



Impact Evaluation of Laos Road Maintenance Groups Program

East Asia and Pacific Gender Innovation Lab

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Executive Summary

This is the endline report from the Impact Evaluation of the Laos Poverty Reduction Fund's Road Maintenance Groups program. It provides estimates of the impacts of the program on a wide range of welfare and empowerment indicators after 18 months of program implementation. The main findings emerging from this impact evaluation can be summarized as follows:

- 1. *The program achieved its core objectives, improving household welfare and women's productive work during the program:*** The RMG program significantly increased women's engagement in paid work, their earnings and household income. Notably, increase in household income was a large fraction of the wage payments made under the RMG program, which suggests that it did not displace other income sources but complemented them to raise household welfare.
- 2. *The program is unlikely to have lasting impacts beyond its termination:*** On average, the RMG program did not have impacts on farm, livestock or non-farm enterprise investments, or on investment in human capital. Thus, there are no strong indications that income generated during the program would trigger substantive benefits after the program is over.
- 3. *The program did not increase GBV and had moderate impacts on women's empowerment:*** Unlike some interventions increasing women's income, there is no evidence that the RMG program triggered an increase in gender-based violence, from household or non-household actors. The increase in women's economic empowerment, such as paid work and income, is mirrored in impacts on women's participation in decision-making within households and their voice in the community. However, we do not find impacts on other measures of empowerment collected for the impact evaluation.
- 4. *The program appears to have stronger impacts on relatively wealthier beneficiaries:*** When we examine the impacts of the program on households above and below the median in terms of baseline income, we find stronger impacts on households above the median. The increase in women's earnings and household income is higher, compared to poorer households. Moreover, households with baseline income at and above median appear to use this income to invest in children's education, unlike the poorest households. Finally, even the empowerment impacts are more consistently observed among the relatively wealthier households.
- 5. Understanding the constraints that may prevent the poorest households from fully benefitting from the RMG program and the constraints that limit the use of RMG income towards productive, long-term income generating activities by all households can inform the design of complementary interventions. Such interventions can increase the sustainability of program impacts beyond the lifetime of the program and ensure that those in greatest need fully reap its benefits. Complementary interventions can also be a way to increase impacts on women's empowerment.**

1. Background

The World Bank's East Asia and Pacific Gender Innovation Lab (EAPGIL) partnered with the Laos Poverty Reduction Fund (PRF) to carry out a rigorous impact evaluation (IE) of the PRF's Road Maintenance Groups (RMG) program. The aim of this IE was to help PRF assess whether the program meets its stated objectives of increasing women's empowerment and providing a social safety net for remote rural populations through wage earning opportunities. The evidence can be used to scale-up the program and/or to improve its design to better achieve its objectives and increase other development impacts.

This IE was designed as a Randomized Controlled Trial (RCT). This report contains the results of the analysis of endline data, collected after 18 months of program implementation. It is structured as a follow-up to the Baseline Report: for conciseness, we provide a brief overview of the RMG program (section 2) and data (section 3) and refer the reader to the Baseline Report for additional details. Section 4 presents the methodology for estimating impacts. Section 5 describes the results. We conclude with a discussion of remaining questions and policy implications in Section 6. While the report presents key impacts graphically, the Appendix includes more complete tables with results from estimated regressions.

2. Overview of the RMG program

The RMG intervention is a part of a broader program, the Laos Poverty Reduction Fund (PRF)¹, which aims to reduce poverty through infrastructure improvements in sectors such as education, drinking water, irrigation, health and transport. These improvements are identified using a community driven development (CDD) approach. A process evaluation of PRF's projects carried out in 2015 highlighted that they had been successful in improving infrastructure but that the post-completion sustainability of road projects was not very good: road quality deteriorated quickly due to a lack of maintenance.

In response, PRF introduced the Road Maintenance Groups program. Viewing the labor-intensive task of carrying out road maintenance as an opportunity to create jobs for the vulnerable, PRF is targeting women from poor households living in these villages, where wage-earning opportunities are limited. These women are organized into RMGs and tasked with carrying out routine road maintenance, tasks such as clearing roads of vegetation, clearing the drainage system and making small repairs to the road surface. They are provided with simple training and basic hand tools and paid a fixed-daily rate set slightly below the prevailing market wage in each village. Wage payments are made monthly or quarterly, depending on the payment preference of each RMG, corresponding to the number of days worked. Typically, this is a few days each month, with monthly variation based on maintenance needs².

¹ Unless otherwise specified, the information in this section is drawn from the PRF III Operations manual document available http://prflaos.org/sites/default/files/Library%20Items/files/1080/eng//prf_operationsmanual_Eng.pdf here:

http://prflaos.org/sites/default/files/Library%20Items/files/1080/eng//prf_operationsmanual_Eng.pdf

² Generally, the RMG members work more days in the rainy season months (e.g. 6-7) and fewer days in the dry season (2-3).

There may be deductions to wage payments in the case of poor performance. To enforce this, PRF carries out road quality audits each month³.

The road maintenance activities under this cycle started in June 2018, soon after the road improvements under PRF III were completed. The maintenance contracts run for 18 months, from October 2018 up to the January 2020, covering 2 full rainy seasons and providing on average 75 days of employment for each RMG member. This equates to just over 4 days of work per month. The RMG members were paid wages of around LAK 60,000/day (US\$7.3/day), resulting in a total average income of around \$550 per RMG member over the implementation period.

3. Data

PRF identified 71 road segments covering 344 km of rural roads in 7 provinces and 24 districts for the RMG intervention in this cycle of funding. The size of each RMG varied depending on the length of the road segment being maintained. There were two eligibility criteria for participation,

- (i) Participating women must belong to a poor household, and up to one woman from each such household could participate in the selection.
- (ii) Participating women must be between 18 and 50 years old, though the upper age and lower limit was not strictly enforced.

More women were eligible and interested in the program than were spots available. Random selection of beneficiaries in this context allowed for fair allocation of scarce program spots in a fair way, while permitting the rigorous evaluation of the impacts of the program.

Therefore, a lottery was carried out among the eligible women to select which of these women would be RMG group members. The study sample for this IE consists of the women who participated in the lottery. This corresponds to a total of 1182 women in 85 villages in 7 provinces. Of the 1182 women, 339 were in the RMG or treatment group and 843 were in the waitlist or control group⁴.

There were two rounds of data collection in this impact evaluation. Baseline data were collected between September and October 2018, before any salary payments were made. Of the target of 339 RMG women (treatment group) and 847 waitlisted women (control group) baseline data were collected from 333 RMG women and households and 813 control women and households. This corresponds to an attrition rate of less than 2% in the treatment group and approximately 3.5% in the control group. While there is differential attrition, the rates are very low, compared to the sample size and are unlikely to induce bias.

Endline data collection took place in December 2019 and January 2020, 18 months after the program started. Out of the target of 333 treatment households and 813 control households interviewed at baseline, 323 treated households and 776 control households were re-interviewed at endline. This corresponds to an attrition rate of approximately 3% in the treatment group and 4% in the control

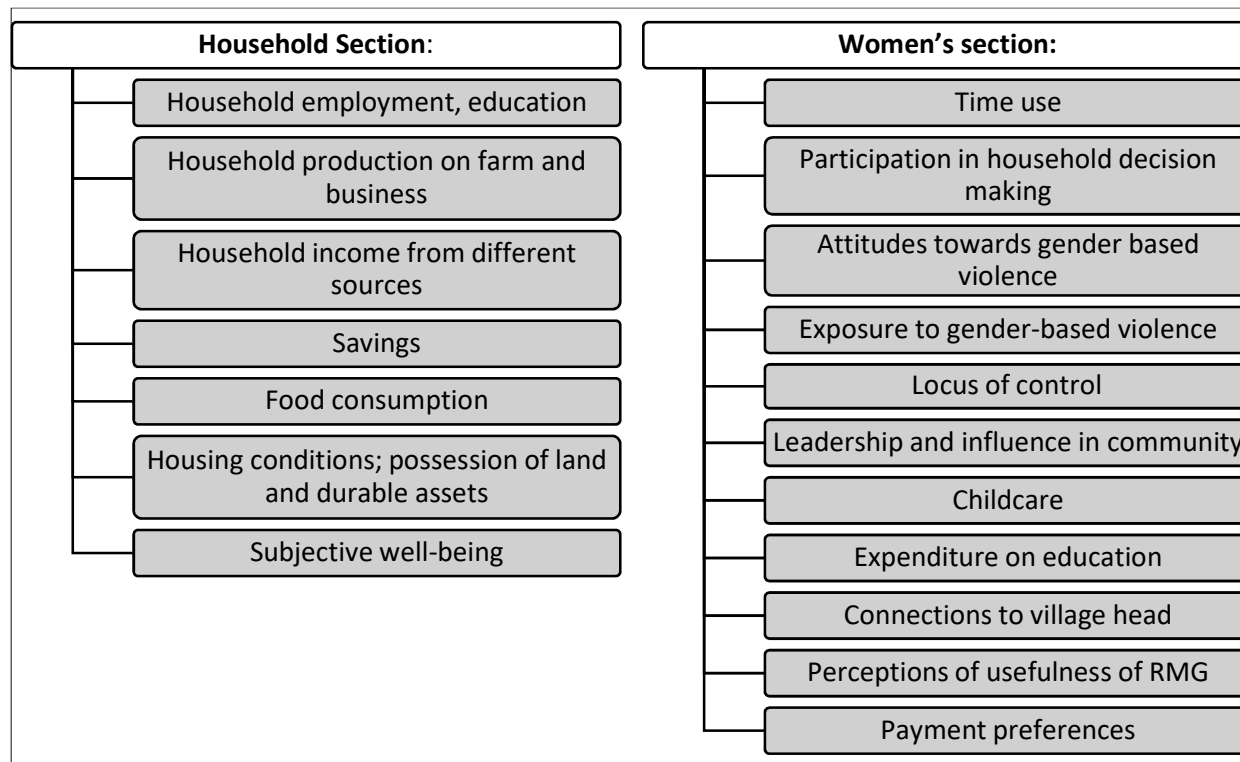
³ In the pilot, the RMGs were paid for 50 person-days of work per km per year, divided into equal monthly payments. These were paid in full each month, unless PRF inspections found the performance of the RMG to be poor, in which case a deduction was applied.

⁴ For additional information about randomization, including balance tables, please refer to the Baseline report.

group. Notably, the attrition rate was not different between treatment and control groups. We present attrition rates by treatment status and baseline characteristics in Table 2 in the Appendix.

The main survey instrument implemented at baseline and endline consisted of two sections. Figure 1 presents the modules included in the sections. At endline, the survey team also collected data on Gender Based Violence (GBV), using Audio Computer Assisted Self-Interview (ACASI) technology.

Figure 1: Contents of primary survey instruments (illustrative).



For more information on the contents of the survey instrument, please consult the baseline report.

4. Methodology

We estimate the intent to treat (ITT) effect and Treatment on the Treated (ToT). ITT effect measures the impact on all intended beneficiaries, regardless of compliance. It provides policy makers with information on what the overall effect of the program is likely to be, if implemented with a similar population elsewhere. ToT provides information on the impact of the program, if perfect compliance is ensured. The remainder of this section presents estimated equations for ITT and ToT.

In a normal RCT, estimating an intent to treat (ITT) effect using the assignment to treatment during the selection process is a straightforward difference between the group means, or

$$y_i = \alpha + \beta Treat_i + \epsilon_i \dots\dots\dots (1)$$

where y_i is the outcome of interest and the $Treat_i$ is a dummy that takes the value of one if a woman was treated (i.e. selected for a RMG job) and zero otherwise. In our case, we collected two rounds of

data - baseline and one-follow up – and improved upon this specification to obtain more precise estimates by controlling for baseline characteristics and the baseline value of the outcome variable in an ANCOVA specification (Mckenzie, 2014).

$$y_{i1} = \alpha + \beta Treatment_{i1} + \gamma X_{i0} + \theta y_{i0} + \epsilon_i \quad \dots\dots\dots (2)$$

where y_{i1} is the value of the outcome of interest in the post-intervention period (i.e. in the endline data), $Treatment_{i1}$ is a dummy that takes the value of one for the treatment group in the post-intervention period, X_{i0} contains a set of baseline covariates (or pre-intervention characteristics) and y_{i0} is the baseline value of the outcome variable y .

For outcomes where we don't have a baseline value, we run the following regression, where the notation is the same as in equation (2):

$$y_{i1} = \alpha + \beta Treatment_{i1} + \gamma X_{i0} + \epsilon_i \quad \dots\dots\dots(3)$$

In the case of perfect compliance with treatment assignment, we can interpret the ITT as a Treatment-on-Treated (ToT) effect and this would be equal to the Average Treatment Effect (ATE). However, in our case, some women dropped out of the program and were replaced by women from waitlist. We have information on the women who dropped out, which allows us to track actual treatment. This allows us to instrument for take-up using the random assignment in a 2-stage regression to estimate a ToT. Since this is only relevant for women who take up the intervention, it should be interpreted as a Local Average Treatment Effect (LATE). In the first stage, we estimate the likelihood of taking up the treatment based on (exogenous) assignment to treatment through the randomization process,

$$T_i = \alpha + \pi Z_i + u_i \quad \dots\dots\dots (4)$$

In the second stage, we regress the outcome of interest on the predicted take-up \widehat{T}_i

$$y_{i1} = \alpha + \beta \widehat{T}_{i1} + \gamma X_{i0} + \theta y_{i0} + \epsilon_i \quad \dots\dots\dots (5)$$

where Z_i is an indicator that takes the value of 1 for women assigned to the RMG during the lucky draw and 0 for women assigned to the waitlist. T_i is equal to 1 if the woman worked in an RMG and is 0 otherwise. \widehat{T}_{i1} is the predicted value of T_i from the first stage-regression in (4).

We use robust standard errors. We do not cluster errors since treatment was randomized within village at the individual level.

5. Results

RMG compliance was high: only a few women dropped out of the RMG program. Consequently, ITT and ToT effects are similar in magnitude. We present ITT results throughout this section and include ToT results in the Appendix. For clarity of exposition, we present all results graphically, and include tables with more detailed regression output in the Appendix. All graphs show average outcomes for the control and treatment group, where the difference in the height of the bars is the impact of the RMG program. Dark bars indicate statistically significant differences in that outcome between the RMG and control group. Bars that are light or shaded indicate that the differences are not statistically significant,

therefore we show both bars equal to the average value of the outcome in the control group – to see the values of insignificant coefficients, please refer to the Appendix.

5.1. Impacts on women’s employment and income, and on household income

The RMG program was meant to directly change labor market activities by giving participants a regularly paying job for 18 months. To see if the program worked as intended, we explore impacts on women’s productive work and household income.

Figure 2: Women's productive work (ITT estimates).

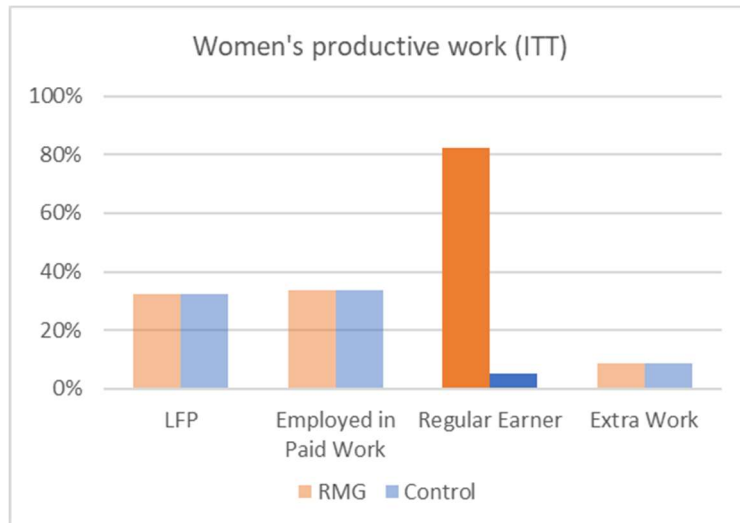


Figure 2 (or Table 3 in the appendix) shows impacts of the RMG program on women’s labor force participation (LFP) and employment in paid work one week prior to the endline survey, being a regular contributor to household wage income in the preceding 12 months and likelihood of taking extra wage work in the past 12 months. We do not find evidence that treatment increased women’s labor force participation or likelihood of being employed in paid work. However, the impact of RMGs on these outcomes may have been absorbed during the baseline because the baseline survey was conducted after the start of the RMG program but before any payments were made. We run an additional estimation excluding the baseline values for LFP and employment in paid work and we find that participation in the RMG program increases the likelihood of working in paid work by 16 percentage points⁵.

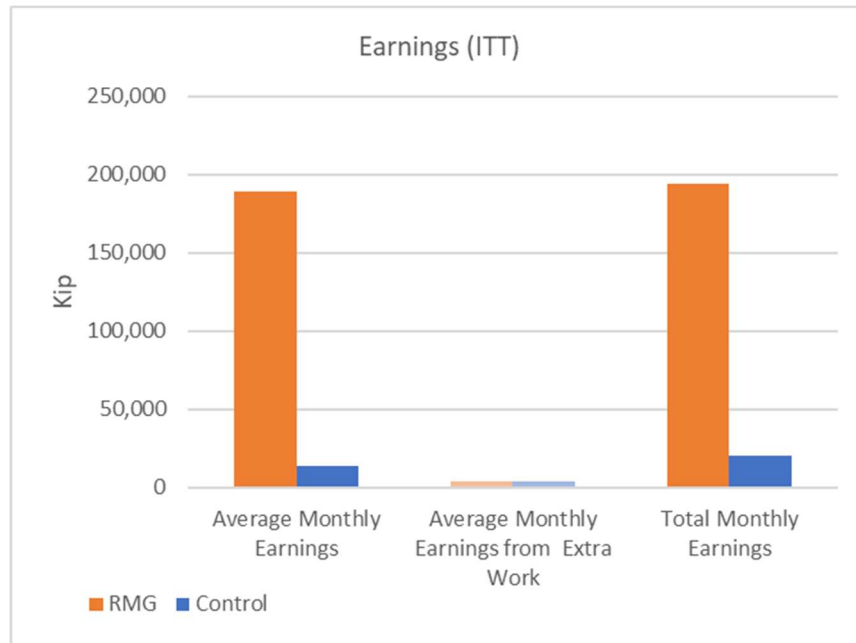
We do however, see a very large increase in the likelihood that a woman was a regular earner for the household in the preceding 12 months. Five percent of the control group women were regular earners for their households, and treatment increased the probability that a woman was regularly earning a salary by 77.4 percentage points. We do not find impacts on whether a woman intermittently took on extra (non-RMG) work for wages in the past 12 months in ITT estimations⁶.

⁵ These results are available upon request.

⁶ ToT estimates suggest that compliers were less likely to take on extra work (see Table 3 in the Appendix for more details).

These effects are mirrored by the effects on earnings. Figure 3 (or Table 4 in the appendix) presents the effects of treatment on a woman’s average monthly salary from the preceding 12 months. In the absence of the intervention, very few women would have earned an income. The average earnings for the control group are only approximately LAK13,000. The RMG program increases treated women’s monthly wage income by LAK 175,598.30. This is approximately equal to 3 days of work under the RMG program. There is a similarly sized effect on total monthly income. There is no evidence that the RMG program affected income from intermittent work.

Figure 3: Women's earnings (ITT estimates).

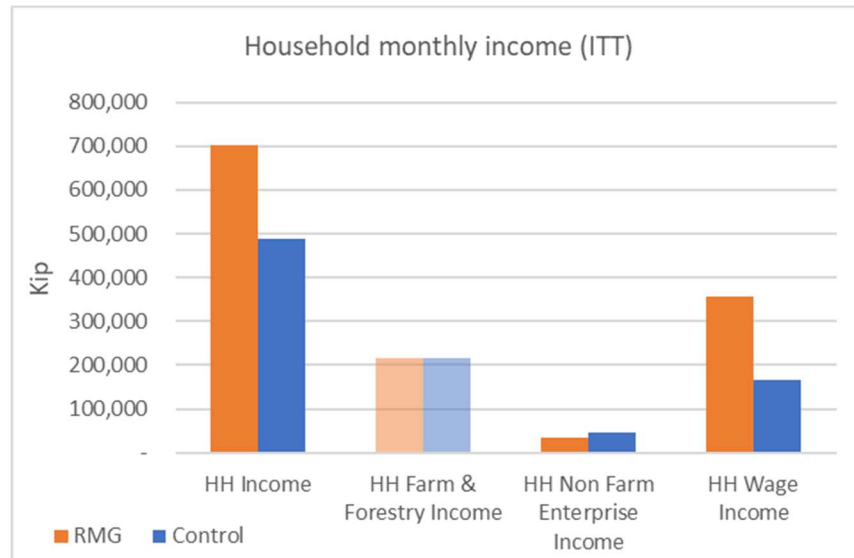


Figures 2&3 suggest that the RMG program was effective in its goals to employ women and provide them with a stable source of work and income. The program represents a large change from the status-quo.

Figure 4 (Table 5 in the appendix) shows the effect of treatment on (1) average monthly household income in the past 12 months, (2) average monthly household income for farming and forestry, (3) average monthly income from non-farm enterprises and (4) average monthly household income from wages⁷.

⁷ The outcome variables were all winsorized at the 99th percentile to minimize the effects of outliers.

Figure 4: Household income (ITT estimates).

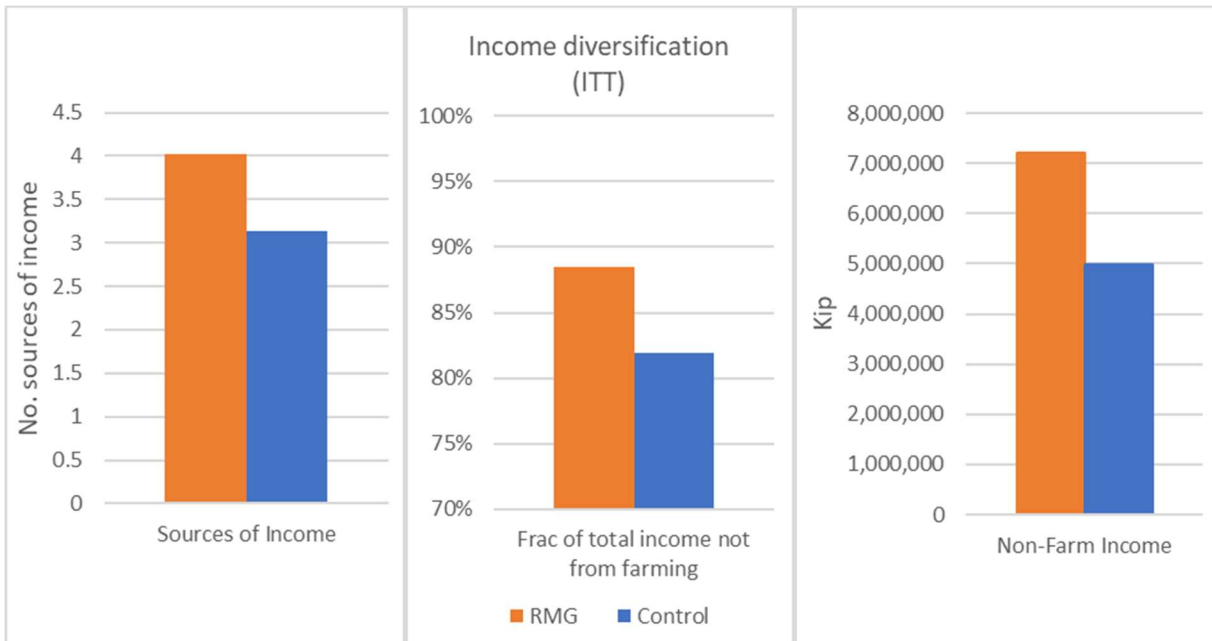


We find that being selected for the RMG program increases household income by LAK 211,302.60 and household wage income by LAK 188,721.5. The magnitude of the effects are similar to the effect on women's average monthly income over the past 12 months. This suggests that the increase in household wage income and a large portion of the increase in household income come directly from the registered woman doing road maintenance work.

Treatment decreases household income from non-farm enterprises slightly, by LAK 9,476.20. This is approximately 1/6th of daily RMG rate, and there is a positive but insignificant effect on farm income. The RMG work is meant to be a supplementary source of income by design, and when time constrained, it appears that RMG women are making a trade-off with working in the non-farm household business.

The RMG program also diversified income sources for the households of participating women. As Figure 5 (Table 6 in the appendix) indicates, the RMG program increased the number of sources of household income by nearly one additional source. There was also an increase in the amount and share of income that did not come from farming.

Figure 5: Income diversification (ITT estimates).



Women in RMG villages typically engage in unpaid work at home, which does not generate income, but allows other household members to take up work for salary or wages outside the home. An intervention which increases women’s work outside the home may displace productive work by other household members. For example, having a household member in the RMG program can induce other household members to do less paid work. However, the increase in monthly household income is close to 100% of the transfer amount, suggesting that women’s work is not displacing other income generating activities for other household members.

5.2. Impacts on other measures of household welfare and investments

The impact of RMGs on household income amounts to nearly 35% of the average monthly income of a control household. This is a meaningful increase. We explore the different ways in which this income is used, by looking for impacts on food consumption (nutrition), ownership of durable assets and housing quality. We also look for impacts on savings, investments in farm and business, and in human capital.

These outcomes are of interest because they give us a better picture of the types of welfare effects the RMG program is having and how long we can expect these effects to last. Increase in food consumption may tell us that the program is meeting an immediate need in hunger-vulnerable households. On the other hand, improvements to housing quality or durable assets, may suggest that there are welfare effects from the program that last beyond the end of the program.

In a similar spirit, investments in productive or income-generating assets may suggest that the impacts of the program on household income may last beyond the termination of the program. For example, if households use the extra income to buy agricultural equipment that increases the productivity of their farms, this investment will result in higher income for as long as the equipment works. Similarly, households can make investments in their business that make it more profitable in the future or increase human capital investments in children.

Increases in savings fall somewhere in between the consumption and investment outcomes. Increases in savings can precede and be suggestive of increases in investments. On the other hand, they may also be indicative that household consumption in the future is less vulnerable to economic shocks.

We do not find significant impacts on nutrition, housing conditions and durable assets⁸.

Figure 6: Farm investment (ITT estimate).

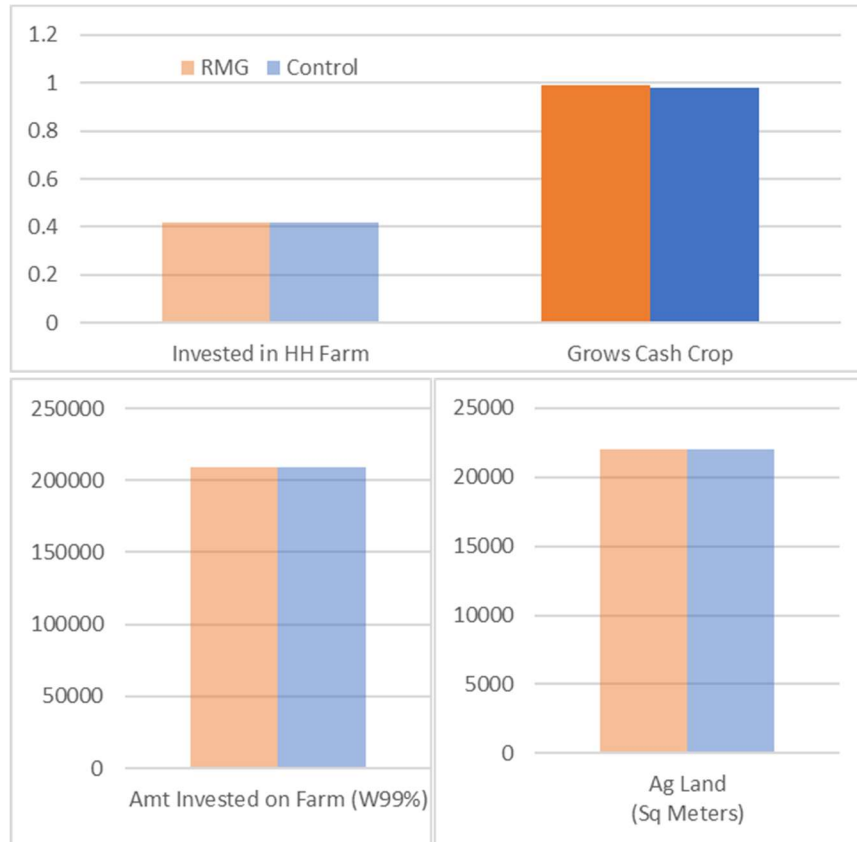


Figure 6 (Table 7 in the appendix) analyzes whether the RMG program induced households to change farming behavior or make investments in the household farm. We do not find impacts on the likelihood to grow a cash crop, the amount invested in the farm, the size of farmland and livestock ownership⁹. There is a small increase in the likelihood of growing a cash crop. Overall, we do not find evidence that suggests that the RMG program affects agricultural investments.

⁸ Please find relevant regression results in Tables 9 & 10 in the Appendix.

⁹ Outcomes 1 and 2 were not measured at baseline so we are not able to run an ANCOVA specification using them.

We next explore whether the RMG program changes investment behavior related to non-farm enterprises.

Figure 7: Investment in non-farm enterprise (ITT estimate).

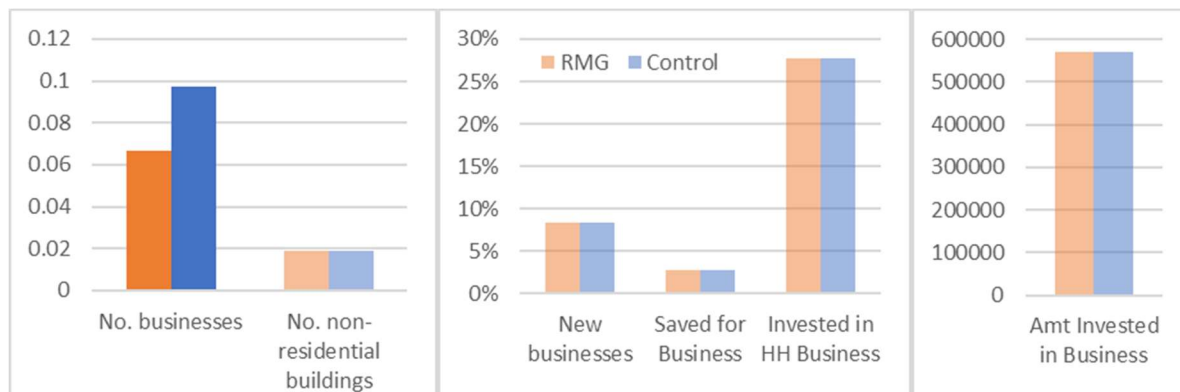
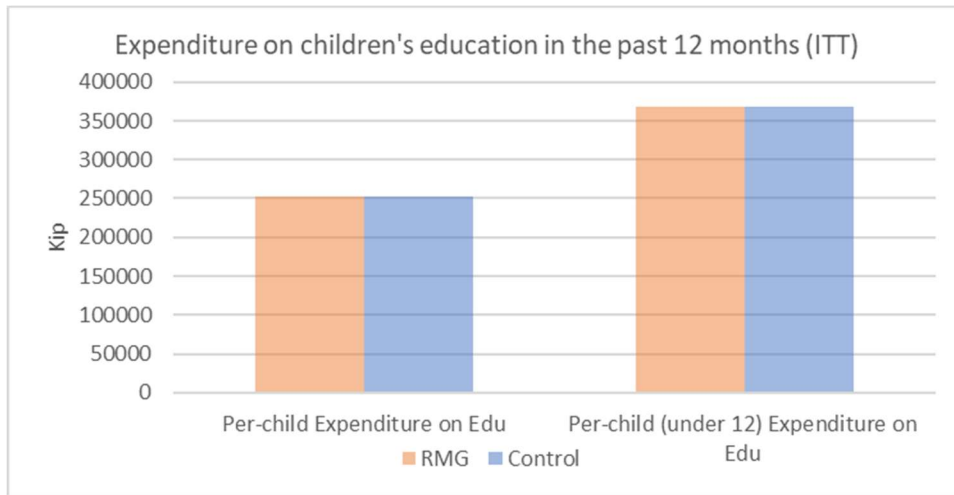


Figure 7 (Table 8 in the appendix) shows the estimation results on the effect of being selected in the RMG program on the total number of non-farm businesses and non-residential buildings the household owns, whether the household has (i) opened a new business since baseline, (ii) saved for business or (iii) invested in their non-farm business, and the amount invested in a household non-farm business¹⁰. Only 83 households owned a business at endline. There appear to be fewer businesses among RMG women, though the magnitude is small. It may be that rural non-farm enterprises are not profitable and usually owned by the poorest of households that lack access to other revenue streams such as farms. In this interpretation, this could suggest that treatment decreases the reliance of the poorest households on their non-farm businesses.

We also explore whether treatment impacts human capital investment in children. Figure 8 (Table 11) shows program impacts on per-child education expenditure and the per-child education expenditure for children under the age of 12. We separately examine impact on children under the age of 12 because they are more likely to be affected by the program: older children may have already completed schooling or dropped out due to financial constraints, jobs or marriage. We do not find evidence that the RMG program affects human capital investments, measured through education expenditures on children.

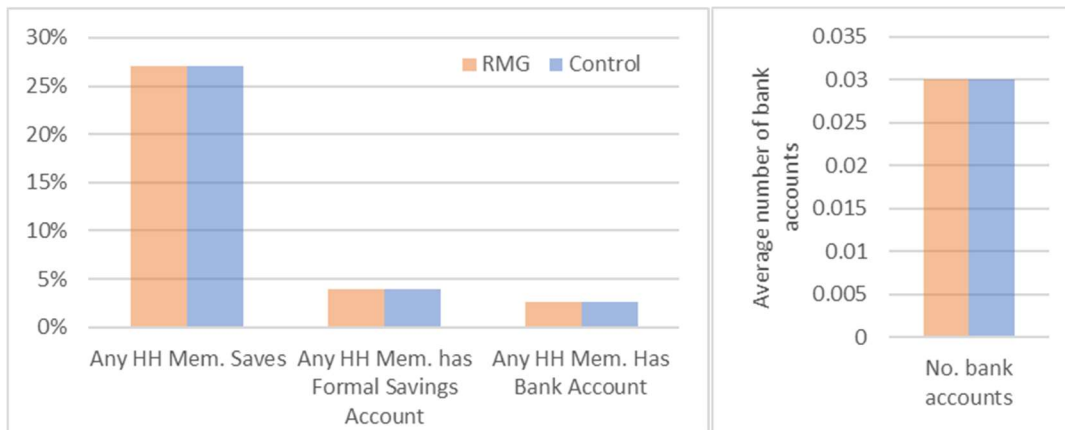
¹⁰ Winsorized at 99th percentile.

Figure 8: Expenditure on children's education (ITT estimate).



Finally, we explore impacts on household savings. Figure 9 (Table 12 in the appendix) presents the results of the estimation of whether the RMG program affected savings and other financial behavior. We look at the following outcomes; (1) a binary indicator for whether any household member saves, (2) a binary indicator for whether any household member has a formal savings account, (3) a binary indicator for whether any household member has a bank account and (4) the total number of bank accounts a household has. We do not find evidence that the RMG program affects savings behavior. Increased savings may indicate that the program would have longer impacts on household income; we cannot conjecture whether the effect on income will persist beyond the program period.

Figure 9: Household savings and financial behavior (ITT estimate).

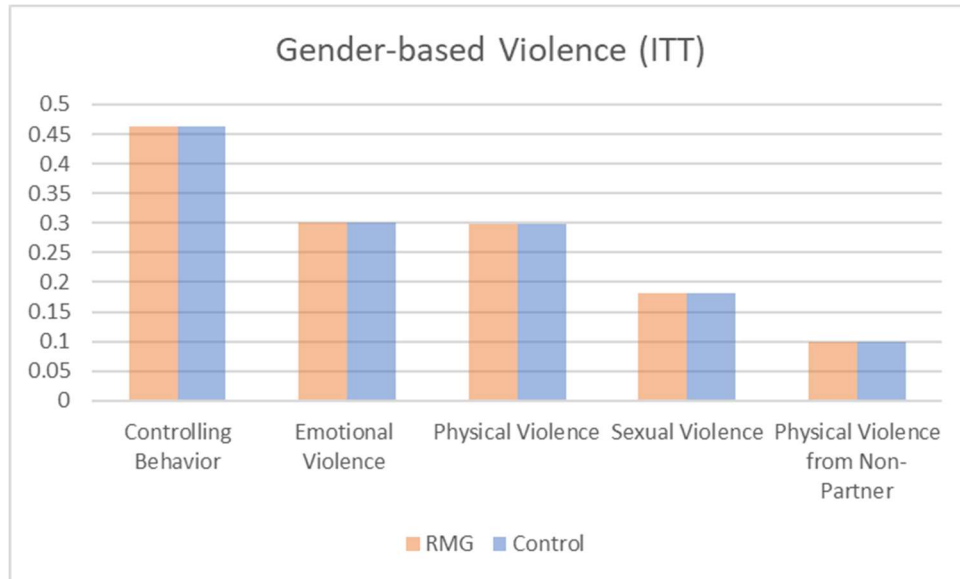


5.3. Impacts on gender-based violence and women's empowerment

The literature on gender-based violence indicates that an increase in women's income generally leads to a decrease in gender-based violence (Buller et al. 2018). However, this is not always the case (Bulte and

Lesik, 2018; Hidrobo and Fernald, 2013)¹¹. Since this is an intervention that targets women’s empowerment, avoiding an increase in gender-based violence, an extreme form of disempowerment, is an important corollary objective.

Figure 10: Gender-based Violence (ITT estimate).



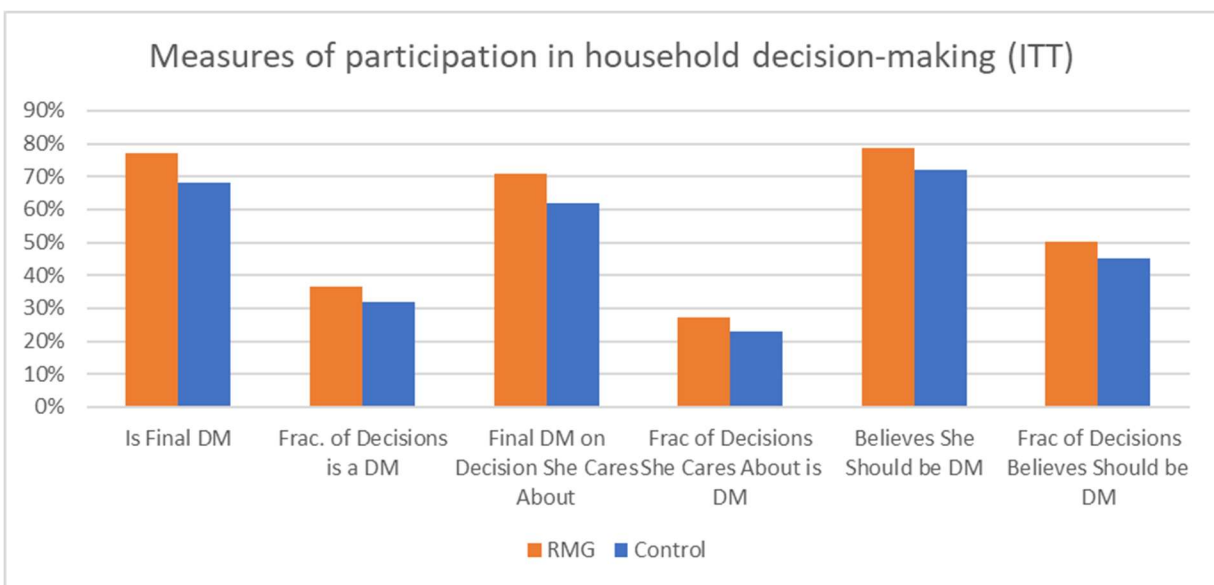
We find that the RMG program improved women’s labor market outcomes, particularly by increasing the amount of income they generated for the household, during the term of the program. However, as is a concern with any intervention that increases a woman’s resources in the household, there may be unintended negative consequences in her exposure to domestic violence.

Figure 10 (Table 15 in the appendix) shows that there do not appear to be significant differences between the RMG and control group in exposure to domestic violence from the woman’s most recent partner. We measure domestic violence through exposure to controlling behavior, emotional violence, physical violence and sexual violence. We also look at exposure to physical violence from household members that are not the woman’s partner. Since the RMG program increases a woman’s time outside the household, it may increase her exposure to GBV from non-household members. We estimate impacts on exposure to physical violence from a non-household member and exposure to sexual violence from a non-household member in the past 12 months. We cannot control for exposure at baseline in these models because we did not collect GBV data at baseline. However, both the ITT and ToT estimations do not show evidence that participating in the program increased exposure to violence from non-household members.

¹¹ The theoretical mechanisms for the relationship between GbV and income is not unidirectional. Theories of Nash-bargaining (Manser and Brown, 1980) suggest that by improving women’s outside options, the program is likely to improve women’s outcomes within marriage, including exposure to gender-based violence (GBV). However, psychological theories of backlash, or use of violence for extractive purposes (Block and Rao, 2006, Bobonis et al., 2013) suggest a possibility of increase to GBV.

These findings suggest that there is no increase in extreme *disempowerment*. Turning to *empowerment*, as we note in 5.1, the program increased women’s productive work, a measure of women’s economic empowerment. In this section, we explore if there were effects on other measures of empowerment, using a number of directly reported measures of empowerment (in contrast to proxies of empowerment, such as women’s employment). In the survey, we collect the data on such manifestations of empowerment as: subjective wellbeing¹², leisure time¹³, self-efficacy (measured through locus of control)¹⁴, participation in household decision making and voice in community. We find that there are effects on two measures: women’s reported participation in intra-household decision making and voice in community. The program therefore appears to increase women’s voices both in their households and in their communities.

Figure 11: Participation in household decision-making (ITT estimate).



We collected data on four types of decisions of the household; (1) decisions related to the woman visiting family or relatives, (2) how to spend income the woman earns, (3) how to spend income the husband earns and (4) large purchases. Figure 10 (Table 13 in the appendix¹⁵) shows seven measures of a woman’s decision-making; (1) whether she is the final decision maker (DM) on at least one household

¹² Subjective well-being is measured through questions asking women about their satisfaction with their lives (on a scale of 1-5), and their place on a six-step ladder (from poorest to richest).

¹³ We asked women how much time they spent on different activities, including but not restricted to leisure in the past two days. We use the time spent on leisure activities as a proxy of women’s empowerment.

¹⁴ Self-efficacy is measured through questions about locus of control. For instance, respondents are asked how much they agree with the following statements on a scale of 1-5: “How many friends I have depends on how nice of a person I am” and “It’s mostly a matter of fate whether or not I have only a few friends or many friends”. Strong agreement with the first statement is associated with high internal locus of control (I believe that I am in control of my life) whereas strong agreement with the second statement is associated with high external locus of control (I believe that external forces are in control of my life).

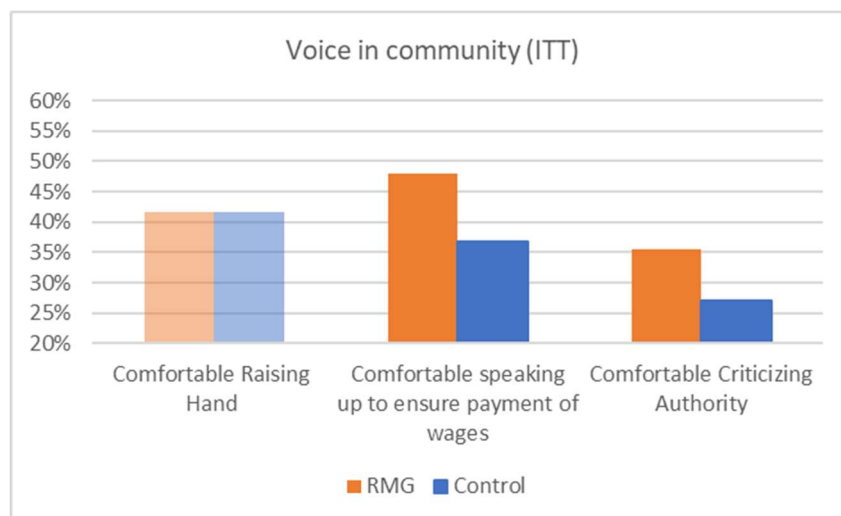
¹⁵ In the table we also present effects for DM Index, an index variable that aggregates the responses across these six decision-making measures into a single z-score.

decision, (2) the fraction of total decisions on which she is the final decision maker, (3) whether she is the decision maker on at least one decision she cares about, (4) the fraction of decisions where she is the final decision maker for a decision she cares about, (5) whether she believes she should be the final decision maker on at least one decision and (6) the fraction of total decisions on which she believes she should be the final decision maker.

We see positive and significant impact of participation in RMGs on women’s participation in decision making in the household. RMG women are 9 percentage points more likely to be a final decision maker at endline than control women; they are also about 9 percentage points more likely to be a final decision maker on a decision they care about and 6 percentage points more likely to believe they should be the final decision-maker on at least one decision. The program also increases the fraction of decisions where the woman is the final decision maker among all decisions and among decisions she cares about by 4.66 and 4.06 percentage points respectively.

We also find that the RMG program increased women’s voices outside of the household. Figure 11 (Table 14 in the appendix) shows program impacts on women’s empowerment in the community. We measure this broadly by whether she is comfortable raising her hand in a village meeting or gathering and more specifically on whether she is comfortable speaking up in public to ensure wage payments and criticizing authority figures and assigned leaders. We do not find evidence that treatment changes the likelihood that she is comfortable raising her hand in public, but we do find that it increases the likelihood that she is comfortable speaking up to ensure payment for work and to criticize authority figures and assigned leaders publicly. Our results suggest that public workfare programs that target women may empower them in their households and in the community, at least on some dimensions of empowerment.

Figure 12: Voice in community (ITT estimate).



5.4. Difference in impacts between poorest and less poor beneficiaries

The RMG program targets the poorest households of a village. However, even within this sample there are varying levels of poverty. We explore whether poorer households may face additional constraints

that limit their ability to fully benefit from the program. In this section, we examine the impacts of the program on the poorest and relatively-less poor households within our sample. We define these two groups by using their pre-intervention total household income. Households with incomes above the median are classified as relatively well-off and households below the median are classified as relatively poor. It is important to emphasize that the program was very well targeted, and households in both categories are worse off than an average household in their villages¹⁶, or an average household in Laos¹⁷ on a number of welfare outcomes. This section focuses on impacts which are different for the two groups.

Figure 13: Heterogeneous effects on women's earnings, by baseline income (ITT estimate).

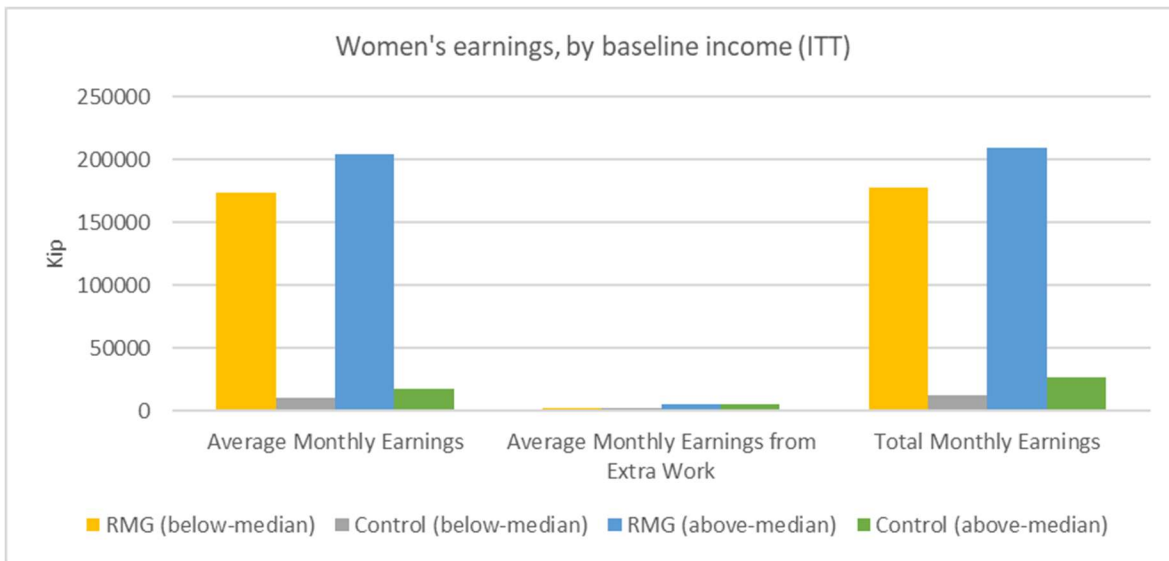
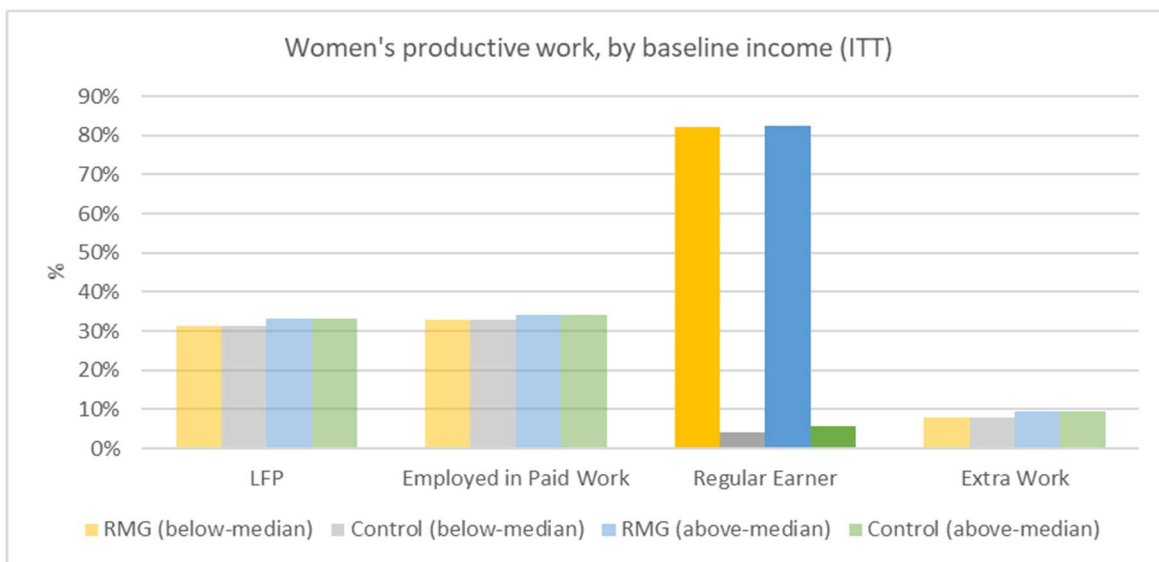


Figure 14: Heterogeneous effects on women's productive work, by baseline income (ITT estimate).



¹⁶ See Dervicevic, Garz, Mannava and Perova (2020) for more detailed analysis.

¹⁷ Baseline report presents comparison of RMG groups with Lao averages based on LECS-V data.

Figure 14 (Table 18 in the appendix) shows that women in households with income at or above median experience an increase in average monthly earnings of LAK 186,414 while women from poorer households see a lower increase of LAK 163,790. Women from poorer households see smaller relative gains. Notably, there is no difference in the likelihood of being a regular earner for the household (Figure 14). The combination of these results suggests that poorer households may not reallocate women’s labor hours from other pursuits to RMG work as well as wealthier households. Although the results are not statistically significant, RMG program appears to decrease earnings from extra work for women from better-off households more than for women from poorer households. The decreases are much smaller in magnitude than increases from RMG work.

These results are aligned with evidence that suggests that poorer households are more risk averse, and due to this risk aversion may prefer to rely on diverse sources of income as a protection from risks (Taylor and Lybbert, 2015). However, this diversification is suboptimal, as it may prevent poorer households from foregoing less productive activities to free time and labor for more productive pursuits, such as RMGs.

Figure 13: Heterogeneous effects on household income, by baseline income (ITT estimate).

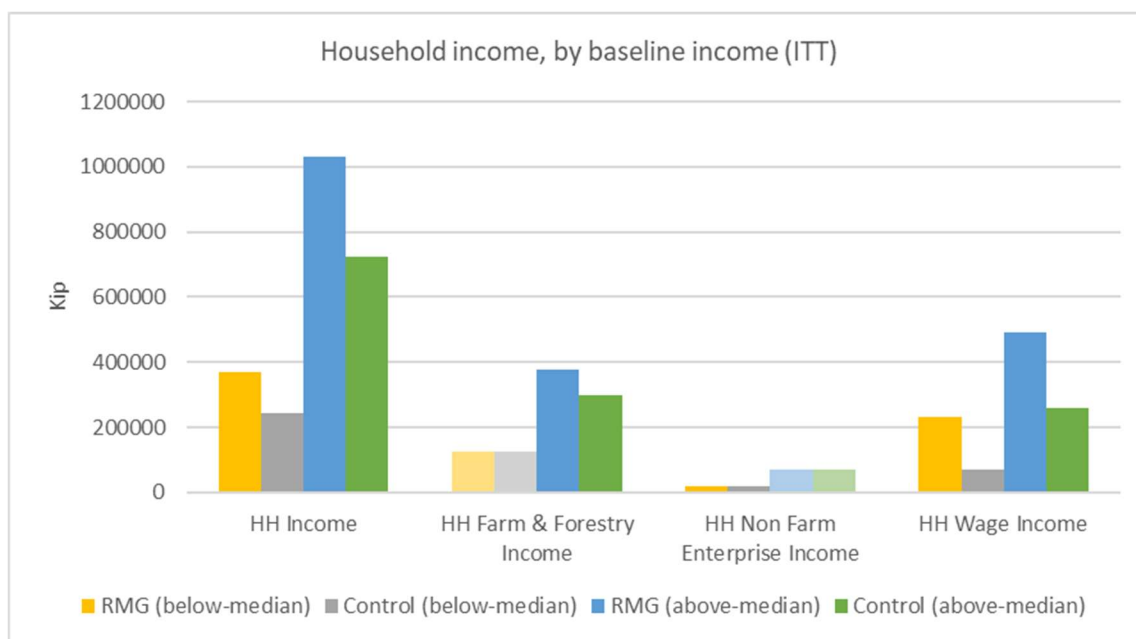


Figure 15 (Table 19 in the appendix) shows that there are also differential effects on household income. The difference in the size of effects is large. The increase in income in poorest households is less than 50% of the increase in income among less poor. We also find that the RMG program increases farm and forestry income for less poor households. There is no such increase for the poorest households. We find that the magnitude of the effect on wage income to also be lower for poorer households.

Overall, the income results show that poorer households and relatively-less poor households both see significant increases in wage income and total income, attesting to overall success of the RMG program. However, the magnitudes of these increases are smaller in the case of poorer households, especially in the case of total household income

Figure 16 (Table 20 in the appendix) shows that less poor are also able to use the program to diversify more successfully, though at baseline they are more reliant on farm income than the poorest.

Figure 14: Heterogeneous effects on income diversification, by baseline income (ITT estimate).

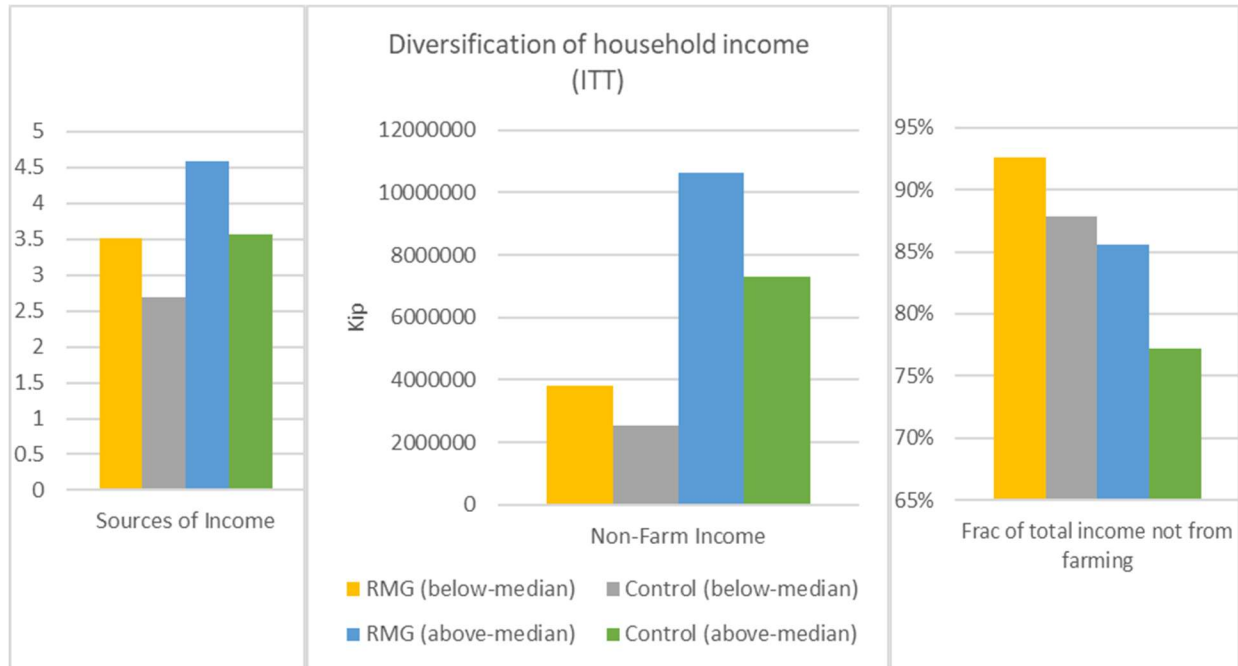
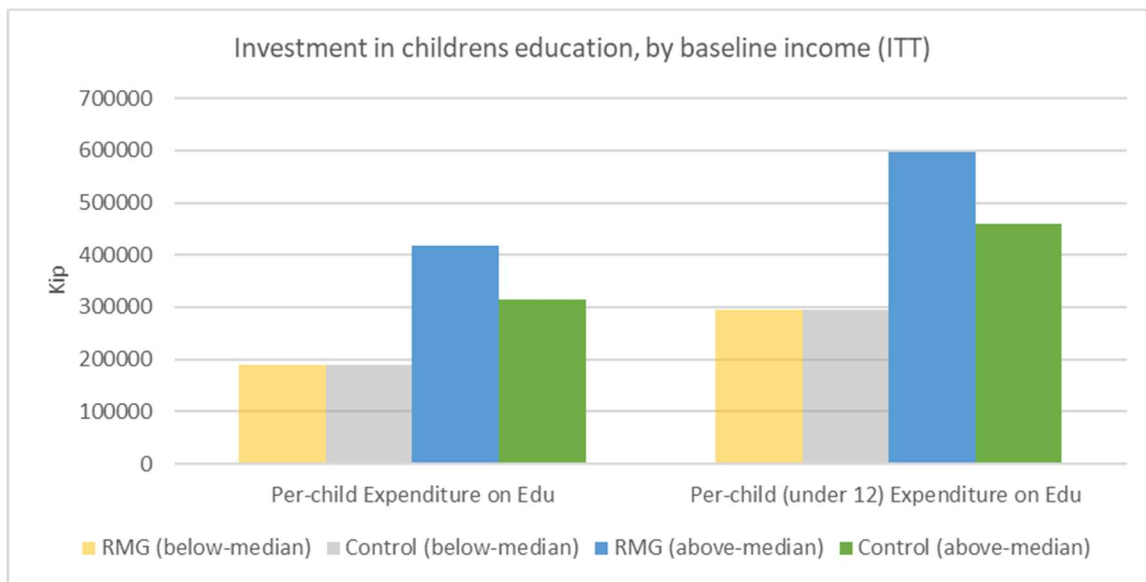


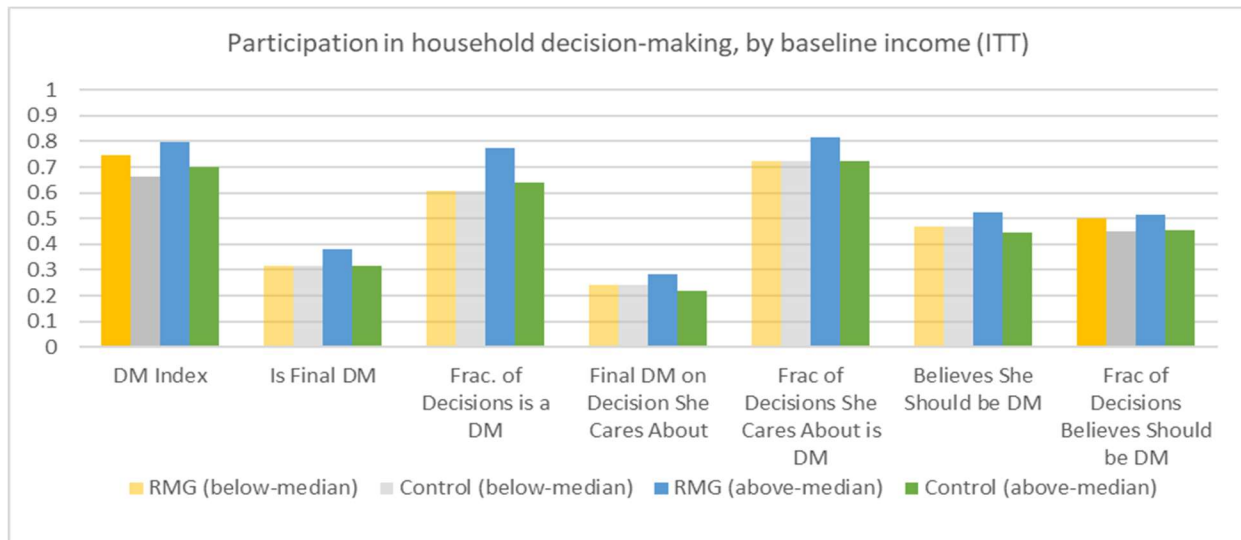
Figure 17 (Table 21 in the appendix) shows the effects of the program on expenditure on children’s education. Unlike the results from the full sample we do find evidence that treatment increases human capital investments. However, the effect is concentrated among less poor households. The poorest households do not increase expenditure on children’s education.

Figure 15: Heterogeneous effects on investment in children's education, by baseline income (ITT estimate).



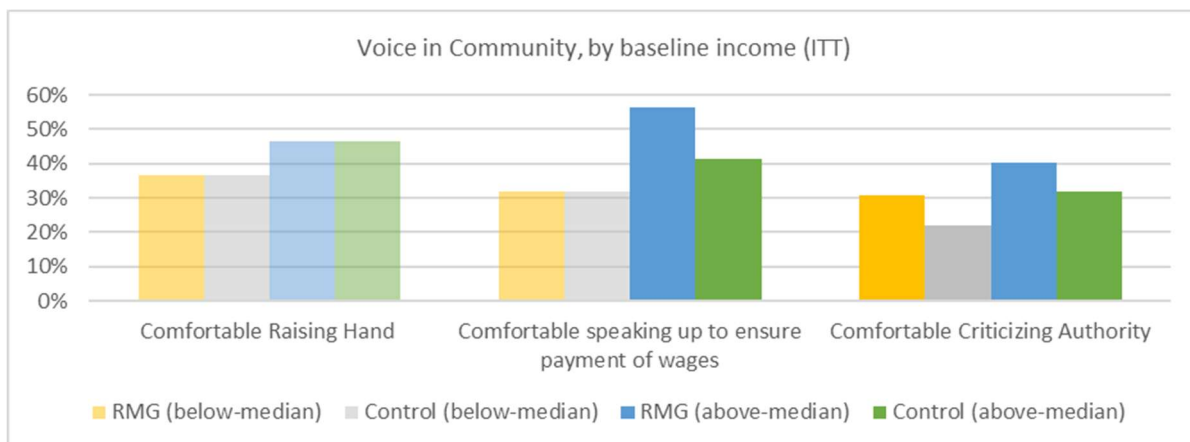
Turning to measures of empowerment, we once again see signs of differential impacts. Figure 18 (Table 22 in the appendix) shows that the RMG program only improves a woman’s decision making in one dimension for poorer households- it increases the likelihood that she is the final decision maker on at least one decision by 8.32% percent. The effect is larger for those with above median income households at 10.1%. Women in above median income households also see improvements across all the different measures of participation in decision making. DM Index is an index that aggregates the responses across the different measures of decision-making into a single z-score. For both groups, there appears to be an increase in overall decision making, as captured by the DM index. The magnitude of the increase is slightly larger among the less poor women.

Figure 16: Heterogeneous effects on decision-making, by baseline income (ITT estimate).



The effects on voice in community are similar. Figure 19 (Table 23 in the appendix) shows that the program positively affected poorer women in one dimension: whether she is comfortable publicly criticizing authority figures. The model estimates she is 8% more likely to do so. Women from less poor households are more comfortable speaking publicly about wages and publicly criticizing authority figures with increases of 15% and 9% respectively.

Figure 17: Heterogeneous effects on Voice in Community, by baseline income (ITT estimate).



6. Discussion

The results from the IE of the RMG program suggest that the program achieves its objectives of improving household welfare and women's productive work substantially during the program. The net gains are 75-90% of the wage payments made under the program, far higher than the 30-40% range of impacts found in other studies¹⁸. These suggest that the program does not displace any other economic activity and fills an important need for wage work.

Given these large effects, it is natural to think about the program's potential to sustainably reduce poverty beyond the termination of RMG work. This may happen if the households use earnings towards investments, with a potential of generating income beyond the life cycle of the program. However, we do not observe any increase in investments in agriculture, non-farm enterprises or human capital. This raises the question of what can be done to trigger such changes in future versions of the program so that the impacts of the program may be sustained in the long-term. If information constraints are behind the limited use of resources towards investment, a complementary information intervention may fill this need. If there is a problem of saving enough resources to make lumpy investments, altering payment schedules to make fewer lump-sum payments, or a complementary intervention to encourage savings, may fill this need. More work, including qualitative interviews, are being planned to understand these issues better.

There is no evidence that the program led to an increase in gender-based violence, either from household or non-household actors. Some interventions increasing women's income have had this highly undesired disempowering impact, so this is an important non-result. The RMG program had positive impacts on women's empowerment, not only in terms of proxy measures such as employment and earnings, but also directly reported measures of participation in household decision making and voice in their communities. However, we do not find increases in other measures of empowerment. If the aim of the program is to maximize impacts on women's empowerment, there may be scope to use complementary interventions. Field et al. (2016) provide one example in the context of a public works program where financial inclusion training making wage payments directly to women's bank accounts had long-term impacts on women's empowerment and gender norms, compared to women working on the program who received payments to bank accounts not owned by them.

Finally, the impacts of the program appear to be stronger on households with above-median income at baseline. The increase in women's earnings and household income in these households are higher, compared to women from households with below-median pre-intervention income. Moreover, the program increases the likelihood of investing in human capital for relatively wealthier households only. Even empowerment impacts are more consistently observed among women from the above-median income households.

¹⁸ Trabajar Urbano y Rural, Peru: 24% (Chacaltana, 2003), Empleo en Accion, Colombia: 33% (Departamento Nacional de Planeación, 2004), Jefes, Argentina: 39% (Ravallion and Galsso, 2004)

These findings require further work to understand causes behind differences in impacts depending on relative income but suggest at least two possible implications. First, it raises the question of who the program ought to target – the poorest households, or those who are likely to experience the greatest impact in the short and long-term. These groups may not be the same. A corollary question is – are public workfare programs the best poverty alleviation tool for the very poorest? Second, if the aim of the program is to benefit the poorest households, we need to understand the constraints ('poverty traps') preventing these households from benefiting to the same extent as slightly less poor households. Designing complementary interventions to address these constraints might increase impacts among the poorest.

7. References

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8. Appendix

Table 1: Baseline Characteristics by Treatment Status

	RMG Women Mean	sd	Waitlist Women Mean	sd	Diff.	Obs.
Age	32.90	10.76	33.26	10.46	-0.503	1099
Married	0.89	0.32	0.87	0.33	0.012	1099
None	0.45	0.50	0.41	0.49	0.035	1099
Primary	0.44	0.50	0.48	0.50	-0.032	1099
Lower Sec.	0.09	0.29	0.10	0.31	-0.015	1099
Upper Sec +	0.02	0.15	0.01	0.10	0.011	1099
Lao-Tai	0.22	0.42	0.23	0.42	-0.012	1099
Mon-Khmer	0.61	0.49	0.66	0.48	-0.040	1099
Chinese-Tibet	0.06	0.24	0.04	0.21	0.014	1099
Hmong-Emien	0.10	0.30	0.07	0.25	0.038**	1099
Eth Other	0.00	0.06	0.00	0.05	0.001	1099
HH Size	6.36	3.83	5.85	2.69	0.511**	1099
Monthly HH Inc	484992.00	768128.64	582842.25	871138.21	-95669.618*	1099

* p<0.1, ** p<.05, *** p<0.01

Table 2: Attrition rates by treatment status and baseline characteristics

RMG	-0.0811 (0.0676)
Age	3.742** (1.565)
Married	0.0687 (0.0494)
None	0.0836 (0.0736)
Primary	-0.0697 (0.0743)
Lower Sec.	0.0150 (0.0446)
Upper Sec +	-0.0289 (0.0180)
Lao-Tai	0.167*** (0.0620)
Mon-Khmer	-0.124* (0.0712)
Chinese-Tibet	0.0279 (0.0319)

Hmong-Emien	-0.0734* (0.0400)
Eth Other	0.00273 (0.00762)
HH Size	0.615 (0.458)
Monthly HH Inc	-23516.3 (125706.3)
Observations	1146

* p<0.1, ** p<.05, *** p<0.01

Figure 1: Income, by source. Comparison of study sample (RMG and Waitlist women) to a random sample of women within the same RMG villages

The value of the mean for the RMG/Waitlist women is always shown. If the p-value of the difference between the mean of this group and the mean of a comparison group is <0.1, the mean of that group is also displayed.

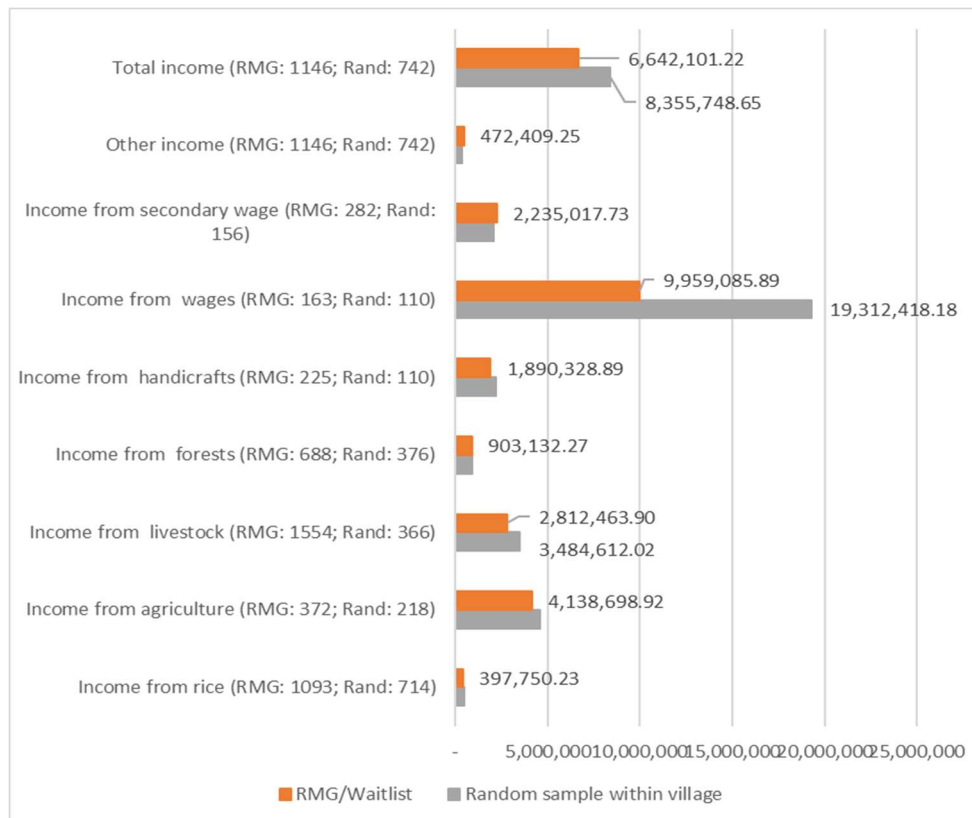


Table 3: The effect of treatment on women's labor market activities.

	LFP	Employed in Paid Work	Regular Earner	Extra Work
<i>Panel A: Intent to Treat</i>				
RMG	0.0330 (0.0325)	0.155 (0.103)	0.774*** (0.0230)	-0.0251 (0.0169)
Dep. Var. Control Group Mean	.324	.336	.05	.088
Adj. R-sq	0.0210	0.139	0.637	0.0128
P-val	.31	.13	1.32e-170	.14
<i>Panel B: Treatment on the Treated(2SLS)</i>				
RMG	0.0489 (0.0385)	0.170 (0.104)	0.939*** (0.0273)	-0.0356* (0.0203)
Dep. Var. Control Group Mean	.312	.322	.055	.089
Adj. R-sq	0.0245	0.147	0.684	0.0121
P-val	.23	.1	9.51e-259	.08
Bonferroni ($\alpha = .05$)	.0125	.0125	.0125	.0125
Obs	1061	124	1099	1099
Baseline Char.	Yes	Yes	Yes	Yes
Baseline Dep. Var.	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. LFP is a binary indicator if the RMG eligible woman is participating in the labor force. LFP=1 if the a woman is currently employed in reference week or attached to job she was absent from in the reference week or if she is unemployed, defined as being without a job and seeking work in the reference week or did not seek work but was available to work. Employed in Paid Work is a binary indicator of whether she was engaged in paid labor in the reference week. Regular earner is a binary outcome that is equal to 1 if the woman was listed as a household member that regularly earned a salary in past 12 months. Extra work is binary indicator equal to 1 if the RMG eligible woman was listed as a household member that took on extra work over the past 12 months that contributed to household wage income. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 4: The effect of treatment on women's income from wage work.

	Average Monthly Earnings	Average Monthly Earnings from Extra Work	Total Monthly Earnings
<i>Panel A: Intent to Treat</i>			
RMG	175598.3*** (7079.0)	-468.2 (1066.7)	173799.4*** (7313.8)
Dep. Var. Control Group Mean	13886.491	3919.137	20404.424
Adj. R-sq	0.439	0.0150	0.403
P-Val	5.30e-108		7.28e-101
<i>Panel B: Treatment on the Treated(2SLS)</i>			
RMG	212685.3*** (7998.6)	-854.6 (1287.0)	210335.7*** (8231.4)
Dep. Var. Control Group Mean	14004.667	3975	19924.111
Adj. R-sq	0.495	0.0147	0.467
P-val	8.81e-156	.51	5.1e-144
Bonferroni ($\alpha = .05$)	.0167	0167	0167
Obs	1099	1099	1099
Baseline Char.	Yes	Yes	Yes
Baseline Dep. Var.	Yes	Yes	Yes

Robust standard errors in parentheses. Outcomes are winsorized at the 99th percentile to minimize the effects of outliers. Earnings refer to wages earned from working outside of the household and household enterprises. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest. All income variables were divided by 12 to construct average monthly earnings. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 5: The effect of treatment on household income in past 12 months.

	HH Income	HH Farm & Forestry Income	HH Non Farm Enterprise Income	HH Wage Income
<i>Panel A: Intent to Treat</i>				
RMG	211302.6*** (42089.3)	16102.6 (24621.5)	-9467.2* (5045.9)	188721.5*** (27782.8)
Dep. Var. Control Group Mean	489609.915	215258.941	44546.499	166407.968
Adj. R-sq	0.333	0.194	0.447	0.392
P-val	6.03e-07	.51	.06	1.81e-11
<i>Panel B: Treatment on the Treated(2SLS)</i>				
RMG	247109.5*** (50386.0)	18328.1 (29144.6)	-10864.2* (6017.4)	221934.7*** (33469.8)
Dep. Var. Control Group Mean	505175.337	218686.207	44624.111	176662.444
Adj. R-sq	0.332	0.185	0.467	0.406
P-val	9.37e-07	.53	.07	3.34e-11
Bonferroni ($\alpha = .05$)	0.0125	0.0125	0.0125	0.0125
Obs	1099	1099	1099	1099
Baseline Char.	Yes	Yes	Yes	Yes
Baseline Dep. Var.	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. . Outcomes are winsorized at the 99th percentile to minimize the effects of outliers. We control for the following baseline characteristics: age, binary indicator for married indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, and household size. We also control for the baseline value of the outcome of interest. We do not control for average household income at baseline to avoid collinearity with the baseline outcome. All income variables are average monthly values for income from the past 12 months. HH Income is the sum of income from farming and forestry, non-farm enterprises and wages (aggregated for all household members). * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 6: The effect on household income diversification in the past 12 months.

	Sources of Income	Non-Farm Income	Frac of total income not from farming
<i>Panel A: Intent to Treat</i>			
RMG	0.882*** (0.116)	2244035.3*** (471768.5)	0.0654*** (0.0150)
Dep. Var. Control Group Mean	3.135	4971356.041	.819
Adj. R-sq	0.163	0.381	0.273
P-val	6.84e-14	2.23e-06	.000001
<i>Panel B: Treatment on the Treated(2SLS)</i>			
RMG	1.014*** (0.139)	2611154.9*** (565329.0)	0.0782*** (0.0181)
Dep. Var. Control Group Mean	3.147	5192445.997	.822
Adj. R-sq	0.156	0.391	0.264
P-val	2.76e-13	3.86e-6	.00002
Bonferroni ($\alpha = .05$)	.0167	.0167	.0167
Obs	1099	1099	980
Baseline Char.	Yes	Yes	Yes
Baseline Dep. Var.	Yes	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest. Sources of incomes are the sum of all household member that have a wage job, all harvest crop varieties, forestry goods, aquaculture goods and non-farm enterprises. Non-farm income excludes income from rice and vegetable crop harvest and sales. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 7: Agricultural Investment in past 12 months.

	Invested in HH Farm	Amt Invested on Farm (W99%)	Grows Cash Crop	Ag Land (Sq Meters)	Livestock Index
<i>Panel A: Intent to Treat</i>					
RMG	0.00385 (0.0328)	17240.6 (71837.2)	0.009* (0.005)	-861.4 (1912.3)	0.00951 (0.0498)
Dep. Var. Control Group Mean	.417	209169.303	.981	22037.096	-.188
Adj. R-sq	0.0188	0.0583	0.105	0.0623	0.437
P-val	.91	.81	.07	.97	.84
<i>Panel B: Treatment on the Treated(2SLS)</i>					
RMG	-0.0146 (0.0388)	24940.4 (86146.2)	0.0112* (0.00619)	206.3 (2107.7)	0.0128 (0.0603)
Dep. Var. Control Group Mean	.421	199070.556	.983	18958.563	-.189
Adj. R-sq	0.0220	0.0700	0.141	0.0632	0.447
P-val	.71	.77	.07	.92	.83
Bonferroni ($\alpha = .05$)	.01	.01	.01	.01	.01
Obs.	1084	1084	1099	1099	1099
Baseline Char.	Yes	Yes	Yes	Yes	Yes
Baseline Dep. Var.	No	No	Yes	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest when possible. Livestock index is constructed using a principal components method of the number of cows, buffaloes, goats, pigs, chicken and ducks that creates an orthogonal transform of the correlated measures. We use only the first principal component as it has the largest variance and accounts for the greatest degree of variation in underlying components. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 8: Non-agricultural Enterprise Investments in past 12 months.

	Total # of Businesses	New Business	Invested in HH Business	Amt Invested in Business (W99%)	# of Non- Residential Buildings	Saved of Business
<i>Panel A: Intent to Treat</i>						
RMG	-0.0301* (0.0182)	-0.0211 (0.0159)	-0.170 (0.106)	-367879.9 (278731.5)	0.00177 (0.00947)	-0.00146 (0.0104)
Dep. Var. Control Group Mean	.097	.084	.277	568984.615	.019	.027
Adj. R-sq	0.0440	0.0392	0.125	0.118	0.0454	0.0172
P-val	.0993	.18	.11	.19	.85	.89
<i>Panel B: Treatment on the Treated(2SLS)</i>						
RMG	-0.0396* (0.0212)	-0.0303* (0.0184)	-0.216* (0.131)	-476540.4 (347857.5)	0.00187 (0.0109)	0.00105 (0.0124)
Dep. Var. Control Group Mean	.097	.085	.281	577875	.02	.025
Adj. R-sq	0.0389	0.0338	0.113	0.126	0.0437	0.0160
P-val	.07	.0995	.098	.17	.86	.93
Bonferroni ($\alpha = .05$)	.008	.008	.008	.008	.008	.008
Obs	1099	1099	83	83	1099	1099
Baseline Char.	Yes	Yes	Yes	Yes	Yes	Yes
Baseline Dep. Var.	No	No	No	No	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest when possible. Invested in HH Business, New Business and Saved for Business are binary outcomes. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 9: Expenditure on large purchases, changes in durable asset ownership, changes in housing in past 12 months.

	Expenditure on Large Purchases	Durable Good Index	Housing Conditions Index
<i>Panel A: Intent to Treat</i>			
RMG	10902.49 (50239.06)	0.0296 (0.0557)	0.135 (0.1498)
Dep. Var. Control Group Mean	162788.7	-0.1837	-0.0107
Adj. R-sq	0.0486	0.487	0.479
P-val	0.82	0.6	0.36
<i>Panel B: Treatment on the Treated(2SLS)</i>			
RMG	21803.1 (61061.5)	0.0531 (0.0662)	0.136 (0.1798)
Dep. Var. Control Group Mean	166260	-0.198	-0.003
Adj. R-sq	0.0515	0.484	0.4756
P-val	0.72	0.42	0.45
Bonferroni ($\alpha = .05$)	0.025	0.025	0.05
Obs	1099	1099	1099
Baseline Char.	Yes	Yes	Yes
Baseline Dep. Var.	No	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and monthly household income. The durable goods index is the first principal components measure of square meters of residential land, winsorized at the 90th percentile, whether the HH owns a motorcycle, a vehicle, a fridge or freezer, a steam rice cooker, an electric rice cooker, a tractor, a rice mill, a television and the number of cell phones the HH owns. Housing condition index is principal components index of whether the household has a brick wall, a solid floor, the number of rooms, has piped water, has a toilet, has a roofed kitchen and use electricity. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table 10: Food consumption in the past week (kg).

	Meat and Fish Consumption per HH member	Vegetable Consumption per HH member
<i>Panel A: Intent to Treat</i>		
RMG	-0.0234 (0.027)	0.1535 (0.061)
Dep. Var. Control Group Mean	0.552	0.907
Adj. R-sq	0.213	0.821
P-val	0.39	0.012
<i>Panel B: Treatment on the Treated(2SLS)</i>		
RMG	-0.0278 (0.0316)	0.181** (0.0714)
Dep. Var. Control Group Mean	0.552	0.915
Adj. R-sq	0.212	0.161
P-val	0.38	0.011
Bonferroni ($\alpha = .05$)	0.025	0.025
Obs	1038	1038
Baseline Char.	Yes	Yes
Baseline Dep. Var.	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, and monthly household income. To account for age specific differences in the consumption we add controls for the number of adults and the number of children in the HH. Outcomes are adjusted for number of HH members in the household. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table 11: Expenditure on Education for Children

	Per-child Expenditure on Edu	Per-child (under 12) Expenditure on Edu
<i>Panel A: Intent to Treat</i>		
RMG	28601.5 (23624.6)	35722.9 (41156.1)
Dep. Var. Control Group Mean	251988.11	368277.293
Adj. R-sq	0.268	0.325
P-val	.22	.38
<i>Panel B: Treatment on the Treated(2SLS)</i>		
RMG	40926.6 (27398.1)	41894.5 (47114.7)
Dep. Var. Control Group Mean	253744.555	376845.086
Adj. R-sq	0.275	0.323
P-val	.13	.37
Bonferroni ($\alpha = .05$)	.025	.025
Obs		
Baseline Char.	Yes	Yes
Baseline Dep. Var.	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest when possible. The education module was limited to household children between the age of 5-24. Outcomes are winsorized at the 99th percentile.

Table 12: Household Savings Behavior

	Any HH Mem. Saves	Any HH Mem. has Formal Savings Account	Any HH Mem. Has Bank Account	Total # of Bank Accounts
<i>Panel A: Intent to Treat</i>				
RMG	0.0356 (0.0296)	0.00765 (0.0129)	0.0129 (0.0102)	0.0109 (0.0106)
Dep. Var. Control Group Mean	.271	.04	.026	.03
Adj. R-sq	0.0496	0.0439	0.179	0.175
P-val	.22	.55	.22	.3
<i>Panel B: Treatment on the Treated(2SLS)</i>				
RMG	0.0332 (0.0351)	0.00408 (0.0146)	0.0188 (0.0121)	0.0166 (0.0125)
Dep. Var. Control Group Mean	.279	.037	.028	.031
Adj. R-sq	0.0497	0.0476	0.183	0.162
P-val	.34	.78	.12	.18
Bonferroni ($\alpha = .05$)	.0125	.0125	.0125	.0125
Obs	1099	1099	1099	1099
Baseline Char.	Yes	Yes	Yes	Yes
Baseline Dep. Var.	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. We control for baseline outcome and the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income.

Table 13: Effects on Decision Making in the Household

	Is Final DM	Frac. of Decisions is a DM	Final DM on Decision She Cares About	Frac of Decisions She Cares About is DM	Believes She Should be DM	Frac of Decisions Believes Should be DM
<i>Panel A: Intent to Treat</i>						
RMG	0.0923*** (0.0274)	0.0466*** (0.0169)	0.0897*** (0.0292)	0.0406** (0.0184)	0.0667** (0.0277)	0.0517** (0.0229)
Dep. Var. Control Group Mean	.681	.317	.624	.23	.724	.457
Adj. R-sq	0.139	0.149	0.133	0.0936	0.127	0.173
P-val	.0008	.006	.002	.03	.02	.02
<i>Panel B: Treatment on the Treated(2SLS)</i>						
RMG	0.108*** (0.0320)	0.0544*** (0.0197)	0.105*** (0.0341)	0.0474** (0.0214)	0.0780** (0.0322)	0.0604** (0.0266)
Dep. Var. Control Group Mean	.685	.32	.632	.233	.724	.456
Adj. R-sq	0.135	0.146	0.127	0.0908	0.127	0.173
P-val	.0008	.006	.002	.03	.02	.02
Bonferroni ($\alpha = .05$)	.007	.007	.007	.007	.007	.007
Obs	1049	1049	1049	995	1049	1049
Baseline Char.	Yes	Yes	Yes	Yes	Yes	Yes
Baseline Dep. Var.	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and monthly household income. We also control for the baseline value of the outcome of interest. Outcomes 1,3 and 5 are binary outcomes. We collected data on four decisions of the household; (1) decisions related to the woman visiting family or relatives, (2) how to spend income the woman earns, (3) how to spend income the husband earns and (4) large purchases. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 14: Comfortable Speaking in Public

	Comfortable Raising Hand	Comfortable speaking up to ensure payment of wages	Comfortable Criticizing Authority
<i>Panel A: Intent to Treat</i>			
RMG	0.0459 (0.0327)	0.112*** (0.0331)	0.0846*** (0.0313)
Dep. Var. Control Group Mean	.416	.367	.271
Adj. R-sq	0.0990	0.0946	0.0878
P-val	.16	.0008	.007
<i>Panel B: Treatment on the Treated(2SLS)</i>			
RMG	0.0538 (0.0382)	0.131*** (0.0384)	0.0991*** (0.0364)
Dep. Var. Control Group Mean	.419	.363	.273
Adj. R-sq	0.0979	0.0987	0.0868
P-val	.16	.0006	.006
Bonferroni ($\alpha = .05$)	.017	.017	.017
Obs	1020	1019	1018
Baseline Char.	Yes	Yes	Yes
Baseline Dep. Var.	Yes	Yes	Yes

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest. All outcomes are binary, the outcome equals 1 if the respondent said they answered they “Yes with difficulty” or “Yes without difficulty.”* $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 15: Exposure to Intimate Partner Violence and Domestic Violence in the Household

	Controlling Behavior	Emotional Violence	Physical Violence	Sexual Violence	Physical Violence from Non-Partner
<i>Panel A: Intent to Treat</i>					
RMG	0.0438 (0.0346)	-0.00100 (0.0319)	0.0159 (0.0316)	0.0379 (0.0280)	-0.0139 (0.0191)
Dep. Var. Control Group Mean	.462	.3	.298	.181	.099
Adj. R-sq	0.0155	0.00640	0.0425	0.0371	0.0219
P-val	.21	.94	.69	.17	.47
<i>Panel B: Treatment on the Treated(2SLS)</i>					
RMG	0.0482 (0.0400)	-0.00240 (0.0368)	0.0171 (0.0364)	0.0436 (0.0322)	-0.0160 (0.0222)
Dep. Var. Control Group Mean	.493	.316	.313	.186	.093
Adj. R-sq	0.0120	0.00701	0.0424	0.0383	0.0208
P-val	.23	.95	.64	.18	.47
Bonferroni ($\alpha = .05$)	.007	.007	.007	.007	.007
Obs	1025	1025	1025	1025	1049
Baseline Char.	Yes	Yes	Yes	Yes	Yes
Baseline Dep. Var.	No	No	No	No	No

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and monthly household income.

Data on gender based violence was not collected at baseline so cannot control for exposure before the RMG program. All outcomes are binary outcomes where the outcome equals 1 if she has experienced this type of violence in the past 12 months. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table 16: The effect on GBV from non-household members

	Physical Violence Non HH	Sexual Violence Non HH
<i>Panel A: Intent to Treat</i>		
RMG	-0.00144 (0.0250)	0.000557 (0.0242)
Dep. Var. Control Group Mean	.158	.143
Adj. R-sq	0.0331	0.0316
P-val	.95	.98
<i>Panel B: Treatment on the Treated(2SLS)</i>		
RMG	-0.00168 (0.0291)	0.000652 (0.0281)
Dep. Var. Control Group Mean	.154	.141
Adj. R-sq	0.0331	0.0316
P-val	.94	.98
Bonferroni ($\alpha = .05$)	.025	.025
Obs	1020	1020
Baseline Char.	Yes	Yes
Baseline Dep. Var.	No	No

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and monthly household income.

Data on gender based violence was not collected at baseline so cannot control for exposure before the RMG program. All outcomes are binary outcomes where the outcome equals 1 if she has experienced this type of violence in the past 12 months. $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 17: Heterogeneous effects on labor market activities by baseline HH income above and below 50th percentile

	LFP	Employed in Paid Work	Regular Earner	Extra Work
<i>Panel A: ITT estimates for Below Median Income</i>				
RMG	0.0144 (0.0463)	0.0796 (0.166)	0.781*** (0.0309)	-0.0299 (0.0224)
Dep. Var. Control Group Mean	.314	.33	.042	.079
Adj. R-sq	0.0314	0.132	0.664	0.0178
Obs	523	57	546	546
P-val	.75	.63	2.706e-93	.18
<i>Panel B: ITT estimates for Median or Above Median Income</i>				
RMG	0.0422 (0.0467)	0.202 (0.150)	0.766*** (0.0347)	-0.0256 (0.0254)
Dep. Var. Control Group Mean	.333	.341	.058	.096
Adj. R-sq	0.0319	0.276	0.619	0.0247
Obs	538	67	553	553
P-val	.37	.18	1.185e-77	.31
Bonferroni ($\alpha = .05$)	.0125	.0125	.0125	.0125
H_0 Treatment effects equal				
P-val	.669	.543	.758	.899

Robust standard errors in parentheses. LFP is a binary indicator if the RMG eligible woman is participating in the labor force. LFP=1 if the a woman is currently employed in reference week or attached to job she was absent from in the reference week or if she is unemployed, defined as being without a job and seeking work in the reference week or did not seek work but was available to work. Employed in Paid Work is a binary indicator of whether she was engaged in paid labor in the reference week. Regular earner is a binary outcome that is equal to 1 if the woman was listed as a household member that regularly earned a salary in past 12 months. Extra work is binary indicator equal to 1 if the RMG eligible woman was listed as a household member that took on extra work over the past 12 months that contributed to household wage income. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 18: Heterogeneous effects on women's income from wages by baseline HH income above and below 50th percentile

	Average Monthly Earnings	Average Monthly Earnings from Extra Work	Total Monthly Earnings
<i>Panel A: ITT estimates for Below Median Income</i>			
RMG	163790.4*** (8300.4)	-248.0 (1298.7)	164907.5*** (8391.4)
Dep. Var. Control Group Mean	10218.997	2660.51	13198.329
Adj. R-sq	0.511	0.0128	0.491
Obs	553	553	553
P-val	1.663e-65	.85	7.929e-47
<i>Panel B: ITT estimates for Median or Above Median Income</i>			
RMG	186414.9*** (10917.3)	-1102.1 (1700.0)	182264.1*** (11489.9)
Dep. Var. Control Group Mean	17387.699	5120.697	27283.795
Adj. R-sq	0.417	0.0280	0.363
Obs	553	553	553
P-val	1.262e-52	.52	4.190e-65
Bonferroni ($\alpha = .05$)	.0167	.0167	.0167
<i>H₀ Treatment effects equal</i>			
P-val	.096	.687	.218

Robust standard errors in parentheses. Outcomes are winsorized at the 99th percentile to minimize the effects of outliers. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 19: Heterogeneous effects on household income by baseline HH income above and below 50th percentile

	HH Income	HH Farm & Forestry Income	HH Non Farm Enterprise Income	HH Wage Income
<i>Panel A: ITT estimates for Below Median Income</i>				
RMG	125881.1*** (40208.5)	-35911.9 (29363.7)	-7068.8 (4915.9)	159909.1*** (17762.5)
Dep. Var. Control Group Mean	244434.148	125874.178	17766.711	70573.439
Adj. R-sq	0.0688	0.0751	0.133	0.120
Obs	546	546	546	546
P-val	.002	.22	.17	1.84e-17
<i>Panel B: ITT estimates for Median or Above Median Income</i>				
RMG	307048.3*** (75576.2)	75836.5* (40953.8)	-9557.5 (8943.8)	233462.2*** (53383.3)
Dep. Var. Control Group Mean	723669.4	300590.995	70112.091	257897.355
Adj. R-sq	0.320	0.220	0.485	0.409
Obs	550	553	553	553
P-val	.00005	.098	.23	.0003
Bonferroni ($\alpha = .05$)	.0125	.0125	.0125	.0125
<i>H₀ Treatment effects equal</i>				
P-val	.033	.025	.805	.187

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, and household size. We also control for the baseline value of the outcome of interest. All income variables are average monthly values for income from the past 12 months and winsorized at the 99th percentile. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 20: Heterogeneous effects on household income diversification by baseline HH income above and below 50th percentile

	Sources of Income	Non-Farm Income	Frac of total income not from farming
<i>Panel A: ITT estimates for Below Median Income</i>			
RMG	0.826*** (0.145)	1297571.0*** (425482.0)	0.0475** (0.0207)
Dep. Var. Control Group Mean	2.689	2527105.9	.878
Adj. R-sq	0.145	0.0778	0.207
Obs	546	546	464
P-val			
<i>Panel B: ITT estimates for Median or Above Median Income</i>			
RMG	1.026*** (0.176)	3327112.4*** (855768.8)	0.0837*** (0.0223)
Dep. Var. Control Group Mean	3.562	7304783.758	.772
Adj. R-sq	0.154	0.392	0.290
Obs	553	550	516
Bonferroni ($\alpha = .05$)	.0167	.0167	.0167
H_0 Treatment effects equal			
P-val	.374	.032	.228

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest. Sources of incomes are the sum of all household member that have a wage job, all harvest crop varieties, forestry goods, aquaculture goods and non-farm enterprises. Non-farm income excludes income from rice and vegetable crop harvest and sales. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 21: Heterogeneous effects on education expenditure by baseline HH income above and below 50th percentile

	Per-child Expenditure on Edu	Per-child (under 12) Expenditure on Edu
<i>Panel A: ITT estimates for Below Median Income</i>		
RMG	-17281.8 (23553.4)	-51947.0 (43928.3)
Dep. Var. Control Group Mean	195135.589	286441.328
Adj. R-sq	0.334	0.304
Obs	385	280
P-val	.46	.23
<i>Panel B: ITT estimates for Median or Above Median Income</i>		
RMG	80981.9** (39726.3)	114556.9* (69026.8)
Dep. Var. Control Group Mean	305732.937	452777.685
Adj. R-sq	0.260	0.314
Obs	395	269
P-val	.04	.098
Bonferroni ($\alpha = .05$)	.025	.025
<i>H₀ Treatment effects equal</i>		
P-val	.031	.038

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and average monthly household income. We also control for the baseline value of the outcome of interest when possible. The education module was limited to household children between the age of 5-24. Outcomes are winsorized at the 99th percentile. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 22: Heterogeneous effects on decision making in the household by baseline HH income above and below 50th percentile

	DM Index	Is Final DM	Frac. of Decisions is a DM	Final DM on Decision She Cares About	Frac of Decisions She Cares About is DM	Believes She Should be DM	Frac of Decisions Believes Should be DM
<i>Panel A: ITT estimates for Below Median Income</i>							
RMG	0.849* (0.485)	0.0832** (0.0418)	0.0299 (0.0251)	0.0390 (0.0443)	0.0177 (0.0264)	0.0437 (0.0410)	0.0308 (0.0329)
Dep. Var. Control Group Mean	.221	.662	.318	.606	.24	.723	.47
Adj. R-sq	0.139	0.103	0.126	0.101	0.0754	0.0895	0.157
Obs.	485	518	518	518	485	518	518
P-val	.08	.047	.23	.37	.5	.29	.34
<i>Panel B: ITT estimates for Median or Above Median Income</i>							
RMG	1.219*** (0.413)	0.101*** (0.0362)	0.0639*** (0.0233)	0.134*** (0.0383)	0.0623** (0.0258)	0.0907** (0.0382)	0.0770** (0.0325)
Dep. Var. Control Group Mean	.396	.698	.317	.641	.22	.724	.445
Adj. R-sq	0.238	0.189	0.183	0.181	0.122	0.173	0.204
Obs.	509	531	531	532	510	531	531
P-val	.003	.006	.006	.0005	.02	.02	.02
Bonferroni ($\alpha = .05$)	.007	.007	.007	.007	.007	.007	.007
<i>H₀ Treatment effects equal</i>							
Pval	.557	.747	.315	.1	.221	.397	.313

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and monthly household income. We also control for the baseline value of the outcome of interest. Outcomes 1,3 and 5 are binary outcomes. We collected data on four decisions of the household; (1) decisions related to the woman visiting family or relatives, (2) how to spend income the woman earns, (3) how to spend income the husband earns and (4) large purchases. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Table 23: Heterogeneous effects on comfortableness speaking publicly by baseline HH income above and below 50th percentile

	Comfortable Raising Hand	Comfortable speaking up to ensure payment of wages	Comfortable Criticizing Authority
<i>Panel A: ITT estimates for Below Median Income</i>			
RMG	0.0599 (0.0465)	0.0712 (0.0463)	0.0900** (0.0426)
Dep. Var. Control Group Mean	.365	.319	.219
Adj. R-sq	0.0929	0.0663	0.0825
Obs	502	502	500
P-val	.19	.12	.04
<i>Panel B: ITT estimates for Median or Above Median Income</i>			
RMG	0.0360 (0.0471)	0.150*** (0.0484)	0.0821* (0.0463)
Dep. Var. Control Group Mean	.464	.412	.32
Adj. R-sq	0.104	0.114	0.0892
Obs	518	517	518
P-val	.44	.002	.08
Bonferroni ($\alpha = .05$)	.0167	.0167	.0167
<i>H₀ Treatment effects equal</i>			
P-val	.716	.235	.889

Robust standard errors in parentheses. We control for the following baseline characteristics: age, a binary indicator for married indicator, an indicator for ever attending school, indicators for ethnicity being Lao-Tai, Mon-Khmer, Chinese-Tibet, Hmong-Emien or other, household size and monthly household income. We also control for the baseline value of the outcome of interest. All outcomes are binary, the outcome equals 1 if the respondent said they answered they “Yes with difficulty” or “Yes without difficulty.”* $p < 0.1$, ** $p < .05$, *** $p < 0.01$



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