomes	A1_01	A2_02	A2_13	B1K_01	B1L_05	mean_score_B2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High agent incentives	-0.003	-0.001	0.000	0.007	-0.005	-0.003	-0.003
	(0.008)	(0.010)	(0.009)	(0.012)	(0.012)	(0.009)	(0.009)
WBO training & mentoring	-0.007	-0.009	-0.006	-0.011	-0.018*	-0.010	-0.010
	(0.008)	(0.010)	(0.009)	(0.011)	(0.011)	(0.009)	(0.009)
WBO's age at baseline	0.002***	0.002**	0.002***	0.003***	0.003***	0.001*	0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
WBO married at baseline	-0.006	-0.045**	-0.007	-0.030	-0.035	-0.039**	-0.040**
	(0.014)	(0.021)	(0.016)	(0.021)	(0.022)	(0.019)	(0.019)
WBO's agency z-score at baseline	-0.004	-0.008	-0.001	-0.006	-0.004	-0.007	-0.008
	(0.005)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Number of children in the household at baseline	-0.010**	-0.016***	-0.011**	-0.006	-0.009	-0.012**	-0.013**
	(0.005)	(0.006)	(0.005)	(0.008)	(0.006)	(0.005)	(0.005)
Household size	-0.002	-0.001	-0.001	0.001	-0.002	-0.002	-0.003
	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Highest level of schooling completed by the WBO	-0.002	-0.002	0.000	-0.001	0.002	-0.008	-0.007
	(0.005)	(0.006)	(0.005)	(0.006)	(0.007)	(0.005)	(0.005)
WBO's cognitive score at baseline	-0.010**	-0.006	-0.004	-0.002	-0.006	-0.009	-0.009
	(0.005)	(0.006)	(0.005)	(0.007)	(0.007)	(0.005)	(0.005)
WBO uses smart phone at baseline	0.009	0.009	0.009	0.016	0.018	0.014	0.014
	(0.008)	(0.010)	(0.010)	(0.012)	(0.012)	(0.010)	(0.010)
WBO's household asset index at baseline	0.006*	0.003	0.005	0.004	0.001	0.002	0.002
	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
WBO knew the agent at baseline	0.011	0.004	0.008	0.019	0.012	0.007	0.007
	(0.008)	(0.010)	(0.009)	(0.012)	(0.012)	(0.009)	(0.009)
Proportion of other sample WBOs in the same village known by the WBO at baseline	-0.035***	-0.058***	-0.037**	-0.019	-0.043**	-0.052***	-0.051***
	(0.013)	(0.017)	(0.015)	(0.020)	(0.019)	(0.015)	(0.015)

	Outcomes with higher attrition rates than in the overall sample						
Dependent variables →	WBO overall sample attrition	Average monthly profit in the primary business during the past year	Total savings in the last 12 months	Total current balance of savings	Total value of capital stock in both primary and second businesses	Number of days worked by WBO in her primary business in a typical month	Index of adherence to recommended business practices
	Most outcomes	A1_01	A2_02	A2_13	B1K_01	B1L_05	mean_score_B2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
WBO belonged to a business-related association or group at baseline	-0.046***	-0.039*	-0.009	0.033	-0.076***	-0.045***	-0.043***
	(0.006)	(0.023)	(0.027)	(0.040)	(0.017)	(0.016)	(0.016)
Baseline value of outcome		0.002	0.001*	0.000	0.000	-0.020***	-0.044*
		(0.002)	(0.000)	(0.000)	(0.000)	(0.006)	(0.023)
Joint test: treatments (p)	0.638	0.642	0.773	0.465	0.216	0.555	0.552
Joint test: covariates (p)	0.000***	0.004***	0.055*	0.026**	0.000***	0.003***	0.004***
Sample mean	0.040	0.064	0.051	0.085	0.082	0.057	0.057
Sample size	2840	2828	2840	2840	2680	2840	2840

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. The outcomes listed in columns 2-7 have typical levels of attrition for their category. The results in columns 6 and 7 are identical because the two outcomes are not reported for the same WBOs. In addition to the covariates listed in the table, the regressions also include dummy variables for the eight randomization strata. Blank cells in the row for "Baseline value of outcome" indicate that no baseline value of the indicator is available.

Table 3. Agent attrition

Dependent variables →	Agent overall sample attrition: Definition 1	Agent overall sample attrition: Definition 2	Agent's commission in typical month (Rp. millions)	Agent's commission in October 2018 (Rp. millions)	Agent's contributions to social institutions or organizations during the past year (Rp. millions)
			CS2_10	CS2_11	CS2_17
	(1)	(2)	(3)	(4)	(5)
High agent incentives	-0.020	-0.067*	-0.014	0.019	-0.065
	(0.030)	(0.036)	(0.038)	(0.047)	(0.040)
Female agent	-0.040	-0.033	-0.090	0.041	0.001
	(0.052)	(0.062)	(0.065)	(0.080)	(0.068)
Agent's age	-0.002	-0.001	0.001	-0.000	-0.001
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Agent's highest level of completed schooling	-0.032	-0.043	-0.062**	-0.043	-0.053*
	(0.023)	(0.027)	(0.029)	(0.035)	(0.030)
Household size	0.014	0.014	0.004	0.020	0.007
	(0.013)	(0.016)	(0.016)	(0.020)	(0.017)
Number of agent's children living in household	-0.027	-0.027	-0.002	-0.028	-0.039
	(0.022)	(0.027)	(0.028)	(0.035)	(0.030)
Location (urban or rural)	0.010	-0.042	0.032	-0.058	-0.035
	(0.046)	(0.056)	(0.058)	(0.072)	(0.061)
Agent has secondary business	-0.066*	-0.065	-0.010	-0.103*	-0.034
	(0.034)	(0.041)	(0.043)	(0.053)	(0.045)
Agent is married	-0.026	0.010	-0.076	-0.004	0.002
	(0.054)	(0.065)	(0.068)	(0.083)	(0.071)
Agent is head of household	0.036	0.032	-0.002	0.020	0.050
	(0.055)	(0.067)	(0.070)	(0.085)	(0.072)
Number of paid workers in agent's primary and secondary businesses	0.015**	0.018**	0.012	0.008	0.025***
	(0.006)	(0.007)	(0.008)	(0.010)	(0.008)
Number of customers in agent's primary and secondary businesses	0.000**	0.000**	0.000	0.000	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Agent's earnings from sources other than primary and secondary businesses	-0.002	-0.004	-0.004	-0.007	-0.004
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
Total value of the agent's business assets	-0.000	-0.000	-0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Agent's household asset index	0.020**	0.020*	0.016	0.004	0.018
	(0.009)	(0.011)	(0.011)	(0.014)	(0.012)
Baseline value of outcome					0.000
					(0.008)
Joint test: covariates	0.064*	0.170	0.369	0.212	0.012**
Sample mean	0.095	0.148	0.160	0.715	0.186
Sample size	400	400	400	400	397

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Definition 1 is limited to agents who could not be re-interviewed in the endline survey (N=38). Definition 2 includes Definition 1 attrition plus agents who were interviewed in the endline survey but who indicated that they had already resigned from their agent jobs (N=21). The outcomes in columns 3-5 are agent indicators with higher attrition rates than those under Definitions 1 or 2. In addition to the covariates listed in the table, the regressions also include dummy variables for the eight randomization strata. Blank cells in the row for "Baseline value of outcome" indicate that no baseline value of the outcome is available.

Table 4. Constraints to WBO participation in the training (Hypothesis CS3a)

Dependent variables →	WBO participated in initial training session (MCI monitoring data)	WBO participated in all training and mentoring sessions (MCI monitoring data)	Number of days from Initial training session to third mentoring session (MCI monitoring data)	WBO participated in financial literacy training supported by the trial (Endline Survey data)
WBO baseline characteristics	CS3aL_01	CS3aL_02	CS3aL_03	CS3aL_04
	(1)	(2)	(3)	(4)
WBO's age	-0.000	0.001	-0.181*	0.000
	(0.001)	(0.002)	(0.107)	(0.002)
WBO is currently married (0-1)	0.011	0.056	-2.236	-0.012
	(0.034)	(0.042)	(2.568)	(0.050)
WBO's agency	-0.023**	-0.020	-0.828	-0.032*
	(0.011)	(0.015)	(0.768)	(0.018)
Number of children in WBO's household	0.018**	0.004	-1.102*	0.028*
	(0.009)	(0.012)	(0.598)	(0.015)
Household size	0.004	0.005*	0.302	0.004
	(0.003)	(0.003)	(0.266)	(0.005)
Highest level of schooling completed: Lower secondary (0-1)	0.017	0.044	-2.192	0.070**
	(0.021)	(0.029)	(1.786)	(0.035)
Highest level of schooling completed: Upper secondary (0-1)	0.010	0.031	-2.610	0.099***
	(0.023)	(0.032)	(1.884)	(0.036)
Highest level of schooling completed: Tertiary (0-1)	-0.017	-0.011	3.008	0.080
	(0.046)	(0.058)	(4.085)	(0.064)
WBO's cognitive ability score (0-4)	-0.011	0.007	-2.121***	0.044***
	(0.010)	(0.013)	(0.722)	(0.015)
WBO uses smartphone (0-1)	-0.043**	-0.058**	-0.504	-0.015
	(0.019)	(0.025)	(1.343)	(0.028)
Household asset index	-0.005	-0.003	0.290	0.003
	(0.007)	(0.008)	(0.344)	(0.009)
Number of paid workers in WBO's primary business	-0.021*	-0.009	-0.657	-0.021***
	(0.011)	(0.012)	(0.454)	(0.006)
WBO knew agent at baseline (0-1)	0.011	-0.000	1.675	0.007
	(0.018)	(0.024)	(1.312)	(0.027)
Proportion of other sample WBOs in same village known to WBO at baseline	0.032	0.110***	4.200*	0.043
	(0.027)	(0.039)	(2.273)	(0.047)
WBO belongs to business-related association or group at baseline (0-1)	0.141***	0.192***	7.045*	0.160**
	(0.020)	(0.044)	(3.700)	(0.079)
Constant	0.866***	0.578***	53.447***	0.338***
	(0.077)	(0.098)	(6.435)	(0.108)
Joint test of schooling	0.769	0.413	0.409	0.055*
Sample mean of Y	0.886	0.790	39.185	0.607
Sample size	1554	1554	1228	1543

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. WBO's agency is measured by a standardized z-score of indicators of her participation in five household decisions. The household asset index is the first principal component of indicators referring to baseline housing characteristics, ownership (0-1) of 20 consumer durables and household food sufficiency (0-1).

Table 5. Intermediate outcomes

	Agent performance (based on agent survey data) zscore_CS2 (1)	WBO knowledge of branchless banking zscore_CS3b (2)	WBO take-up and use of branchless banking services zscore_CS4b (3)
High agent incentives alone	-0.020	-0.000	0.007
	(0.029)	(0.033)	(0.031)
WBO training & mentoring alone		0.751***	0.080**
		(0.048)	(0.036)
Interaction of both treatments		-0.116*	-0.035
		(0.068)	(0.054)
Test of no treatment effects (p)		0.000***	0.069*
Test of equality in agent incentives and WBO training & mentoring effects (p)		0.000***	0.038**
Std. dev. of z-score index	0.271	0.933	0.661
Sample size	341	2724	2724

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level (columns 2-3 only). The aggregate z-score indices are based on the following indicators: column 1 (Table 6, indicators in columns 1-10 and 12-21); column 2 (Table 7, indicators in columns 1-14); column 3 (Table 8, indicators in columns 1-14)

Table 6. Agent performance (Hypothesis CS2)

Dependent variables →	Agent promotes LP to women (0-1)	Agent promotes LP to business owners (0-1)	Agent promotes LKD to women (0-1)	Agent promotes LKD to business owners (0-1)	Number of hours worked per week in agent job	% of agent's worktime promoting LP products in shop	% of agent's worktime promoting LP products outside shop	% of agent's worktime educating client about financial products	Agent has made investments to improve performance (0-1)	Commission earned from partner bank in typical month	Commission earned from partner bank in October 2018
	CS2_01 (1)	CS2_02 (2)	CS2_03 (3)	CS2_04 (4)	CS2_05 (5)	CS2_06 (6)	CS2_07 (7)	CS2_08 (8)	CS2_09 (9)	CS2_10 (10)	CS2_11 (11)
High agent incentives alone	-0.030	-0.015	0.036	0.011	0.011	4.908*	-3.089	-0.894	-0.019	-0.007	0.010
	(0.051)	(0.053)	(0.046)	(0.053)	(0.111)	(2.843)	(2.929)	(1.125)	(0.056)	(0.008)	(0.006)
Endline control group mean	0.344	0.541	0.219	0.388	1.413	32.119	40.500	6.923	0.530	0.019	0.003
Baseline control group mean											
	362	362	362	362	362	341	341	341	341	336	114

Table 6 (continued)

Dependent variables →	Agent's satisfaction with agent job (1-10)	Agent's assessment of own competence as agent (1-10)	Agent has personally adopted LKD product (0-1)	Agent has personally adopted LP product (0-1)	Hours spent by agent doing voluntary work in a typical month	Amount of money contributed by agent to social institutions/ organizations last year	Agent sees self as doing a thorough job (1-5)	Agent sees self as considerate and kind to almost everyone (1-5)	Agent sees self as doing things efficiently (1-5)	Agent sees self as outgoing, sociable (1-5)
	CS2_12 (12)	CS2_13 (13)	CS2_14 (14)	CS2_15 (15)	CS2_16 (16)	CS2_17 (17)	CS2_18 (18)	CS2_19 (19)	CS2_20 (20)	CS2_21 (21)
High agent incentives alone	0.006	0.056	-0.028	-0.010	-0.796	-0.481	-0.066	0.024	0.013	0.019
	(0.228)	(0.225)	(0.041)	(0.031)	(0.777)	(1.119)	(0.050)	(0.041)	(0.037)	(0.045)
Endline control group mean	5.208	5.440	0.191	0.087	4.612	2.272	0.311	0.180	0.126	0.230
Baseline control group mean		7.060	0.005		5.946	0.818	6.420	6.420	6.420	6.420

Dependent variables →	Agent's satisfaction with agent job (1-10)	Agent's assessment of own competence as agent (1-10)	Agent has personally adopted LKD product (0-1)	Agent has personally adopted LP product (0-1)	Hours spent by agent doing voluntary work in a typical month	Amount of money contributed by agent to social institutions/ organizations last year	Agent sees self as doing a thorough job (1-5)	Agent sees self as considerate and kind to almost everyone (1-5)	Agent sees self as doing things efficiently (1-5)	Agent sees self as outgoing, sociable (1-5)
	CS2_12 (12)	CS2_13 (13)	CS2_14 (14)	CS2_15 (15)	CS2_16 (16)	CS2_17 (17)	CS2_18 (18)	CS2_19 (19)	CS2_20 (20)	CS2_21 (21)
Sample size	340	340	361	361	340	323	361	361	361	361

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. The analysis in this table is based on data from the Agent Survey, with the estimation sample limited to primary agents. Indicators in columns 10, 11 and 17 are in Rp. millions. Blank entries in the row for "Baseline control group means" imply that baseline values are not available for the indicator.

Table 7. Knowledge of branchless banking (Hypothesis CS3b)

	WBO knows (unprompted) the name of the partner bank agent (0-1)	WBO knows (after prompting with name) the name of the partner bank agent (0-1)	WBO knows about branchless banking services (0-1)	WBO thinks the training provided enough information about the partner bank's branchless banking products (0-1)	WBO knows that there is an agent in her village promoting and selling the partner bank's branchless banking products (0-1)	WBO knows about the partner bank's LKD product (0-1)	WBO knows about the partner bank's LP product (0-1)
	CS3b_01 (1)	CS3b_02 (2)	CS3b_03 (3)	CS3b_04 (4)	CS3b_05 (5)	CS3b_06 (6)	CS3b_07 (7)
High agent incentives alone	0.006	-0.013	-0.010	-0.004	0.006	0.026*	0.009
	(0.023)	(0.027)	(0.025)	(0.009)	(0.010)	(0.014)	(0.014)
WBO training & mentoring alone	0.059***	0.031	0.174***	0.201***	0.045***	0.380***	0.433***
	(0.022)	(0.020)	(0.022)	(0.017)	(0.012)	(0.021)	(0.023)
Interaction of both treatments	-0.012	-0.014	-0.031	-0.012	-0.031*	-0.070**	-0.076**
	(0.030)	(0.029)	(0.031)	(0.024)	(0.016)	(0.032)	(0.033)
Test of no treatment effects (p)	0.005***	0.267	0.000***	0.000***	0.001***	0.000***	0.000***
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.025**	0.098*	0.000***	0.000***	0.002***	0.000***	0.000***
Endline control group mean	0.142	0.652	0.183	0.015	0.027	0.039	0.035
Baseline control group mean		0.580				0.003	0.002
Sample size	2724	2724	2724	2724	2724	2724	2724

(table continued…)

Table 7. Knowledge of branchless banking (Hypothesis CS3b, continued)

	WBO knows about the branchless banking products of other banks (0-1)	WBO knows the interest rate offered by the partner bank's LKD product (0-1)	WBO knows the interest rate offered by the partner bank's LP product (0-1)	WBO knows the fee for a deposit with the partner bank's LKD product (0-1)	WBO knows the fee for a deposit with the partner bank's LP product (0-1)	WBO knows the fee for a withdrawal with the partner bank's LKD product (0-1)	WBO knows the fee for a withdrawal with the partner bank's LP product (0-1)
	CS3b_08 (8)	CS3b_09 (9)	CS3b_10 (10)	CS3b_11 (11)	CS3b_12 (12)	CS3b_13 (13)	CS3b_14 (14)
High agent incentives alone	-0.023	-0.001	-0.000	0.004	0.000	-0.006*	-0.003
	(0.016)	(0.003)	(0.000)	(0.006)	(0.006)	(0.003)	(0.002)
WBO training & mentoring alone	0.017	0.022***	0.004*	0.075***	0.085***	0.015**	0.022***
	(0.016)	(0.006)	(0.002)	(0.011)	(0.012)	(0.006)	(0.006)
Interaction of both treatments	0.012	-0.002	-0.002	-0.008	0.001	-0.005	-0.009
	(0.023)	(0.008)	(0.003)	(0.016)	(0.017)	(0.007)	(0.007)
Test of no treatment effects (p)	0.087*	0.000***	0.259	0.000***	0.000***	0.000***	0.000***
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.015**	0.000***	0.077*	0.000***	0.000***	0.000***	0.000***
Endline control group mean	0.112	0.003	0.000	0.007	0.008	0.007	0.003
Baseline control group mean	0.030	0.000	0.000	0.000	0.000	0.000	0.000
Sample size	2724	2724	2724	2724	2724	2724	2724

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. Blank entries in the row for "Baseline control group means" imply that baseline values are not available for the indicator.

Table 8. Take-up of branchless banking (Hypothesis CS4b)

	WBO has enrolled in partner bank's LKD product (0-1)	WBO has enrolled in partner bank's LP product (0-1)	WBO has enrolled in another bank's branchless banking product (0-1)	WBO has registered partner bank's LKD product (0-1)	WBO is currently using partner bank's LKD product (0-1)	WBO has registered partner bank's LP product (0-1)
	CS4b_01 (1)	CS4b_02 (2)	CS4b_03 (3)	CS4b_04 (4)	CS4b_05 (5)	CS4b_06 (6)
High agent incentives alone	0.004	-0.003	-0.018*	0.008*	0.002	-0.003
	(0.003)	(0.002)	(0.010)	(0.004)	(0.003)	(0.002)
WBO training & mentoring alone	0.009**	0.002	-0.013	0.020***	0.004	0.007
	(0.004)	(0.003)	(0.009)	(0.006)	(0.003)	(0.005)
Interaction of both treatments	-0.006	0.003	0.020*	-0.015*	-0.002	-0.002
	(0.006)	(0.004)	(0.012)	(0.008)	(0.004)	(0.005)
Test of no treatment effects (p)	0.103	0.022**	0.334	0.001***	0.486	0.007***
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.359	0.036**	0.519	0.072*	0.739	0.008***
Endline control group mean	0.002	0.003	0.037	0.002	0.002	0.003
Baseline control group mean						
Sample size	2724	2724	2724	2724	2724	2724

(table continued…)

Table 8. Take-up of branchless banking (Hypothesis CS4b, continued)

	WBO is currently using partner bank's LP product (0-1) CS4b_07 (7)	WBO is currently using another bank' branchless banking product (0-1) CS4b_08 (8)	WBO currently uses the partner bank's LKD product to save money (0-1) CS4b_11 (9)	WBO currently uses the partner bank's LP product to save money (0-1) CS4b_12 (10)	WBO currently uses another bank's branchless banking product to save money (0-1) CS4b_14 (11)	WBO currently uses another bank's branchless banking product to borrow money (0-1) CS4b_15 (12)
High agent incentives alone	-0.003	-0.017*	0.002	-0.003	-0.006	-0.001
	(0.002)	(0.010)	(0.003)	(0.002)	(0.007)	(0.003)
WBO training & mentoring alone	0.002	-0.014	0.009**	0.001	-0.004	-0.000
	(0.003)	(0.009)	(0.004)	(0.003)	(0.007)	(0.003)
Interaction of both treatments	0.002	0.018	-0.007	0.002	0.004	0.000
	(0.004)	(0.012)	(0.005)	(0.004)	(0.009)	(0.004)
Test of no treatment effects (p)	0.034**	0.367	0.152	0.077*	0.814	0.996
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.039**	0.706	0.138	0.082*	0.721	0.864
Endline control group mean	0.003	0.037	0.002	0.003	0.018	0.005
Baseline control group mean		0.012			0.007	0.002
Sample size	2724	2724	2724	2724	2724	2724

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. Blank entries in the row for "Baseline control group means" imply that baseline values are not available for the indicator. No results are presented for indicator CS4b_13 ("WBO uses partner bank LP product to take a loan" (0-1)) because there were no non-zero values.

Table 9. Analysis of aggregate z-score indices (Primary and secondary hypotheses)

	Profits	Capital inputs	Labor inputs	Business practices	Savings: last 12 months and current balance	Savings: shift to formal saving	Access to credit	Women's agency: Household decision-making power	Women's agency: spousal cooperation	Household welfare: index of the ownership of household durables
	zscore_A1	zscore_B1K	zscore_B1L	mean_score_B2	zscore_A2_a	zscore_A2_b	zscore_B4	zscore_B3_a	zscore_B3_b	B5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
High agent incentives alone	0.033	0.163*	-0.037	0.001	-0.001	0.002	-0.019	0.024	0.041	0.072
	(0.049)	(0.090)	(0.033)	(0.011)	(0.043)	(0.034)	(0.025)	(0.046)	(0.025)	(0.060)
WBO training & mentoring alone	0.106**	0.057	0.044	0.020**	0.042	-0.006	0.023	0.087**	-0.022	0.104**
	(0.043)	(0.035)	(0.038)	(0.009)	(0.034)	(0.030)	(0.024)	(0.040)	(0.023)	(0.050)
Interaction of both treatments	-0.009	-0.130	0.010	0.008	-0.029	0.011	0.008	-0.098*	-0.022	-0.056
	(0.070)	(0.089)	(0.047)	(0.014)	(0.055)	(0.047)	(0.037)	(0.057)	(0.032)	(0.078)
Test of no treatment effects (p)	0.024**	0.051*	0.096	0.006***	0.610	0.985	0.359	0.108	0.060*	0.112
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.119	0.262	0.024**	0.061*	0.330	0.805	0.082*	0.132	0.009***	0.598
Std. dev. of z-score index	1.064	1.094	0.644	0.258[a]	0.755	0.630	0.532	0.741	0.413	1.492
Sample size	2657	2599	2678	2678	2723	2723	2724	2723	2443	2723

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. The estimated effects on the aggregate z-score indices in columns 1-3 and 5-9 are in terms of standard devations of the indices. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. The index of adherence to recommended business practices in column 4 is the sample mean proportion of WBO responses indicating adherence to the 16 recommended business practices. The index of household asset ownership in column 10 is the first principal component of indicators of the ownership of 20 consumer durables. The aggregate z-score indices in the other columns are based on the following indicators: column 1 (Table 10, indicators in columns 1, 3, 4, 6, 7 and 9); column 2 (Table 11, indicators in columns 1-6); column 3 (Table 12, indicators in columns 1, 3, 5, 7, 9 and 11); column 5 (Table 14, indicators in columns 1-9 and 12-20);

column 6 (Table 14, indicators in columns 10, 11 and 21-24); column 7 (Table 15, indicators in columns 1-7); column 8 (Table 16, indicators in columns 1-5); and column 9 (Table 16, indicators in columns 6-13).

[a] Endline sample mean of the control group.

Table 10. Profits

Dependent variables →	Average monthly profits during the last 12 months								
	Primary business (Rp. millions)	Secondary business (Rp. millions)	Both primary and secondary businesses (Rp. millions)	Primary business (Rp., IHS)	Secondary business (Rp., IHS)	Both primary and secondary businesses (Rp., IHS)	Primary business (Rp. millions, winsorized)	Secondary business (Rp. millions, winsorized)	Both primary and secondary businesses (Rp. millions, winsorized)
	A1_01 (1)	A1_02 (2)	A1_03 (3)	A1_04 (4)	A1_05 (5)	A1_06 (6)	A1_07 (7)	A1_08 (8)	A1_09 (9)
High agent incentives alone	0.115	-0.477	-0.191	0.040	-0.006	0.035	0.155*	-0.356	0.071
	(0.116)	(0.722)	(0.235)	(0.060)	(0.170)	(0.060)	(0.091)	(0.229)	(0.100)
WBO training & mentoring alone	0.204*	0.463	0.064	0.161***	-0.073	0.157***	0.201**	-0.290	0.146*
	(0.114)	(1.131)	(0.163)	(0.049)	(0.143)	(0.047)	(0.080)	(0.209)	(0.082)
Interaction of both treatments	-0.143	2.853	0.806	-0.110	0.195	-0.081	-0.151	0.599**	0.011
	(0.160)	(2.139)	(0.736)	(0.075)	(0.200)	(0.073)	(0.118)	(0.270)	(0.127)
Test of no treatment effects (p)	0.277	0.576	0.589	0.008***	0.526	0.005***	0.056*	0.162	0.089*
Test of equality of agent incentives and WBO training & mentoring effects (p)	0.443	0.380	0.203	0.032**	0.653	0.030**	0.594	0.666	0.428
Endline control group mean	1.362	1.406	1.665	14.314	13.814	14.431	1.319	1.206	1.560
Baseline control group mean	1.596	0.615	1.781	14.373	6.394	14.452	1.514	0.455	1.689
Sample size	2646	547	2642	2646	547	2642	2646	547	2642

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. IHS=inverse hyperbolic sine transformation. The inverse hyperbolic sine (IHS) transformations in columns 4-6 were applied to the reported profits measure in Rupiah so that the estimated effects could be interpreted as proportionate effects (Bellemarre and Wichman 2019).

Table 11. Capital inputs

Dependent variables →	Total value of capital stock in all businesses owned (Rp. millinos, winsorized)	Total value of physical capital investments during the past year (Rp. millions, winsorized)	Ratio of the total value of physical capital investments during the past year to the total value of the capital stock in all businesses owned	Ratio of the total value of physical capital investments during the past year to total business profits during the past year	Any (nonzero) physical capital investment in primary or secondary businesses during the past year (0-1)	Any (nonzero) increased value of stocks in primary or secondary business during the past year (0-1)	Log of total value of capital stock in all businesses owned
	B1K_01 (1)	B1K_02 (2)	B1K_04 (3)	B1K_05 (4)	B1K_06 (5)	B1K_07 (6)	Ln_B1K_01 (7)
High agent incentives alone	2.538	0.593	0.088*	0.132	-0.008	0.023	0.052
	(3.627)	(0.413)	(0.046)	(0.099)	(0.029)	(0.026)	(0.077)
WBO training & mentoring alone	3.287	0.104	0.034	-0.001	0.002	0.037	0.157**
	(3.135)	(0.213)	(0.021)	(0.020)	(0.025)	(0.023)	(0.070)
Interaction of both treatments	2.113	-0.291	-0.095*	-0.151	0.067*	-0.022	-0.075
	(4.955)	(0.457)	(0.048)	(0.096)	(0.035)	(0.033)	(0.105)
Test of no treatment effects (p)	0.249	0.427	0.050*	0.218	0.018**	0.359	0.107
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.825	0.221	0.288	0.179	0.701	0.579	0.144
Endline control group mean	25.246	1.094	0.068	0.083	0.345	0.260	2.016
Baseline control group mean	21.007						1.643
Sample size	2459	2720	2595	2653	2723	2722	2456

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. Indicators in columns 1 and 2 are in Rp. millions. Blank entries in the row for "Baseline control group means" imply that baseline values are not available for the indicator. Note: The variable in column 7 was not included in the pre-analysis plan or the z-score indicator in Table 9

Table 12. Labor inputs

Dependent variables →	Days worked in primary business in a typical month B1L_01 (1)	Days worked in secondary business in a typical month B1L_02 (2)	Hours worked in primary business in a typical day B1L_03 (3)	Hours worked in secondary business in a typical day B1L_04 (4)	Hours worked in primary business in a typical month B1L_05 (5)	Hours worked in secondary business in a typical month B1L_06 (6)	Number of unpaid workers in primary business (winsorized) B1L_07 (7)	Number of unpaid workers in secondary business (winsorized) B1L_08 (8)	Number of paid workers in primary business B1L_09 (9)	Number of paid workers in secondary business B1L_10 (10)	Number of paid and unpaid workers in primary business (winsorized) B1L_11 (11)	Number of paid and unpaid workers in secondary business (winsorized) B1L_12 (12)
High agent incentives alone	0.197	0.008	-0.229	0.344	-5.885	13.668	-0.012	0.019	-0.074	-0.209*	-0.074	-0.182
	(0.277)	(1.255)	(0.188)	(0.348)	(5.698)	(10.922)	(0.052)	(0.115)	(0.056)	(0.113)	(0.065)	(0.163)
WBO training & mentoring alone	0.072	0.895	0.077	-0.544*	2.077	-10.803	0.014	-0.082	0.101	-0.076	0.009	-0.183
	(0.253)	(1.106)	(0.176)	(0.277)	(5.302)	(8.621)	(0.050)	(0.096)	(0.138)	(0.114)	(0.063)	(0.152)
Interaction of both treatments	0.023	-2.346	0.286	0.038	9.887	-12.295	-0.013	-0.016	-0.062	0.189	0.029	0.184
	(0.339)	(1.658)	(0.230)	(0.457)	(6.899)	(14.201)	(0.066)	(0.143)	(0.148)	(0.135)	(0.084)	(0.198)
Test of no treatment effects (p)	0.666	0.210	0.103	0.062*	0.066*	0.110	0.949	0.673	0.183	0.196	0.506	0.600
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.631	0.465	0.094*	0.012**	0.153	0.027**	0.597	0.394	0.146	0.154	0.152	0.993
Endline control group mean	27.683	22.397	7.056	4.214	198.415	97.413	2.268	1.897	0.200	0.325	2.459	2.222

Baseline control group mean	28.768	10.437	8.531	2.246	247.543	50.556	2.075	0.746	0.154	0.238	2.230	0.929
Sample size	2678	553	2678	553	2678	553	2678	553	2678	553	2678	553

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. Reported labor inputs in primary and secondary businesses cannot be meaningfully combined because of the tendency to report the same labor inputs in both businesses.

Table 13. Business practices

Dependent variables →	Adherence to recommended business practices									
	Ever asked a supplier which products are selling well (0-1)	Used a special offer to attract customers in the last 3 months (0-1)	Done any form of advertising in the last 6 months (0-1)	Done anything to measure the effectiveness of the advertising (0-1)	Attempted to negotiate with supplier for lower prices in the last 3 months (0-1)	Has a record-keeping system that reports stocks of goods to sell or raw materials on hand (0-1)	Keeps written business records (0-1)	Records every purchase or sale made by the business (0-1)	Able to use records to see easily how much cash is on hand at any point in time (0-1)	Regularly uses records monthly to know whether sales of a product are increasing or decreasing (0-1)
	B2_01	B2_02	B2_03	B2_04	B2_05	B2_06	B2_07	B2_08	B2_09	B2_10
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
High agent incentives alone	0.019	0.002	-0.019	-0.024	-0.027	0.018	-0.022	-0.004	-0.008	-0.008
	(0.029)	(0.025)	(0.020)	(0.017)	(0.026)	(0.023)	(0.029)	(0.024)	(0.023)	(0.021)
WBO training & mentoring alone	0.077***	-0.001	-0.006	-0.005	0.017	0.026	0.017	0.034	0.050**	0.028
	(0.025)	(0.023)	(0.019)	(0.015)	(0.025)	(0.021)	(0.024)	(0.022)	(0.020)	(0.019)
Interaction of both treatments	-0.050	-0.009	0.037	0.027	0.015	0.009	0.028	0.022	0.013	-0.002
	(0.037)	(0.034)	(0.026)	(0.021)	(0.036)	(0.029)	(0.033)	(0.031)	(0.030)	(0.026)
Test of no treatment effects (p)	0.014**	0.974	0.430	0.427	0.375	0.087*	0.210	0.024**	0.002***	0.211
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.032**	0.913	0.487	0.226	0.084*	0.702	0.138	0.101	0.008***	0.067*
Endline control group mean	0.453	0.222	0.147	0.092	0.365	0.178	0.386	0.210	0.189	0.154
Baseline control group mean	0.432	0.201	0.077	0.036	0.345	0.134	0.341	0.177	0.155	0.119
Sample size	2614	2678	2678	2678	2678	2637	2678	2678	2678	2678

(table continued…)

Table 13. Business practices (continued)

Dependent variables →	Adherence to recommended business practices					
	Has worked out the cost of each main product sold (0-1)	Has a written budget for business expenses (0-1)	Has records needed to apply for a bank loan (0-1)	Keeps business money separate from household money (0-1)	Uses bank account or branchless banking account for the business (0-1)	Primary business is registered with the government (0-1)
	B2_11	B2_12	B2_13	B2_14	B2_15	B2_16
	(11)	(12)	(13)	(14)	(15)	(16)
High agent incentives alone	0.016	-0.016	-0.002	-0.005	0.000	0.044*
	(0.019)	(0.019)	(0.020)	(0.027)	(0.010)	(0.023)
WBO training & mentoring alone	0.014	0.004	0.020	0.033	0.006	0.020
	(0.014)	(0.015)	(0.017)	(0.024)	(0.009)	(0.019)
Interaction of both treatments	0.013	0.031	-0.006	0.051	0.003	-0.053*
	(0.021)	(0.023)	(0.024)	(0.036)	(0.013)	(0.028)
Test of no treatment effects (p)	0.035**	0.266	0.515	0.004***	0.695	0.238
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.902	0.251	0.236	0.137	0.512	0.287
Endline control group mean	0.894	0.131	0.145	0.381	0.029	0.155
Baseline control group mean	0.882	0.067	0.106			0.114
Sample size	2678	2678	2678	2678	2678	2678

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. Blank entries in the row for "Baseline control group means" imply that baseline values are not available for the indicator.

Table 14. Savings: Savings during the last 12 months

Dependent variables →	Savings during the last 12 months										
	Any (nonzero) savings (0-1)	Total amount saved	Amount saved in formal or e-savings account	Amount saved in e-savings account	Total amount saved (Rp., IHS)	Amount saved in formal or e-savings account (Rp., IHS)	Amount saved in e-savings account (Rp., IHS)	Total amount saved (winsorized)	Amount saved in formal or e-savings account (winsorized)	Proportion of total savings in formal or e-savings account	Proportion of total savings in e-savings account
	A2_01 (1)	A2_02 (2)	A2_03 (3)	A2_04 (4)	A2_05 (5)	A2_06 (6)	A2_07 (7)	A2_08 (8)	A2_09 (9)	A2_11 (10)	A2_12 (11)
High agent incentives alone	0.018	-1.018	-0.258	0.010	-0.006	-0.078	0.005	-1.122	-0.495	0.005	0.000
	(0.018)	(0.786)	(0.564)	(0.009)	(0.070)	(0.059)	(0.005)	(0.684)	(0.449)	(0.017)	(0.001)
WBO training & mentoring alone	0.033**	0.313	0.541	0.010	0.113*	0.014	0.006	0.068	0.105	0.008	0.000
	(0.016)	(0.783)	(0.592)	(0.006)	(0.060)	(0.054)	(0.004)	(0.637)	(0.424)	(0.016)	(0.001)
Interaction of both treatments	-0.009	0.257	-0.403	-0.014	-0.013	0.043	-0.007	0.595	0.152	-0.010	0.001
	(0.022)	(1.019)	(0.829)	(0.012)	(0.083)	(0.075)	(0.007)	(0.867)	(0.615)	(0.022)	(0.002)
Test of no treatment effects (p)	0.043**	0.331	0.556	0.237	0.083*	0.409	0.301	0.259	0.534	0.966	0.844
Test of equality of agent incentives and WBO training & mentoring effects	0.339	0.076*	0.174	0.981	0.063*	0.110	0.788	0.063*	0.172	0.855	0.744
Endline control group mean	0.888	7.680	3.010	0.002	1.781	0.656	0.002	7.472	2.872	0.181	0.001
Baseline control group mean	0.827	6.114	2.292	0.007	1.575	0.461	0.006	5.589	1.787	0.147	0.003
Sample size	2723	2694	2705	2719	2694	2705	2719	2694	2705	2694	2694

(table continued…)

Table 14. Savings (continued): Current savings balances and saving for emergencies

	Current savings balances											Saving for emergencies	
Dependent variables →	Total balance	Balance in formal or e-savings account	Balance in e-savings account	Total balance (Rp., IHS)	Balance in formal or e-savings account (Rp., IHS)	Balance in e-savings account (Rp., IHS)	Total balance (winsorized)	Balance in formal or e-savings account (winsorized)	Balance in e-savings account (winsorized)	Proportion in formal or e-savings account	Proportion in e-savings account	Formal or e-savings account is primary account used (0-1)	E-savings account is primary account used (0-1)
	A2_13 (12)	A2_14 (13)	A2_15 (14)	A2_16 (15)	A2_17 (16)	A2_18 (17)	A2_19 (18)	A2_20 (19)	A2_21 (20)	A2_22 (21)	A2_23 (22)	A2_24 (23)	A2_25 (24)
High agent incentives alone	0.412	0.979	-0.032	-0.045	-0.020	-0.005	-1.300**	-0.645	-0.000	-0.000	-0.002	-0.010	0.001
	(2.166)	(2.075)	(0.033)	(0.068)	(0.058)	(0.006)	(0.636)	(0.431)	(0.000)	(0.019)	(0.002)	(0.024)	(0.003)
WBO training & mentoring alone	-0.011	-0.102	-0.028	0.062	-0.011	-0.002	-0.430	-0.306	0.000	-0.013	-0.001	-0.005	-0.000
	(0.833)	(0.627)	(0.034)	(0.061)	(0.056)	(0.007)	(0.646)	(0.438)	(0.000)	(0.018)	(0.002)	(0.021)	(0.003)
Interaction of both treatments	-0.711	-1.450	0.042	0.068	0.010	0.008	1.395*	0.465	0.000	0.006	0.003	0.008	-0.002
	(2.230)	(2.126)	(0.036)	(0.086)	(0.079)	(0.008)	(0.815)	(0.573)	(0.000)	(0.025)	(0.002)	(0.030)	(0.004)
Test of no treatment effects (p)	0.950	0.638	0.388	0.118	0.983	0.524	0.123	0.489	0.025**	0.866	0.262	0.981	0.859
Test of equality of agent incentives and WBO training & mentoring effects	0.843	0.600	0.428	0.073*	0.877	0.382	0.122	0.395	0.007***	0.483	0.463	0.843	0.821
Endline control group mean	7.264	3.397	0.035	1.706	0.700	0.008	6.941	2.999	0.000	0.251	0.002	0.275	0.004
Baseline control group mean												0.168	0.004

Dependent variables →	Current savings balances											Saving for emergencies	
	Total balance	Balance in formal or e-savings account	Balance in e-savings account	Total balance (Rp., IHS)	Balance in formal or e-savings account (Rp., IHS)	Balance in e-savings account (Rp., IHS)	Total balance (winsorized)	Balance in formal or e-savings account (winsorized)	Balance in e-savings account (winsorized)	Proportion in formal or e-savings account	Proportion in e-savings account	Formal or e-savings account is primary account used (0-1)	E-savings account is primary account used (0-1)
	A2_13	A2_14	A2_15	A2_16	A2_17	A2_18	A2_19	A2_20	A2_21	A2_22	A2_23	A2_24	A2_25
	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Sample size	2600	2618	2714	2600	2618	2714	2600	2618	2714	2600	2600	2550	2550

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. IHS=inverse hyperbolic sine transformation. Indicators in columns 2-4, 8-9, 12-14 and 18-20 are in Rp. millions. Blank entries in the row for "Baseline control group means" imply that baseline values are not available for the indicator. Indicator A2_10 "Amount saved in e-savings accounts (winsorized)" is not reported because there were no non-zero observations following winsorization of the highest 1% of reported values.

Table 15. Access to credit

Dependent variables →	Access to credit						
	WBO has a registered bank account in her name (0-1)	WBO uses bank credit (0-1)	WBO currently has a bank loan (0-1)	WBO has borrowed money from a money lender during the last 12 months (0-1)	WBO has borrowed money from a non-bank financial institution during the past 12 months (0-1)	WBO currently has a loan through the partner bank agent (0-1)	Last amount borrowed from the partner bank agent (Rp. thousands)
	B4_01	B4_02	B4_03	B4_04	B4_05	B4_06	B4_07
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High agent incentives alone	-0.006	-0.002	-0.002	-0.033***	-0.012	0.000	-7.501
	(0.023)	(0.024)	(0.023)	(0.012)	(0.025)	(0.004)	(9.430)
WBO training & mentoring alone	0.003	0.028	0.025	-0.003	-0.019	0.000	-2.917
	(0.023)	(0.022)	(0.021)	(0.013)	(0.022)	(0.004)	(8.526)
Interaction of both treatments	0.013	0.001	-0.006	0.013	-0.001	-0.003	28.015
	(0.032)	(0.031)	(0.030)	(0.015)	(0.033)	(0.005)	(28.648)
Test of no treatment effects (p)	0.915	0.334	0.512	0.010	0.558	0.768	0.759
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.722	0.201	0.253	0.005***	0.777	0.983	0.414
Endline control group mean	0.553	0.261	0.283	0.059	0.228	0.005	8.298
Baseline control group mean	0.476	0.270	0.233	0.000	0.000	0.000	0.000
Sample size	2724	2724	2723	2723	2723	2723	2723

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. Blank entries in the row for "Baseline control group means" imply that baseline values are not available for the indicator.

Table 16. Women's agency: Household decision-making power

Dependent variables →	Whether the WBO participates in the following household decisions:				
	Whether to purchase an appliance for the home (0-1)	In what way household members may work outside the home (0-1)	Whether to support family members, such as parents, siblings, in-laws (0-1)	Whether to save for the future (0-1)	Whether to sign up for a new banking product (0-1)
	B3_01	B3_02	B3_03	B3_04	B3_05
	(1)	(2)	(3)	(4)	(5)
High agent incentives alone	0.002	0.019	-0.000	-0.003	0.033
	(0.024)	(0.030)	(0.026)	(0.023)	(0.026)
WBO training & mentoring alone	0.041**	0.027	0.026	0.037*	0.055**
	(0.021)	(0.026)	(0.022)	(0.021)	(0.023)
Interaction of both treatments	-0.031	-0.046	-0.020	-0.035	-0.082**
	(0.031)	(0.037)	(0.033)	(0.029)	(0.032)
Test of no treatment effects (p)	0.154	0.631	0.616	0.140	0.050
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.071*	0.722	0.302	0.051*	0.326
Endline control group mean	0.792	0.615	0.767	0.811	0.734
Baseline control group mean	0.446	0.491	0.375	0.405	0.363
Sample size	2723	2723	2723	2723	2723

(table continued…)

Table 17. Women's agency (continued): Spousal cooperation

Dependent variables →	Indicators based on WBOs with a spouse (or partner) who are currently operating a business							
	Proportion of WBO's business earnings known to spouse	Proportion of WBO's business earnings going to household expenses	Proportion of household expenses coming from spouse	Spouse did not ask WBO for money that she did not want to provide during the past 12 months (0-1)	Both WBO and spouse have access to the money from WBO's business (0-1)	Both WBO and spouse only decide how money from WBO's business will be spent (0-1)	WBO does not have sole control over the spending of any money without consulting anyone (0-1)	WBO and spouse together have equal say in the decision about how spouse's earnings will be spent (0-1)
	B3_06 (6)	B3_07 (7)	B3_08 (8)	B3_09 (9)	B3_10 (10)	B3_11 (11)	B3_12 (12)	B3_13 (13)
High agent incentives alone	0.063***	-0.002	0.015	0.008	0.048	-0.010	-0.044	0.019
	(0.022)	(0.012)	(0.018)	(0.014)	(0.032)	(0.030)	(0.032)	(0.031)
WBO training & mentoring alone	0.014	-0.030***	-0.007	-0.013	-0.004	-0.018	0.023	0.026
	(0.021)	(0.011)	(0.016)	(0.013)	(0.025)	(0.027)	(0.029)	(0.027)
Interactiion of both treatments	-0.061**	0.014	0.004	0.010	-0.039	-0.006	0.018	-0.039
	(0.029)	(0.016)	(0.023)	(0.018)	(0.037)	(0.039)	(0.039)	(0.039)
Test of no treatment effects (p)	0.016	0.025	0.490	0.481	0.307	0.663	0.149	0.763

Dependent variables →	Indicators based on WBOs with a spouse (or partner) who are currently operating a business							
	Proportion of WBO's business earnings known to spouse	Proportion of WBO's business earnings going to household expenses	Proportion of household expenses coming from spouse	Spouse did not ask WBO for money that she did not want to provide during the past 12 months (0-1)	Both WBO and spouse have access to the money from WBO's business (0-1)	Both WBO and spouse only decide how money from WBO's business will be spent (0-1)	WBO does not have sole control over the spending of any money without consulting anyone (0-1)	WBO and spouse together have equal say in the decision about how spouse's earnings will be spent (0-1)
	B3_06 (6)	B3_07 (7)	B3_08 (8)	B3_09 (9)	B3_10 (10)	B3_11 (11)	B3_12 (12)	B3_13 (13)
Test of equality in agent incentives and WBO training & mentoring effects (p)	0.010**	0.016***	0.183	0.139	0.093*	0.799	0.026**	0.866
Endline control group mean	0.736	0.434	0.512	0.935	0.310	0.364	0.520	0.627
Baseline control group mean	0.735	0.395	0.504	0.918	0.371	0.282	0.507	0.726
Sample size	2403	2402	2214	2403	2403	2403	2403	2403

Notes: * 0.10 level, ** 0.05 level, *** 0.01 level. Estimated standard errors corrected for heteroskedasticity and clustering at the village level. Indicators in columns 1 and 2 are in Rp. millions. The WBO's business earnings in column 2 and her spouse's earnings in column 3 do not include personal goods used only by themselves or business expenses. The indicators in this table differ slightly from their description in the PAP.

Table 18. Heterogeneity analysis: Average marginal effects of high agent incentives by gender

	Winsorized primary business profits	Capital inputs	Savings: last 12 months and current balance	Agency: household decision-making power	Knowledge of branchless banking	Take-up and use of branchless banking
		zscore_B1K	zscore_A2_a	zscore_B3_a	zscore_CS3b	zscore_CS4b
	(1)	(2)	(3)	(4)	(5)	(6)
Male business owner	-0.050	-0.021	0.121*	0.046	0.019	0.058**
	(0.110)	(0.027)	(0.070)	(0.029)	(0.018)	(0.028)
Female business owner	0.060	0.052*	-0.019	-0.045	-0.086*	-0.033
	(0.068)	(0.028)	(0.023)	(0.037)	(0.048)	(0.039)
Test of equality in marginal effects of high agent incentives (p)	0.363	0.057*	0.050*	0.043**	0.032**	0.041**
Sample size	4515	4449	4632	4632	4638	4637

Note: This table shows the marginal effects, as given by the dydx command in STATA.

Table 19: Heterogeneity analysis: Marginal effects of treatments by household asset quintile

	Winsorized primary business profits	Capital inputs	Business practices	Savings: last 12 months and current balance	Access to credit	Women's agency: household decision-making power	Household welfare: index of ownership of household durables
	hetero_A1_07	hetero_zscore_B1K	hetero_mean_score_B2	hetero_zscore_A2_a	hetero_zscore_B4	hetero_zscore_B3_a	hetero_B5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
High agent incentives alone							
Lowest quintile	0.240**	0.471	0.018	0.041	0.032	0.100	0.018
	(0.121)	(0.385)	(0.020)	(0.031)	(0.043)	(0.896)	(0.116)
Next lowest quintile	0.034	-0.131**	-0.004	0.002	-0.075	-0.052	0.033
	(0.167)	(0.065)	(0.022)	(0.135)	(0.055)	(2.658)	(0.106)
Middle quintile	0.168	0.052	0.009	0.058	0.014	0.008	0.079
	(0.202)	(0.076)	(0.021)	(0.119)	(0.059)	(2.371)	(0.101)
Next highest quintile	0.198	0.104	-0.009	0.024	0.021	0.017	-0.036
	(0.182)	(0.089)	(0.021)	(0.062)	(0.062)	(0.102)	(0.127)
Highest quintile	0.175	0.319*	-0.013	-0.109	-0.082	0.077	0.261
	(0.293)	(0.187)	(0.029)	(0.087)	(0.057)	(0.098)	(0.187)

(table continued…)

Table 19: Heterogeneity analysis: Marginal effects of treatments by household asset quintile (continued)

	Winsorized primary business profits	Capital inputs	Business practices (mean score)	Savings: last 12 months and current balance	Access to credit	Women's agency: household decision-making power	Household welfare: index of ownership of household durables
	hetero_ A1_07	hetero_zscore_ B1K	hetero_mean_score_B2	hetero_zscore _A2_a	hetero_zscore _B4	hetero_zscore _B3_a	hetero_B5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
WBO training & mentoring alone							
Lowest quintile	0.413***	0.161***	0.021	0.094***	0.090**	0.197	0.293***
	(0.120)	(0.055)	(0.018)	(0.032)	(0.043)	(0.896)	(0.111)
Next lowest quintile	-0.104	-0.041	-0.001	-0.143**	-0.085	0.116	-0.241**
	(0.146)	(1.520)	(0.021)	(0.060)	(0.056)	(2.652)	(0.106)
Middle quintile	0.189	-0.050	0.047***	0.032	0.052	-0.130	0.087
	(0.179)	(0.057)	(0.018)	(0.054)	(0.051)	(1.373)	(0.108)
Next highest quintile	0.274	0.163	0.018	0.049	0.003	0.200**	0.100
	(0.196)	(0.103)	(0.021)	(0.066)	(0.056)	(0.093)	(0.118)
Highest quintile	0.267	0.054	0.010	0.210	0.070	0.056	0.275*
	(0.235)	(0.100)	(0.026)	(0.138)	(0.056)	(0.089)	(0.143)
Both treatments							
Lowest quintile	0.381***	0.155**	0.033*	0.136**	0.155	0.029	0.202*
	(0.147)	(0.064)	(0.018)	(0.067)	(0.956)	(13.244)	(0.117)
Next lowest quintile	-0.141	-0.062	0.010	-0.095	-0.024	-0.110	-0.028
	(0.137)	(0.065)	(0.021)	(0.061)	(0.096)	(2.658)	(0.102)
Middle quintile	-0.104	-0.002	0.065***	-0.090	0.003	0.062	0.025
	(0.146)	(0.064)	(0.020)	(0.057)	(0.048)	(1.372)	(0.102)
Next highest quintile	0.631***	0.119	0.020	0.050	-0.039	0.065	0.093
	(0.206)	(0.075)	(0.020)	(0.070)	(0.630)	(0.101)	(0.126)
Highest quintile	0.307	0.249**	0.014	0.077	-0.033	0.031	0.314**
	(0.284)	(0.121)	(0.029)	(0.089)	(0.050)	(0.096)	(0.160)

Test of equality in marginal effects: high agent incentives (p)	0.908	0.048**	0.837	0.623	0.319	0.984	0.762
Test of equality in marginal effects: WBO training & mentoring (p)	0.097*	0.081*	0.444	0.014**	0.159	0.092*	0.004***
Test of equality in marginal effects: Both treatments (p)	0.003***	0.055*	0.314	0.029**	0.263	0.709	0.289
Sample size	2646	2599	2678	2723	2724	2723	2723

Note: This table shows the marginal effects, as given by the dydx command in STATA.

Table 20. Reasons given by WBOs for not having the partner bank's branchless banking products

	Treatment arms				
	Control	High agent incentives alone	WBO training & mentoring alone	Both treatments combined	Total
	(1)	(2)	(3)	(4)	(5)
LKD product					
Total sample of responding WBOs	597	581	788	751	2717
Know about LKD product	23	35	326	278	662
Have LKD product	1	3	8	6	18
Do not have LKD product	22	32	318	272	644
Reasons given for not having the LKD product (% of responses, multiple responses permitted):					
No money to save	18.2	59.4	56.3	57.4	55.6
Don't know about the product	50.0	53.1	41.5	45.2	43.9
Already have similar product with another bank	22.7	21.9	17.0	15.8	16.9
Internet is unreliable	0.0	3.1	2.5	3.3	2.8
Product is too complicated to use	4.5	6.3	10.1	7.4	8.5
Product is too expensive	0.0	0.0	1.9	1.8	1.7
Don't trust the agent	9.1	0.0	8.5	10.3	8.9
Don't trust the bank	4.5	0.0	1.6	0.4	1.1
Don't trust the financial institution	4.5	3.1	1.6	4.4	3.0
Other reason	22.7	0.0	6.6	3.3	5.4
N	22	32	318	272	644
	Control	**High agent incentives alone**	**WBO training/mentoring**	**Both treatments combined**	**Total**
LP product					
Total sample of responding WBOs	597	581	788	751	2717

	Treatment arms				
	Control	High agent incentives alone	WBO training & mentoring alone	Both treatments combined	Total
	(1)	(2)	(3)	(4)	(5)
Know about LP product	21	25	366	299	711
Have LP product	2	0	4	4	10
Do not have LKD product	19	25	362	295	701
Reasons given for not having the LP product (% of responses, multiple responses permitted):					
No money to save	36.8	68.0	58.6	53.2	56.1
Already have similar product with another bank	36.8	20.0	17.1	15.3	17.0
Don't know about the product	52.6	40.0	35.1	40.7	38.1
Internet is unreliable	5.3	8.0	1.9	5.4	3.7
Product is too complicated to use	5.3	8.0	7.2	10.8	8.7
Product is too expensive	5.3	0.0	0.8	3.7	2.1
Don't trust the agent	10.5	0.0	9.1	8.5	8.6
Don't trust the bank	0.0	0.0	1.7	1.4	1.4
Don't trust the financial institution	0.0	4.0	0.8	2.4	1.6
Other reason	15.8	0.0	7.7	5.4	6.7
N	19	25	362	295	701

Table 21. Cost-effectiveness and cost-benefit analysis

Treatment group→	High agent incentives (alone)		WBO training & mentoring (alone)		Both treatments combined	
Month	Monthly net benefits	Discounted monthly net benefits	Monthly net benefits	Discounted monthly net benefits	Monthly net benefits	Discounted monthly net benefits
	(1)	(2)	(3)	(4)	(5)	(6)
0	-$11.65	-$11.65	-$63.60	-$63.60	-$63.60	-$63.60
1	$11.74	$11.63	$15.23	$15.08	$15.53	$15.38
2	$11.74	$11.51	$15.23	$14.93	$15.53	$15.22
3	$11.74	$11.40	$15.23	$14.78	$15.53	$15.07
4	$11.74	$11.28	$15.23	$14.63	$15.53	$14.92
5	$11.74	$11.17	$15.23	$14.49	$15.53	$14.78
6	$11.74	$11.06	$15.23	$14.34	$15.53	$14.63
7	$11.74	$10.95	$15.23	$14.20	$15.53	$14.49
8	$11.74	$10.84	$15.23	$14.06	$15.53	$14.34
9	$11.74	$10.74	$15.23	$13.92	$15.53	$14.20
10	$11.74	$10.63	$15.23	$13.79	$15.53	$14.06
11	$11.74	$10.53	$15.23	$13.65	$15.53	$13.92
12	$11.74	$10.42	$15.23	$13.51	$15.53	$13.78
13	$11.74	$10.32	$15.23	$13.38	$15.53	$13.65
14	$11.74	$10.22	$15.23	$13.25	$15.53	$13.51
15	$11.74	$10.11	$15.23	$13.12	$15.53	$13.38
16	$11.74	$10.01	$15.23	$12.99	$15.53	$13.24
17	$11.74	$9.92	$15.23	$12.86	$15.53	$13.11
18	$11.74	$9.82	$15.23	$12.73	$15.53	$12.98
19	$11.74	$9.72	$15.23	$12.60	$15.53	$12.86
20	$11.74	$9.62	$15.23	$12.48	$15.53	$12.73
21	$11.74	$9.53	$15.23	$12.36	$15.53	$12.60

Treatment group→	High agent incentives (alone)		WBO training & mentoring (alone)		Both treatments combined	
Month	Monthly net benefits	Discounted monthly net benefits	Monthly net benefits	Discounted monthly net benefits	Monthly net benefits	Discounted monthly net benefits
	(1)	(2)	(3)	(4)	(5)	(6)
22	$11.74	$9.43	$15.23	$12.23	$15.53	$12.48
23	$11.74	$9.34	$15.23	$12.11	$15.53	$12.35
24	$11.74	$9.25	$15.23	$11.99	$15.53	$12.23
Totals	$270.17	$237.80	$301.85	$259.88	$309.13	$266.32
CE ratio (24 mos)		**$0.047**		**$0.197**		**$0.193**
B-C ratio (24 mos)		**21.417**		**5.086**		**5.187**

Notes: The unit is one entrepreneur. It is assumed that there is one agent trainee per village, that agents are trained in all villages (including control villages), the total cost of agent training and mentoring is $81.53 per village (including an estimate of the opportunity cost of the agent's time), and that the cost of the agent training is spread across the 7 sample WBO in the village. In addition, the costs of training one female entrepreneur are assumed to be $51.95 (including an estimate of the opportunity cost of the WBOs' time). Average monthly profits are assumed to increase by Rp. 155,000 ($11.74) in months 1-24 in the High agent incentives (alone) treatment group, by Rp. 201,000 ($60.91) in months 1-24 in the WBO training and mentoring (alone) treatment group, and by Rp. 205,000 ($62.12) in the combined treatments arm. The monthly increases in profits are discounted at a social discount rate of 1% per month. The CE ratio is defined as the ratio of the total training cost in month 0 (including the cost of agent training under all treatments) to the sum of the discounted monthly benefits during months 1-24. The B-C ratio is in this case equal to the inverse of the CE ratio.

Appendix A: Departures from the pre-analysis plan (PAP)

Profits (Hypothesis A1)

1. Measures of the profits of secondary businesses (A1_02, A1_05, A1_08) are not included in the aggregate z-score index for profits because only about 20% of sample WBOs had secondary businesses.
2. Reported profits were re-scaled from reported values to millions of Rupiah, except those used to calculate IHS transformations (A1_04, A1_05, A1_06) for which the IHS transformation was applied to the unscaled Rupiah value so that the estimated effects would more closely approximate proportional changes (Bellemarre and Wichman 2019).

Savings (Hypothesis A2)

1. Estimates for the amount saved in the last 12 months in an electronic savings account, winsorized at the 99th percentile (A2_10) are not reported, and this indicator is not included in the aggregate z-score index (zscore_A2_a) because there are no non-zero observations of this indicator following winsorization.
2. The reported amounts saved were re-scaled from Rupiah to millions of Rupiah, except for the IHS indicators (A2_05, A2_06, A2_07, A2_16, A2_17, A2_18) for which the IHS transformation was applied to the unscaled Rupiah value so that the estimated effects more closely approximate proportional changes (Bellemarre and Wichman 2019).
3. The pre-analysis plan specified that we would use an average z-score index of several variables as the primary specification of savings. However, we have focused instead on whether they save and the IHS of the total amount saved because the index included several variables related to e-savings accounts. Given we did not see the expected take-up of the accounts, relying on the index would mask the effect on more general savings impacts. We focus on the IHS rather than the untransformed variable, as savings are a noisy variable that includes 0 values.

Capital inputs (Hypothesis B1K)

1. All reported values of capital inputs and investment were rescaled from Rupiah to millions of Rupiah.
2. The increase in the value of stocks in primary and secondary businesses combined (B1K_03) was dropped from the analysis because the actual data refer to the number of additional types of products, goods or services added to stocks during the last 12 months rather than the value of these products.
3. The indicators based on the total values of capital inputs (B1K_01) and physical investment (B1K_02, B1K_03, B1K_04) were found to be highly skewed (approximately lognormally distributed), while close to two-thirds of the reported investment values are equal to zero (no baseline data on investment were collected, so these features of the data were not anticipated). As such, the log of total value of capital (B1K_01) is used as the primary specification of capital.

Labor inputs (Hypothesis B1L)

1. Indicators referring to WBO labor inputs and the number of unpaid and paid workers in secondary businesses (B1L_02, B1L_04, B1L_06, B1L_08, B1L_10, B1L_12) were not included in the aggregate z-score index for labor inputs because only about 20% of WBOs had secondary businesses.

Business practices (Hypothesis B2)

The indicator "Has records needed to apply for a bank loan" (based on question P26) is also equal to zero if P17 is "No").

Women's agency (Hypothesis B3)

The last five indicators (B3_06, B3_07, B3_08, B3_09, B3_10) are reported only for WBOs with a spouse present. Accordingly, the second aggregate z-score index on spousal cooperation was re-defined to include indicators B3_09 and B3_10, which were dropped from the first aggregate z-score on household decision-making.

Access to credit (Hypothesis B4)

1. Indicator B4_04 is defined only when EG02A is reported.
2. Indicator B4_05 is defined only when EB02B is reported.
3. Indicator B4_07 was redefined to represent the value of outstanding loans owed to the partner bank obtained from the agent (EG04A) and was re-scaled from Rupiah to thousands of Rupiah.

Condition 1

No departures.

Condition 2

Indicator #10 was redefined as a summary index of connectivity for use in the heterogeneity analysis. The revised indicator #10 is equal to one if indicators #s 1-7 are equal to one and if either indicator #8 or #9 is equal to one, and zero otherwise. This change was made because WBOs responded to question B10e only if they owned a smart phone.

Agent performance (Hypothesis C-S2)

1. Indicator #11 was not included in the aggregate z-score index because only 117 agents responded to this question (97 of whom indicated that they did not receive any commission).
2. Indicator #14 is equal to one if AK09=1 and AK14a=1, and 0 otherwise (if AK09 is reported)
3. Indicator #15 is equal to one if A09=1 and AK10=1, and 0 otherwise (if AK09 is reported)
4. Indicator #17 is re-scaled from Rupiah to millions of Rupiah.

Constraints to participation (Hypothesis C-S3a)

1. Left side indicator #4 is conditional on the WBO having been randomly selected to receive the training and mentoring treatment
2. Right-side indicator #3 is based on the baseline value of the WBO's aggregate z-score index for household decision-making (zscore_B3_a).
3. Right-side indicator #10 was dropped because it was frequently not-reported; it was replaced by the number of paid workers in the WBOs' primary business.

Knowledge of branchless banking (Hypothesis C-S3b)

No departures.

Take-up and use of branchless banking (Hypothesis C-S4b)

1. Indicators #s 9 and 10 were dropped from this hypothesis because they do not refer to branchless banking.
2. Indicator #13 was dropped because there are no non-zero responses.

Heterogeneity analysis

1. Hypothesis D9: Quintiles are defined on the basis of the aggregate z-score index referring to household decision-making (zscore_B3_a).
2. Hypothesis D10: the number of children was recoded to 4 for number of children equal to 4+ (90% of the reported numbers of children are two or fewer).
3. Hypothesis D11 was added (WBO's are affected differently depending on baseline connectivity, with connectivity quintiles defined on the basis of Indicator #10 under Condition 2, as discussed above).

Methodology

Hypothesis tests

The following hypotheses tests were not included in the tables:

1. High agent incentives have no effect ($\beta_1=0$) and ($\beta_3=0$)
2. The training and mentoring of WBOs has no effect ($\beta_2=0$) and ($\beta_3=0$)
3. There is no interaction effect of high agent incentives with WBO training and mentoring ($\beta_{3=}0$)

The following hypothesis test was added to the tables:

1. The high agent incentives and WBO training and mentoring treatments have equal effects ($\beta_1=\beta_2$)

Outliers

As flagged above, the log of the value of capital was used given the skewedness of the raw variable.

Appendix B: Detailed description of the training and mentoring intervention for entrepreneurs

The training and mentoring program for female entrepreneurs consisted of one approximately three-hour training session delivered in groups of approximately 4-7 entrepreneurs and three sessions of group mentoring that lasted approximately one to one and a half hours each. While there were four sample female entrepreneurs randomly assigned to the training and mentoring treatment in each village, in some cases non-sample female entrepreneurs were also invited to participate in the training. MercyCorps Indonesia developed the training content based on materials from their extensive work with entrepreneurs in Indonesia and employed 50 experienced trainers to deliver the training and mentoring.

The objective of the training was to:

- Enable female entrepreneurs to understand business financial management and to apply it to their daily business activity
- Enable female entrepreneurs to understand several types of Laku Pandai/branchless banking products and services
- Support female entrepreneurs to improve family welfare through their businesses.

The training covered financial management, saving, financial planning and bookkeeping, business financial management, and branchless banking products and services. The module on financial management explained the importance of financial management, how to recognize income and expenses, how to use knowledge of income and expenses to plan finances, and how to set financial priorities. The module on savings explained the importance of savings and provided several practical steps to saving. It also clarified that savings should not be defined by the balance of income minus expenses, but rather savings are the result of disciplined and purposeful actions of setting money aside to achieve a financial goal. The module on financial planning and bookkeeping likewise defined concrete steps for how to plan financially for short-term, medium-term, and long-term targets and how to determine the amount one needs to save to achieve those targets. It also taught entrepreneurs how to write down their income and expense plan and to do basic bookkeeping. The fourth module on business financial management went into more detail on why it is important to keep business financial records and concrete steps to establish these records. It discussed separating business and personal finances and explained the different types of accounting books in detail (cash journal, receivable journal, payable journal, and stock record journal). The final module presented the benefits of branchless banking products in general and explained how the partner bank's LP and LKD products worked in detail. The training included examples and worksheets to help entrepreneurs understand the material.

The main differences between the training session and the group mentoring sessions were that the mentoring sessions were much more interactive and applied than the training session. The training session introduced the materials and included some exercises, but the

mentoring sessions were designed to focus on the questions that the female entrepreneurs had on the materials, the problems they were facing in their businesses, and detailed application of the lessons through exercises. Before each mentoring session, female entrepreneurs were expected to complete a homework assignment. The mentoring sessions started with question and answer sessions on the homework assignment and on the previous session's lessons. The first mentoring session was focused on financial planning, breaking down both business and personal needs, and on savings. The second session was focused on business bookkeeping and stocktaking, and the third session was focused on challenges related to customer outreach and promotion.