

PEKKA

Impact Evaluation

BASELINE REPORT



**EVALUATING THE FEMALE-HEADED HOUSEHOLD
EMPOWERMENT PROGRAM IN INDONESIA**

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Executive Summary

This report presents the analysis of the baseline data collection as part of the effort to evaluate the impact of the *Program Kepala Keluarga* (PEKKA) program. PEKKA is an empowerment program to address the poverty and vulnerability of female-headed households in the poorest parts of Indonesia. It wants to achieve this objective by facilitating training to local women to become community organizers, providing seed grants to launch sustainable micro-finance, and various capacity building initiatives. This program, which is funded by the Japan Social Development Fund (JSDF), consists of several components that aim at building capacity at the national level as well as the local level.

The premise behind the PEKKA program is that poor female-headed households in general, and poor widow-headed households in particular, are particularly vulnerable – both from their poverty and arguably, from their status as a widow. Poor female-household heads often lack the capacity to organize themselves in order to access resources provided, for instance, by Indonesia’s various anti-poverty and development programs. As such, it is argued that untargeted development programs (such as PNPM) are typically inadequate to address the issue of the vulnerabilities of this marginal group. PEKKA wants to address these needs by facilitating the formation of self-help groups among these female household heads, and use these groups to channel resources to them.

The program has been operational since 2001. The expansion of the program to nine additional provinces in 2010 provides an opportunity to evaluate the impact of the program. For the evaluation, four out of the nine provinces were chosen in a manner that allows for rich variations that come from differences in culture (e.g., matrilineal culture in West Sumatera), urban/rural status, or the prevalence of polygamy. Within these provinces, 24 hamlets in 4 provinces, 4 districts, and 8 sub-districts were selected based on the share and number of poor widows to be part of this evaluation, and 18 of them were randomly assigned to receive the PEKKA program. The table below summarizes the provinces and districts of sub-villages that are chosen to participate in the evaluation.

PEKKA LOCATIONS FOR IMPACT EVALUATION

Province	District	Treatment	Control
West Sumatera	Sawahlunto Sijunjung	4 villages	2 villages
Banten	Tangerang	4 villages	2 villages
Yogyakarta	Bantul	4 villages	2 villages
South Kalimantan	Hulu Sungai Utara	4 villages	2 villages

Research Questions

The objective of this report is to make use of the baseline data to obtain a snapshot of the communities that will become part of this evaluation. It aims to answer two different but related research questions. First, it examines whether the villages (and the households and individuals therein) that are selected to receive the PEKKA program (the “treatment” villages) have characteristics similar to those which will be part of the “control” group. Second, this report also makes use of the baseline dataset to answer the following question: Are female-headed households different from male-headed households – and if so, in what ways? We hope to use the dataset to inform us about the premise underlying the program.

Data and Analytical Strategy

Baseline data were collected in February 2011, before the implementation of the program, and the end-line data are expected to be collected three years after. Within each hamlet, 100 households were surveyed. The household population is stratified into four sub-populations based on two dimensions: female headship and poverty status. Within each strata, a household is randomly sampled. A household is categorized as poor if its per-capita expenditure is in the lowest two quintiles in the subvillage.¹ To ensure that we have a large enough sample of poor female-headed households for a separate analysis, we oversample poor female-headed households and poor households. Out of 100 households, we chose 32 poor female-headed households, 32 poor male-headed households, 16 non-poor female-headed households and 16 non-poor male-headed households. The remaining 4 households are reserved for the sub-village elites, that includes a head of the hamlet and women elites (*tokoh perempuan*). Each household observation is then weighted by its probabilistic sampling weight.

To test for differences between treatment and control communities, we estimated a simple regression on community variables with a dummy variable that indicated whether a particular community was allocated into the treatment group. Similarly, to test for differences between households/individuals in treatment and control groups, we again included a dummy variable that indicated whether a household/individual lives in a treatment village. District fixed-effects were included in the regressions to reduce effects from unobservable variables at the district level.

We implemented a similar estimation strategy to test whether female-headed households (and female household heads) have characteristics that are significantly different (in the statistical sense) compared to the male-headed households (and male household heads or their spouses). To wit, we estimated a regression on a dummy variable that indicated whether a household (individual) is a female-headed household (female household head). For this second set of regressions, however, we included village fixed-effects to reduce the potential bias coming from unobservable variables. In some specifications, we also included individual control variables (such as age and education) and household variables (such as per-capita expenditure) as control variables.

¹ The per-capita expenditure of the household is determined using the simplified expenditure questionnaire that was fielded during the construction of the sampling frame.



Results

On the difference between treatment and comparison groups, the baseline data suggest that at various levels of aggregation (village/subvillage, household, individual), the two groups are comparable. We find minor differences in baseline community characteristics between two groups. Similarly, households in the two groups are also comparable in their characteristics. In terms of the individual characteristics, there are less female adults in the treatment group compared to the control group. Adults in the treatment group tend to participate in more organizations, and are also more likely to participate in local governing organizations such as *Rukun Tetangga* or *Rukun Warga*. Children under three years old are also more likely to receive complete immunizations in the treatment group. However, in many other individual characteristics listed above, the two groups are similar. At any rate, in the final analysis, we can utilize the baseline characteristics to control for pre-treatment differences.

Meanwhile, in terms of the difference between female- and male-headed households, we do not find evidence for the claim that female-headed households are disadvantaged across all dimensions. We find that female household heads tend to be older and less educated compared to the male household heads. However, we find no differences in per-capita expenditure between female- and male-headed households – both in the overall sample and the poor household sample. Female-headed households have lower per-capita income, but in the overall sample, the difference disappears after we control for age and education. This difference in per-capita income persisted among the poorest sub-population. We also do not find strong evidence for this claim when we examine differences in access to financial services and government social programs, or in assets. In terms of access to legal documents, female household heads are somewhat disadvantaged, but these disadvantages appear to be correlated more with their level of education instead of their female household head status. We find similar results for the law under which their marriage is certified.

At the same time, we do find that female household heads have a lower subjective welfare and a bleaker view of their future. They are also more likely to experience negative mental states (such as loneliness and depression) and less likely to experience positive mental states (such as the feeling of happiness) compared to male household heads. These results persist when we control for age and education. The results also do not seem to be rooted in gender effects, since female household heads have a lower subjective welfare and are more likely to be in a negative mental states when compared to the spouses of male household heads.

I. Introduction

This report presents results from baseline data collection as part of the effort to evaluate the impacts of the *Program Kepala Keluarga* (PEKKA) program. PEKKA is an empowerment program to address the poverty and vulnerability of female-headed households in the poorest parts of Indonesia. It wants to achieve this objective by facilitating training to local women to become community organizers, providing seed grants to launch sustainable micro-finance, and various capacity building initiatives. This program, which is funded by the Japan Social Development Fund (JSDF), consists of several components that aim at building capacity at the national level as well as the local level.

The premise behind the PEKKA program is that poor female-headed households in general, and poor widow-headed households in particular, are particularly vulnerable – both from their poverty and arguably, from their status as a widow. Poor female-household heads often lack the capacity to organize themselves in order to access resources provided, for instance, by Indonesia’s various anti-poverty and development programs. As such, it is argued that untargeted development programs (such as PNPM) are typically inadequate to address the issue of the vulnerabilities of this marginal group.

Since its inception in 2001, the impacts of the program have not been rigorously evaluated and documented. Gaduh (2007) provided an early assessment of whether PEKKA has delivered its promised outputs to groups that are its target – namely, poor female-headed households using a cross-section dataset that was collected by PEKKA’s program managers. However, to make inferences about program impacts, it is necessary (though often not sufficient) to have data on non-PEKKA households whose pre-program characteristics were similar to PEKKA households as a comparison group in order to establish some sort of a counterfactual. Since the data that were available then were only collected on program beneficiaries, it was not possible to analyze program impacts. Fortunately, the expansion of the program in 2010 to nine additional provinces provided an opportunity to conduct an impact evaluation.

This report provides a brief overview of the impact evaluation strategy for PEKKA and analyzes the dataset that was collected at the baseline, prior to program implementation. Its objective is two-fold. First, it examines whether the villages (and the households and individuals therein) that are selected to receive the PEKKA program (the “treatment” villages) have characteristics similar to those which will be part of the “control” group. We elaborate in Section IV why this comparability is important to establish. Second, this report also makes use of the baseline dataset to answer the following question: Are female-headed households different from male-headed households – and if so, in what ways? We hope to use the dataset to inform us about the premise underlying the program.

On the difference between treatment and comparison groups, we find that at various levels of aggregation (village/subvillage, household, individual), the two groups are comparable. We find a number of differences, in particular for individual-level characteristics. Since we have pre-program characteristics across treatment and control groups, we can control for these characteristics when we perform the final analysis.

Meanwhile, in terms of the difference between female- and male-headed households, we do not find evidence for the claim that female-headed households are disadvantaged in

all dimensions. Although we find female household heads to be older and less educated, we do not find evidence that female-headed households – in both the full sample and the subsample of poorest households – are economically disadvantaged compared to male-headed households. However, female household heads tend to report lower subjective welfare as well as more incidences of depression or loneliness.

This report is structured as follows. The following section discusses the PEKKA program, in particular how it is implemented, followed with a brief outline of the evaluation strategy. Then in Section III we discuss the data and the outcomes analyzed in this report. Section IV discusses the methodology used to assess the comparability of treatment and control groups as well as the results. It is followed by a similarly structured section – that includes both the methodology and the results – to examine characteristic differences between female- and male-headed households and their members. Section VI concludes.

II. Evaluating PEKKA

2.1 The PEKKA Program

The first step in the process to implement a typical PEKKA program is the formation of self-help groups and PEKKA facilitates the self-organization of these groups among female household heads. Once formed, the program use these groups to channel resources to its members. Resources channeled through these groups include financial (i.e., seed money to start a micro-finance scheme) and informational resources (training on financial literacy and other relevant topics, capacity building opportunities, workshops, etc.). The program cycle is expected to be around 3 years, and during that period, the program's success is going to be measured by: (a) The extent to which it is sustainable; (b) Stability of the economic welfare of its beneficiaries; and (c) Better access to core social services.

How does the program target beneficiaries? A typical PEKKA program is rolled out as follows. It begins with village selection. The village selection process begins at the district level – which is two administrative levels above a village. Secondary household-level data are typically available up to the district level. As such, program administrators would use these data to find districts with high shares of female-headed households and select treatment districts.

Within the chosen districts, program administrators would visit the sub-districts officials to find village profile data in terms of the number of female-headed households residing in these villages. In addition, they will also collect data on the number of divorces, migrant workers – since it is quite common for many male migrant workers to leave to work abroad and do not come back – and cases of domestic violence. Based on these data, program administrators would choose the treatment sub-districts.

They then visited the village officials within these districts to find the number of female-headed households in these villages and sort the villages based on this number. Program administrators then begin visiting villages with the highest number of female-headed households, and go door-to-door to introduce themselves and the program. They then try to assess whether there is adequate interest in the program. If the interest is not there, program administrators would move on to the next village in their sorted list, and try to gauge interest in the program. They continue to do this until they have reached their target number of villages.

If the interest is there, then program administrators will send facilitators to these villages. These facilitators would try to facilitate the formation of a PEKKA group. They would do this by, first, encouraging the acceptance of such a group by the community. Second, they would find a “cadre”, which is an individual that would act as the group's local organizer. Third, they would facilitate discussions with interested female household-heads on the working plan ahead. After groups are established, program administrators would provide these groups with seed money to run a micro-finance scheme (along with the financial literacy training to manage the operation) and various training modules on health, legal and political rights, and others.

Figure 1 presents the map of PEKKA coverage across Indonesia. From 2001-2009, the program covers eight provinces: Nanggroe Aceh Darussalam (NAD), East Nusa

Tenggara, West Nusa Tenggara, West Java, Central Java, West Kalimantan, Southeast Sulawesi, and North Maluku. Additional funding allows the program to expand further: In 2010, the program began expansion into nine new provinces, namely North, West, and South Sumatera, Banten, Yogyakarta, East Java, South Kalimantan, South and North Sulawesi. With this expansion comes the opportunity to evaluate the impacts of the program.

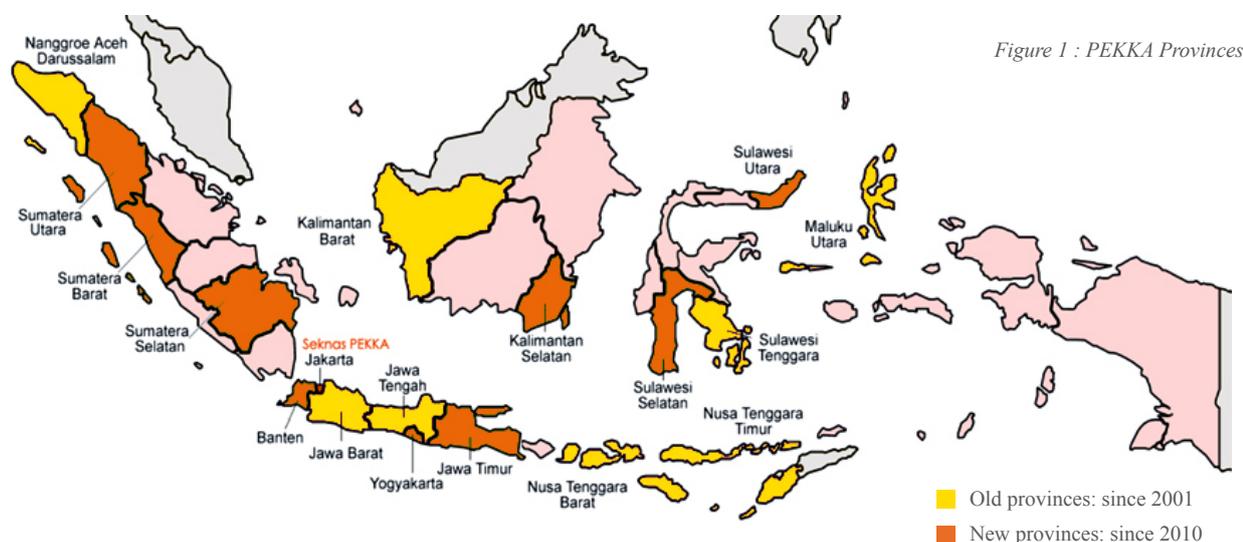


Figure 1 : PEKKA Provinces

2.2 Program Evaluation

Ideally, we want to evaluate the program using the randomized controlled trial (RCT) methodology by randomly assigning the PEKKA programs to villages from a population of eligible village (Duflo et al., 2007). However, in the case of the latest expansion of the PEKKA program, there are technical as well as logistical challenges that make RCT hard to implement. First, there is the issue of compliance – to wit, both to ensure that the program is implemented in treatment villages and no program is implemented in control villages. In the case of PEKKA, the risk of non-compliance is great.² One way to avoid this is to try to randomize at a higher administrative unit – i.e., instead of randomizing villages or sub-villages, we can try to randomize at the sub-district level. However, this would require PEKKA administrators to work at a lot of sub-districts simultaneously – which, unfortunately, was not possible given the amount of resources available to them.

Instead, we implemented a less ambitious impact evaluation strategy. Working closely with PEKKA administrators, we began by choosing 4 of the 9 provinces. These provinces were chosen to allow for rich variations that come from differences in culture (e.g., matrilineal culture in West Sumatera), urban/rural status, or the prevalence of polygamy. In each of these provinces, we utilized secondary data to find eligible locations. First, we find a district with the highest share of poor widows. Then, within each district, we chose 2 sub-districts and within each sub-district, 3 villages based on the highest share of poor widows. Finally in each of the village, we choose a hamlet with the highest number of poor widows. We therefore have a total of 24 hamlets (or sub-villages) that will be part of this impact evaluation. Table I lists the 4 districts that are included in this study.

² We have identified the following issues related to compliance. First, knowledge of the presence of a social program in another village within the same sub-district may create social tensions, as villagers in the control village may demand the same program in their village. The program administrators suggest that it would be very difficult for them to refuse these requests, especially from nearby villages, without being seen as unfair. Second, even if they can refuse to treat to the next village, villagers in the control villages can still come over to the treatment villages to join or create their own self-help groups. Third, even if they are prevented to come over, information about the benefits of self-organization might induce villagers in the control villages to try and form groups on their own that are similar to those in the treatment villages.

TABLE I: TREATMENT VS. CONTROL VILLAGES

Province	District	Treatment	Control
West Sumatera	Sawahlunto Sijunjung	4 villages	2 villages
Banten	Tangerang	4 villages	2 villages
Yogyakarta	Bantul	4 villages	2 villages
South Kalimantan	Hulu Sungai Utara	4 villages	2 villages



III. Data Collection and Measurements

3.1 Data Collection

We collected data at the baseline, before program implementation, and we plan to collect another set of data to construct a panel three years after program implementation. Baseline data were collected in February 2011 by SurveyMeter, and we plan to collect the endline data in 2014. Data were collected at the village, sub-village, and household levels. For data at the village and sub-village level, the respondents are informants that are knowledgeable, and they usually work in the village or sub-village administration, although they do not necessarily have to be the village or sub-village head.

Meanwhile, we interviewed a total of 100 households in each hamlet. The household population is stratified into four sub-populations based on two dimensions: female headship and poverty status. Within each strata, a household is randomly sampled. A household is categorized as poor if its per-capita expenditure is in the lowest two quintiles in the subvillage.³ To ensure that we have a large enough sample of poor female-headed households for a separate analysis, we oversample poor female-headed households and poor households. Out of 100 households, we chose 32 poor female-headed households, 32 poor male-headed households, 16 non-poor female-headed households and 16 non-poor male-headed households.⁴ The remaining 4 households are reserved for the sub-village elites, that includes a head of the hamlet and women elites (*tokoh perempuan*). To facilitate sub-village level analysis, we created a probabilistic sampling weight for each household observation.⁵ In each household, the main respondent is the household head and adults (to wit, individuals who are older than 15 years old) in the household.

3.2 Measurements of Characteristics and Outcomes

The survey collected a rich set of information on community, household, and individual characteristics. Below we describe the subset of variables and indicators at different levels of aggregations that is the focus of this baseline study.

3.2.1 Village and Sub-village Characteristics

Community variables are collected from an informant and not results of aggregations of household or individual responses. As such, for each variable, there is one observation for each village or sub-village. We can group the village-level variables as follows: community head characteristics, demographic and economic characteristics, access to different government poverty programs, and infrastructure. The demographic characteristics of interest include village size (in terms of both households and population) as well as the share of poor households. Meanwhile, the economic characteristics that will be examined

³ The per-capita expenditure of the household is determined using the simplified expenditure questionnaire that was fielded during the construction of the sampling frame.

⁴ In the case when the number of households of a certain strata in the population is too small, the remaining quota for that strata is allocated to the next strata in the following order: poor female-headed households, poor male-headed households, non-poor female-headed households, and non-poor male-headed households.

⁵ The probabilistic sampling weight is simply the population size divided by the sample size for each strata for each sub-village.

are the community's main economic sector, the labor market characteristics (i.e., wages and hours worked) in these villages and sub-villages, and whether villagers recently experienced significant adverse economic shocks in the past twelve months. We also look at whether the village receives the different types of the government poverty alleviation programs.

Furthermore, we also look at the village social and economic infrastructure. We compare the availability of electricity, educational facilities at different levels, and health facilities and staffs between treatment and control villages. More specifically, we calculated the number of facilities and staffs per capita for the different educational facilities, as well as health facilities and staffs. In addition, we also look at their access to the market and the different levels of government, using time and monetary cost to reach the market and the subdistrict and district offices as a proxy, and whether there are financial institutions in these communities. Finally, we also compare the access of these villages to the “outside world” by looking at whether they can receive television and radio broadcast signals. Tables II - V below provide the summary statistics of all of the village and sub-village variables for this analysis.

TABLE II: VILLAGE DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

	Mean	Std. dev	Median	IQR	Min	Max
Village head [...]						
Is female	0.042	0.20	0	0	0	1
Has at least high school edu.	0.88	0.34	1	0	0	1
Number of sub-village	6.13	4.13	4.50	6	2	16
Population (people)	5943.2	4324.7	5154.5	6400	931	17880
Number of households	1661.1	1243.4	1394	1729	231	4626
Share of poor households	0.44	0.21	0.40	0.33	0.15	0.98
Religious composition – share of:						
Moslems	0.98	0.047	1	0.0055	0.79	1
Protestants	0.012	0.043	0	0.0051	0	0.21
Catholics	0.0046	0.019	0	0	0	0.090
Buddhists	0.000021	0.00010	0	0	0	0.00050
Agricultural village	0.92	0.28	1	0	0	1
Average daily wage for [...]:						
Male	40070.8	14450.5	40000	20000	15000	70000
Female	24237.5	7192.8	25000	10000	10000	41700
Average daily working hours	6.96	1.12	7	0.50	4	9
Receives [...] -type poverty program :						
Education	0.58	0.50	1	1	0	1
Health	1	0	1	0	1	1
Cash Transfer	0.63	0.49	1	1	0	1
Education	0.50	0.51	0.50	1	0	1
Credit	0.75	0.44	1	0.50	0	1
Infrastructure	0.96	0.20	1	0	0	1
Community Empowerment	0.83	0.38	1	0	0	1
Employment Creation	0.29	0.46	0	1	0	1
Commodity Subsidy	1	0	1	0	1	1
Agricultural Subsidy	0.75	0.44	1	0.50	0	1
Share of households receiving subsidized rice	0.40	0.30	0.24	0.29	0.12	1

TABLE III: VILLAGE INFRASTRUCTURE CHARACTERISTICS

	Mean	Std. dev	Median	IQR	Min	Max
Share of households without electricity	0.049	0.10	0.00089	0.051	0	0.46
Number of [...] per 1000 person in village						
Hospital	0.0063	0.022	0	0	0	0.095
Puskesmas	0.13	0.14	0.100	0.19	0	0.49
Poskesdes	0.31	0.31	0.18	0.28	0	1.07
Posyandu	0.33	0.31	0.19	0.36	0.056	1.07
Pharmacy	0.042	0.068	0	0.088	0	0.21
Number of [...] per 1000 person in village						
Doctors	0.17	0.36	0	0.21	0	1.64
Skilled Midwives	1.06	1.02	0.63	0.91	0.13	4.02
Unskilled Midwives	0.82	1.03	0.54	0.57	0	3.91
Number of [...] per 1000 person in village						
Kindergarten	1.02	0.77	1.16	1.28	0	3.01
Primary School	0.87	0.44	0.80	0.78	0.32	2.01
Junior High School	0.29	0.25	0.23	0.23	0	1.00
Senior High School	0.11	0.21	0	0.19	0	1.00
Time from village office to nearest [...] (minutes)						
Market	8.29	6.78	5	9.50	1	25
Subdistrict Capital	17.3	12.4	15	12.5	2	60
District Capital	46.0	25.5	40	30	15	120
Cost from village office to nearest [...] (Rp.)						
Market	1904.2	2378.8	1000	2525	0	10000
Subdistrict Capital	5776.0	6545.0	3750	8000	250	30000
District Capital	12427.1	12089.0	8000	17250	2500	50000
Does village have any [...]						
Cooperative?	0.50	0.51	0.50	1	0	1
Bank?	0.21	0.41	0	0	0	1
Does village receive clear broadcast of [...]						
Domestic TV	0.79	0.41	1	0	0	1
Radio	0.92	0.28	1	0	0	1
Internet access in the village	0.25	0.44	0	0.50	0	1
Mobile post office in the village	0.25	0.44	0	0.50	0	1

TABLE IV: SUBVILLAGE DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

Subvillage head [...]						
Is female	0	0	0	0	0	0
Has at least high school edu.	0.29	0.46	0	1	0	1
Population size	1073.7	450.8	970.5	567	433	2105
Number of households	258.9	99.8	246.5	143	104	478
Religious composition – share of:						
Moslems	0.99	0.052	1	0	0.75	1
Protestants	0.0025	0.010	0	0	0	0.050
Catholics	0.010	0.049	0	0	0	0.24
Buddhists	0	0	0	0	0	0
Agricultural subvillage	0.83	0.38	1	0	0	1
Average daily wage for [...]:						
Male	39500	11846.8	40000	20000	20000	60000
Female	28125	10510.1	30000	10000	10000	55000
Average daily working hours	6.92	1.10	7	2	5	9
Experienced [...] in the last 12 months:						
Natural disaster	0.050	0.22	0	0	0	1
Failed harvest	0.74	0.45	1	1	0	1
Commodity price shock	0.38	0.49	0	1	0	1
Share of households receiving subsidized rice	0.55	0.51	0.35	0.45	0.035	1.68

TABLE V: SUBVILLAGE INFRASTRUCTURE CHARACTERISTICS

Number of [...] per 1000 person in subvillage						
Hospital	0	0	0	0	0	0
Puskesmas	0.053	0.19	0	0	0	0.80
Poskesdes	0.61	0.68	0.60	1.00	0	2.31
Posyandu	1.04	0.62	0.93	0.58	0	2.31
Pharmacy	0.025	0.12	0	0	0	0.60
Number of [...] per 1000 person in subvillage						
Kindergarten	2.34	1.41	2.28	1.95	0	4.63
Primary School	1.62	1.19	1.41	0.83	0	4.59
Senior High School	1.81	2.87	1.14	1.58	0	13.4
Time from subvillage office to nearest [...] (minutes)						
Market	11.3	8.67	8.50	10	2	30
Subdistrict Capital	7.75	6.23	5	5	1	30
District Capital	18.8	13.4	15	15	3	60
Cost from subvillage office to nearest [...] (Rp.)						
Market	2635.4	2705.6	2000	2000	0	10000
Subdistrict Capital	1660.4	2277.1	1000	2000	0	10000
District Capital	6041.7	6036.4	4000	8250	0	25000
Does subvillage have any [...]						
Cooperative?	0.29	0.46	0	1	0	1
Bank?	0	0	0	0	0	0
Does subvillage receive clear broadcast of [...]						
Domestic TV	0.79	0.41	1	0	0	1
International TV	0	0	0	0	0	0
Radio	0.88	0.34	1	0	0	1
Internet access in the subvillage	0.042	0.20	0	0	0	1
Mobile post office in the subvillage	0.083	0.28	0	0	0	1

3.2.2 Household- and individual-level characteristics

We hypothesize that PEKKA would improve the welfare of its beneficiaries, among others, by increasing their income, assets, human capital (especially those of children), as well as access to finance. We also expect that the close-knit community provided by program would improve members' subjective well-beings and social capital, while its information programs would improve the knowledge of female household heads regarding their legal and political rights and encourage local leadership – which, eventually, leads to better access to social services. We therefore collect a wide range of measures that capture notions of economic and subjective welfare, human and social capital, access to finance, and access to social services.⁶

3.2.2.1 Economic and Subjective Welfare Measures

We collected a wide set of information that include both economic and subjective assessments to measure household welfare. At the household level, we collected the households' total expenditure and combined them with information on household size to construct the households' monthly per-capita expenditure (PCE), per-capita income (PCI) and per-capita savings. Finally, we also collected a detailed list of household assets. Table VI presents the various per-capita measures of economic welfare. The summary statistics of household assets is presented in Table VII.

At the individual level, we collected information on economic and subjective well-being. On the former, we expect that the economic empowerment aspect of PEKKA may be affecting welfare by altering the employment opportunities of beneficiaries. We therefore collected employment information of adults in the sample, including their labor force participation, sectors and types of jobs. Table VIII provides the overall summary statistics on labor market characteristics of adult household members in the sample.

⁶ We also include a set of questions on respondents' knowledge of their legal and political rights, although we do not analyze these questions in this baseline study.

Meanwhile, to measure subjective welfare, we collected the perceptions of adults regarding their current economic conditions, food consumption, health, and the welfare of their children. First, respondents were asked to rank, in a scale of 1 to 6, their current welfare, where 1 is poorest and 6 is richest. We also asked respondents their future outlook by asking them to rank where they would be in this welfare scale five years from now. We then define a variable that takes a value of 1 for respondents who rank the future at least as good as today. Second, we ask respondents to rate how well they fare in fulfilling their overall and health needs, as well as the overall, food, health, and educational needs of their children. Respondents were asked to rate on a 1 to 3 scale, where 1=not well, 2=just enough, and 3=more than enough. Finally, we also ask respondents to rate from 1 to 4 how happy they are, from very happy to very unhappy.

In addition, we also included a set of questions to measure mental health. In these questions, we ask respondents how often they experience mental health problems such as feeling agitated, difficulties to concentrate and sleep, feeling depressed, lonely, afraid, difficulties to start something, and has ran out of options. On the flip side, we also ask respondents how often they experience feeling happiness and optimism of the future. Respondents can respond on a 4-point scale from “rarely”, “sometimes”, “often”, and “almost every day”. As indices of positive and negative mental states, we average the responses for positive and negative questions across the different questions, and then normalize the answer to one. Table IX summarizes the subjective welfare and measures of mental health for our sample.

3.2.2.2 Access to Finance

One of the programs offered by PEKKA focuses on encouraging female household heads to save and build financial capital in the group. It is therefore important to have information on households’ level of savings as well as the baseline level of access to finance for these households. As mentioned above, we collected a set of information regarding different forms of household savings. However, in addition, we also examined household access to the various formal and informal financial institutions, such as formal banks, government programs (such as PNPM) and local loan sharks. The summary statistics for these indicators are provided in Table VI.

TABLE VI: ECONOMIC WELFARE, ACCESS TO FINANCE AND SOCIAL PROGRAMS

	Mean	Std. dev	Median	IQR	Min	Max
Monthly per-capita expenditure	560644.4	450174.7	469196.4	324285.7	69169.6	14283400
Monthly per-capita income	453027.1	1759152.5	288750	417333.3	-49625000	23891666.7
Household has some savings	0.42	0.49	0	1	0	1
Per-capita savings	338791.7	2385344.6	0	50000	0	100000000
Have loans from [...]:						
Bank	0.14	0.34	0	0	0	1
Non-Bank Institution (e.g, cooperatives)	0.15	0.36	0	0	0	1
Pawn Shops	0.015	0.12	0	0	0	1
PNPM Program	0.078	0.27	0	0	0	1
Own Employer	0.085	0.28	0	0	0	1
Loan Sharks	0.019	0.14	0	0	0	1
Own Family	0.42	0.49	0	1	0	1
Informal Groups	0.17	0.37	0	0	0	1
HH member is beneficiary of [...]						
Askeskin	0.32	0.47	0	1	0	1
PNPM	0.072	0.26	0	0	0	1
Conditional Cash Transfer (PKH)	0.0018	0.042	0	0	0	1
Scholarship	0.12	0.33	0	0	0	1
Unconditional Cash Transfer (BLT)	0.33	0.47	0	1	0	1
Subsidized Rice (Raskin)	0.66	0.47	1	1	0	1

TABLE VII: HOUSEHOLD ASSET OWNERSHIP

	Mean	Std. dev	Median	IQR	Min	Max
Land Ownership						
Irrigated Rice Field	0.25	0.43	0	0	0	1
Rainfed Rice Field	0.12	0.32	0	0	0	1
Dry Field	0.25	0.43	0	0	0	1
Land and/or Current House	0.87	0.34	1	0	0	1
Other Land	0.078	0.27	0	0	0	1
Appliances						
Cupboard	0.94	0.24	1	0	0	1
Stove	0.67	0.47	1	1	0	1
Refrigerator	0.26	0.44	0	1	0	1
Rice Cooker	0.52	0.50	1	1	0	1
Fan	0.49	0.50	0	1	0	1
Air Conditioner	0.0065	0.081	0	0	0	1
Radio	0.33	0.47	0	1	0	1
TV	0.78	0.41	1	0	0	1
DVD	0.41	0.49	0	1	0	1
Parabolic Antenna	0.18	0.39	0	0	0	1
Laptop	0.071	0.26	0	0	0	1
Mobile Phone	0.76	0.43	1	0	0	1
Vehicles						
Bicycle	0.57	0.50	1	1	0	1
Motorcycle	0.67	0.47	1	1	0	1
Car	0.046	0.21	0	0	0	1
Boat	0.057	0.23	0	0	0	1
Motorboat	0.018	0.13	0	0	0	1
Farm Animals						
Chicken	0.48	0.50	0	1	0	1
Goat	0.090	0.29	0	0	0	1
Cow	0.097	0.30	0	0	0	1

TABLE VIII: ADULT LABOR MARKET CHARACTERISTICS

Main activity in the past week:						
Working	0.57	0.49	1	1	0	1
Looking for work	0.013	0.12	0	0	0	1
In school	0.049	0.22	0	0	0	1
Housekeeping	0.29	0.45	0	1	0	1
In labor force	0.79	0.41	1	0	0	1
Employed	0.76	0.43	1	0	0	1
Employed in the [...] sector						
Agriculture	0.41	0.49	0	1	0	1
Manufacturing	0.19	0.40	0	0	0	1
Services	0.40	0.49	0	1	0	1
Work status:						
Self employed	0.19	0.39	0	0	0	1
Self employed with unpaid workers	0.16	0.36	0	0	0	1
Employer	0.049	0.22	0	0	0	1
Employee	0.27	0.45	0	1	0	1
Casual Worker	0.12	0.33	0	0	0	1
Unpaid	0.20	0.40	0	0	0	1

TABLE IX: SUBJECTIVE WELFARE AND MENTAL HEALTH STATUS

	Mean	Std. dev	Median	IQR	Min	Max
Believe future is similar to or better than today	0.98	0.14	1	0	0	1
Subjective ranking of current ability to fulfill needs on [...]						
Health	0.56	0.21	0.67	0.33	0.33	1
Food for Children	0.60	0.21	0.67	0.33	0.33	1
Health for Children	0.59	0.21	0.67	0.33	0.33	1
Education for Children	0.54	0.26	0.67	0.33	0	1
Are you currently happy?	0.49	0.14	0.50	0	0.25	1
Index of mental health status:						
Negative states	0.16	0.14	0.13	0.17	0	0.92
Positive states	0.64	0.28	0.67	0.50	0	1

3.2.2.3 Human Capital

Some of PEKKA's programs aim at improving the human capital of the beneficiaries. We therefore look at a set of measures of education and health of adults and children in our sample communities prior to the intervention. For education, among the adult sample, we look at the literacy and education of adults (Table VIII). Meanwhile, for children, we examine the school enrollment status of children for their respective school ages for those between 7 and 15 years old (to wit, primary and junior high school students). More specifically, we look at two sets of measures, to wit, whether (i) children within this age bracket are in school, and (ii) whether children are in their appropriate level of schooling given their age (i.e., primary school for children 7-12 years old, junior high school for those who are 13-15 years old). We also look at whether children between the ages of six and fifteen worked outside the house for more than 20 hours per month.

Meanwhile, for health, we focus on the immunization and nutritional status of children under three years old. For immunization, we look at whether children have complete immunizations, complete for their given age, and whether children who are older than 10 months have complete immunizations. Meanwhile, for nutritional status, we look at whether children are malnourished or severely malnourished based on different measures of nutritional status. More specifically, we calculated the z-score for the weight-for-age, height-for-age, and weight-for-height, using the methodology developed by the WHO Multicentre Growth Reference Study Group (2006). Children under 3 years old are defined as "malnourished" when their z-score are 2 standard deviation below the population reference, and they are defined as "severely malnourished" when their z-score are 3 standard deviation below the population reference. The summary statistics on the measures of educational and health capital for children are presented in Table X.



TABLE X: EDUCATION AND HEALTH OF CHILDREN

	Mean	Std. dev	Median	IQR	Min	Max
Education: Children 7-15 years old						
Are your children [...]						
Aged 7-12 in school	0.98	0.15	1	0	0	1
Aged 7-12 in primary school	0.92	0.27	1	0	0	1
Aged 13-15 in school	0.84	0.36	1	0	0	1
Aged 13-15 in junior high school	0.61	0.49	1	1	0	1
Do your children work for more than 20 hrs a month, [...]						
Not Including Household Work	0.086	0.28	0	0	0	1
Including Household Work	0.24	0.43	0	0	0	1
Health: Children under 36 months						
Did your children under 36 month receive [...]						
Complete Immunizations for Given Age	0.48	0.50	0	1	0	1
Complete Immunizations	0.43	0.50	0	1	0	1
Complete Immunizations (for children > 10 month)	0.57	0.50	1	1	0	1
Is your children under 36 month [...]						
malnourished by weight-for-age (<2 std. dev.)	0.20	0.40	0	0	0	1
severely malnourished by weight-for-age (<3 std. dev.)	0.040	0.20	0	0	0	1
malnourished by height-for-age (<2 std. dev.)	0.30	0.46	0	1	0	1
severely malnourished by height-for-age (<3 std. dev.)	0.090	0.29	0	0	0	1
malnourished by weight-for-height (<2 std. dev.)	0.097	0.30	0	0	0	1
severely malnourished by weight-for-height (<3 std. dev.)	0.014	0.12	0	0	0	1

3.2.2.4 Trust, Community Participation, and Leadership

For social capital, we collected measures of participation and trust attitudes. For community participation, we asked whether in the last three months, respondents participated in a list of community organizations. The list includes local government organizations (such as *Rukun Tetangga*, *Rukun Warga*, which are the local neighborhood administration and are administratively below the village-level administration), religious, social, sports and arts, or political groups, unions, or some informal credit associations. Also, as a measure of political participation, we asked whether respondents participated in the last presidential, parliamentary, district head and village head elections. Moreover, as a measure of leadership, we also ask whether respondents hold any structural position (i.e., chair, vice-chair, or secretary/treasurer) in these organizations or groups.

Meanwhile, we collected a number of questions to measure trust attitudes. In the first set of trust questions, we ask respondents to rate in a 4-point scale whether they agree that different types of people can be trusted. The list of people includes people in this village, head of the sub-village, head of the village, the district head, people of a different ethnicity, and people of a different religion. We also include a measure of discriminative trust by asking respondents whether they tend to trust people of a same ethnicity and religion as theirs. Next, we also measure trusting behaviors in the community by asking them to rate their willingness to leave their house or children to their neighbors if they need to be away. In addition, we ask them to list friends in the village that they can talk to regarding important issues in their lives.

We also include a measure of respondent beliefs of the trustworthiness of different types of an anonymous other. Respondents were asked to imagine a scenario where they lost a wallet or a purse containing Rp. 200,000 along with an identity card. Respondents were then asked to assess how likely they would get the wallet back with the money intact if it were found by: (i) someone who lives close by; (ii) a stranger; and (iii) a policeman. Respondents can respond on a 4-scale measure from “very likely” to “very unlikely”. Responses to (i) and (ii) can be interpreted as particularized and generalized trust beliefs respectively. Meanwhile, responses to (iii) can be interpreted as trust beliefs of the authorities. Summary statistics of both the participation and trust questions are presented in Table XI.

TABLE XI: COMMUNITY PARTICIPATION AND TRUST

	Mean	Std. dev	Median	IQR	Min	Max
Participate in any organization	0.74	0.44	1	1	0	1
Number of groups	2.04	1.34	2	2	1	11
Holds leadership position in group	0.12	0.33	0	0	0	1
Do you participate in [...]?						
Religious/Adat Groups	0.58	0.49	1	1	0	1
Social Institutions (e.g., school committees, etc.)	0.21	0.41	0	0	0	1
Sports and Arts Groups	0.017	0.13	0	0	0	1
Worker Associations	0.072	0.26	0	0	0	1
Credit Associations	0.22	0.42	0	0	0	1
Number of friends to discuss important issues	0.82	1.08	1	1	0	6
Do you think that [...] can be trusted?						
People in this hamlet	2.92	0.60	3	0	1	4
Head of the hamlet	2.95	0.58	3	0	1	4
Head of the village	3.00	0.56	3	0	1	4
District Head	3.03	0.49	3	0	1	4
People of different ethnicity	2.66	0.60	3	1	1	4
People of different religion	2.52	0.66	3	1	1	4
Willing to help other villagers.	3.34	0.49	3	1	1	4
More trusting of co-ethnics	2.95	0.57	3	0	1	4
Willing to entrust [...] with neighbor						
Child	2.90	0.65	3	0	1	4
House	2.98	0.57	3	0	1	4
How likely will lost wallet return if found by [...]						
Somebody who lives close by	2.87	1.01	3	2	1	4
Police	2.99	0.93	3	1	1	4
Strangers	1.65	0.84	1	1	1	4

TABLE XII: POLITICAL PARTICIPATION AND LEGAL STATUS

	Mean	Std. dev	Median	IQR	Min	Max
Do you participate in [...]?						
Local Governing Institutions (RT/RW)	0.22	0.41	0	0	0	1
Mass or Political Organizations	0.0029	0.054	0	0	0	1
Use their right for election	0.98	0.13	1	0	0	1
Did you vote in the last [...] election?						
Presidential	0.96	0.21	1	0	0	1
Legislative	0.93	0.25	1	0	0	1
District Head	0.94	0.24	1	0	0	1
Village/Nagari Head	0.93	0.25	1	0	0	1
Do you have [...]?						
Birth Certificate	0.24	0.43	0	0	0	1
Marriage Certificate	0.65	0.48	1	1	0	1
Identity Card	0.73	0.44	1	1	0	1
Married under [...] law						
Civil	0.67	0.47	1	1	0	1
Religious	0.32	0.47	0	1	0	1
Cultural	0.017	0.13	0	0	0	1
None (living together)	0.00065	0.025	0	0	0	1

3.2.2.5 Legal Status

Meanwhile, we also include measures of legal status. Some of the problems that many poor households have to face in accessing many of the available pro-poor government programs are often related to their inability to show legal documentations, such as the marriage certificate, the birth certificate of their child, or the government-issued identity cards. We therefore ask respondents regarding their access to each of this important government documents. In addition, we also collected information on the legal status of marriages in the sample, to wit, whether they were conducted under the civil, legal, or traditional law or none of the above. Table XII summarizes the legal status of our sample.

3.2.3 Other Characteristics

Finally, we also collect other additional information that may be useful to control for inter-personal and inter-household differences when we conduct the post-treatment analysis. At the household level, we have information on household composition, that includes the number of members at different age groups. Using this information, we calculated the dependency ratio of the household, which is the number of household members outside of their productive age (i.e., younger than 15 and older than 65 years old) divided by the number of members in their productive years. We also have information on the physical characteristics of their housing, including their different amenities (see Table XIII).

Meanwhile, at the individual-level, we collected information on the respondents' sex, age, and education, as well as their risk and time preference (see summary statistics in Table XIV). We include risk and time preference parameters given findings that these parameters are important determinants for a wide range of behaviors (Schechter, 2007; Dohmen et al., 2011). For risk, we elicit the risk aversion parameter by asking respondents to choose payoffs with different risk levels, which is then used to create an ordinal ordering of risk aversion. Risk aversion is elicited using without real payoffs and there are some concerns about potential biases from this approach. However, the experience from the Mexican Family Life Survey suggests that such biases may not be so severe (Hamoudi, 2006). Meanwhile for time preference, we elicit the time preference (or "patience") parameter by asking respondents to choose different payoffs that give returns at different times from today. The underlying idea is to measure the extent to which individuals are willing to delay "instant gratification" to obtain greater payoff in the future. Similar to the measure of risk aversion, the discount factor is elicited without real payoffs.



TABLE XIII: HOUSEHOLD AND HOUSING CHARACTERISTICS

	Mean	Std. dev	Median	IQR	Min	Max
Household size	4.14	1.90	4	2	1	16
Number of children	1.57	1.35	1	2	0	9
Age 0-6	0.57	0.69	0	1	0	4
Age 7-18	1.01	1.08	1	2	0	7
Number of adults	2.56	1.12	2	1	0	9
Male	1.23	0.75	1	1	0	5
Female	1.34	0.67	1	1	0	5
Dependency ratio	0.65	0.61	0.50	0.75	0	5
House has [...]						
Tile Roof	0.61	0.49	1	1	0	1
Concrete Wall	0.67	0.47	1	1	0	1
Non-Earth Floor	0.88	0.33	1	0	0	1
Clean Water	0.81	0.39	1	0	0	1
State Electricity	0.95	0.22	1	0	0	1
Toilet	0.47	0.50	0	1	0	1
Squatting Latrine	0.94	0.23	1	0	0	1
Cook using:						
Wood/Charcoal	0.60	0.49	1	1	0	1
Kerosene	0.083	0.28	0	0	0	1

TABLE XIV: ADULT CHARACTERISTICS

	Mean	Std. dev	Median	IQR	Min	Max
Female	0.51	0.50	1	1	0	1
Age (years)	39.6	16.7	37	25	16	105
Can read	0.82	0.38	1	0	0	1
Years of education	6.59	4.34	6	6	0	18
Has [...] education						
No schooling	0.12	0.32	0	0	0	1
Some Primary School	0.47	0.50	0	1	0	1
Some Junior High School	0.18	0.38	0	0	0	1
Some Senior High School	0.18	0.39	0	0	0	1
More Than Senior High School	0.057	0.23	0	0	0	1
Risk aversion	2.81	1.38	3	2	0	4
Patience	1.30	0.76	1	0	0	4

IV. Comparisons of Treatment and Control Groups

4.1 Methodology

Recall that the reason for testing whether the treated and control groups are similar is to ensure that any changes in the outcomes of interest that we find after three years can be reasonably attributed to the program, and not to some pre-treatment advantages or disadvantages of the treated groups. In this section, we describe the methodology used to check whether treated and control groups are similar prior to the implementation of the program. We examine the question of whether treatment and control groups are comparable in two iterations. First, we look at whether community-level variables – measured at both village and sub-village levels – are comparable prior to treatment. Second, we look at household- and individual-level variables, and compare the average characteristics of individuals and households in treatment and control groups. The comparisons are implemented in a regression framework, elaborated below.

4.1.1 Community-level Specification

For the community variables, we estimated the following equation:

$$(1) \quad Y_{vd} = \alpha + \beta_T \cdot T_v + X_d \cdot \beta_d + \epsilon_{vd}$$

where Y is the different community characteristics whose balance between treatment and control we are interested in, T is a dummy variable that indicates whether the community will be receiving PEKKA and X are a set of district-level control variables, while v indexes the community while d indexes the district. We collected data on both the village and sub-village characteristics, and hence j may index either the village or the sub-village, depending on the outcome of interest. A statistically significant β_T would indicate that on average, treated communities are different from untreated ones. The model is estimated using ordinary least square (OLS). To account for unobservable variables at the district level, we estimated a model with district fixed-effects and the standard errors are robust-clustered at the village level.

Note, however, that because we have a small sample size of 24 sub-villages with 16 treatment and 8 control sub-villages, these estimates are imprecise and the statistical power of the community-level estimates are low. In other words, the statistical tests will only be able to detect large differences in characteristics.

4.1.2 Household- and Individual-level Specifications

In the second iteration, we look at the household- and individual-level variables. As above, we use the regression framework to make comparisons between households and individuals living in treatment vs control communities. The base specification for household-level variables is as follows:

$$(2) \quad Y_{jvd} = \alpha + \beta_T \cdot T_v + X_d \cdot \beta_d + \epsilon_{jvd}$$

where j indexes the household. To account for district-level unobservable omitted variables, we implemented district fixed-effects and the standard errors are robust-clustered at the village level. All estimates are made using OLS and observations are weighted by their household probabilistic sampling weights. Hence, a statistically significant β_T would indicate

that after controlling for district-level differences, on average, household in treatment and control communities are different. We employ a similar specification to compare the individual-level characteristics of children and adult members of the households. Naturally, here the dependent variables are the individual-level variables.

4.2 Results

The first part of the results section examine whether the sample treatment and control groups are balanced – namely, that their characteristics are not significantly different between the two groups. We use the regression framework to examine possible village-level, household-level or individual-level differences. Meanwhile, in the second part, we use this baseline data to attempt to examine whether poor female-headed households are disadvantaged compared to their male-headed households, and if so, in what way.

4.2.1 Village and Sub-village Characteristics

There are 24 sub-villages in the sample, each is located in a different village. Since village and sub-village data are based on reports of an informant (usually, the village or sub-village head), we have a total of 24 observations. Tables XIV - XVIII present results of our regressions based on Equation 1 to test for statistical differences between treatment and control villages in terms of the village and sub-village characteristics. To account for unobservable district-level variables, we implemented a district fixed-effects. A statistically significant coefficient on the Treatment variable (the first column of these tables) indicate that the difference between treatment and control (sub-)villages are statistically significant. For this analysis, we dropped several variables that do not vary across all villages and sub-villages, such as the sex of the sub-village head (they are all male), the number of hospital located in the sub-village (which was zero), and access to international television broadcast (which is not present).

Based on the village and sub-village observable characteristics, we find that treatment and control sub-villages are comparable. At the village level, there are four variables that are statistically significantly different at 10% between treatment and control sub-villages. Treatment sub-villages are located in villages with a smaller number of sub-villages and a greater share of Moslems (Table XV); in terms of infrastructure, they have a smaller share of households without any electricity and their markets are located further from the village office (Table XVI). Meanwhile, at the sub-village level, treatment sub-villages tend to have a higher average daily wages for male compared to the control sub-villages (Table XVI).

TABLE XV: VILLAGE CHARACTERISTICS: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Village head:					
Is female	-0.125	(-1.14)	0.125	(1.18)	24
Has at least high school edu.	-0.188	(-1.53)	1***	(18.45)	24
Number of sub-village	-1.688*	(-2.34)	7.250***	(10.29)	24
Population (people)	-1278.4	(-2.16)	6795.5***	(10.54)	24
Number of households	-249.6	(-1.67)	1827.5***	(13.95)	24
Share of poor households	-0.181	(-1.89)	0.556***	(7.39)	24
Religious composition – share of:					
Moslems	0.0356*	(2.27)	0.960***	(57.58)	24
Protestants	-0.0256	(-1.27)	0.0287	(1.40)	24
Catholics	-0.00999	(-0.85)	0.0113	(1.02)	24
Buddhists	0.0000313	(0.78)	-1.36e-20	(-0.00)	24
Agricultural village	-0.125	(-1.35)	1***	(19.69)	24

Agricultural village	-0.125	(-1.35)	1***	(19.69)	24
Average daily wage (Rp.)					
Male	725	(0.19)	39587.5***	(11.76)	24
Female	-4275	(-1.37)	27087.5***	(8.79)	24
Average daily working hours	-0.437	(-0.85)	7.250***	(17.05)	24
Education	0.125	(0.67)	0.500***	(5.68)	24
Cash Transfer	-1.04e-17	(-0.00)	0.625**	(3.43)	24
Education	0.188	(1.54)	0.375**	(3.26)	24
Credit	0.188	(0.87)	0.625**	(4.15)	24
Infrastructure	0.125	(1.03)	0.875***	(7.24)	24
Community Empowerment	-0.25	(-1.62)	1***	(20.88)	24
Employment Creation	-0.125	(-0.37)	0.375	(1.83)	24
Agricultural Subsidy	0	(0.00)	0.750***	(4.95)	24
Share of households receiving subsidized rice	0.0125	(0.11)	0.387**	(4.05)	24

Results are estimated using OLS with district fixed-effects. Each line is a separate regression. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

TABLE XVI: VILLAGE INFRASTRUCTURE: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Share of households without electricity	-0.0826*	(-2.25)	0.104*	(2.74)	24
Number of [...] per 1000 person in village					
Hospital	-0.00107	(-0.10)	0.00699	(1.24)	24
Puskesmas	-0.0837	(-1.29)	0.182*	(2.98)	24
Poskesdes	0.16	(1.51)	0.203	(2.06)	24
Posyandu	0.102	(1.64)	0.262***	(5.22)	24
Pharmacy	0.0277	(1.13)	0.0235	(1.60)	24
Number of [...] per 1000 person in village					
Doctors	-0.159	(-0.67)	0.279	(1.38)	24
Skilled Midwives	0.143	(0.36)	0.967**	(3.68)	24
Unskilled Midwives	-0.207	(-0.61)	0.957***	(6.01)	24
Number of [...] per 1000 person in village					
Kindergarten	-0.121	(-0.57)	1.101***	(9.67)	24
Primary School	-0.139	(-1.36)	0.959***	(9.15)	24
Junior High School	0.0383	(0.39)	0.262**	(4.09)	24
Senior High School	0.0745	(0.90)	0.0643	(1.84)	24
Time from village office to nearest [...] (minutes)					
Market	3.063*	(2.52)	6.250***	(5.04)	24
Subdistrict Capital	5.813	(1.16)	13.38**	(3.60)	24
District Capital	2.5	(0.37)	44.38***	(9.67)	24
Cost from village office to nearest [...] (Rp.)					
Market	1075	(1.29)	1187.5	(1.80)	24
Subdistrict Capital	2125	(0.93)	4359.4*	(2.70)	24
District Capital	2046.9	(0.54)	11062.5***	(5.02)	24
Does village have any [...]					
Cooperative?	3.90e-17	(0.00)	0.500**	(4.26)	24
Bank?	-0.0625	(-0.59)	0.250*	(2.88)	24
Does village receive clear broadcast of [...]					
Domestic TV	-0.125	(-1.05)	0.875***	(7.24)	24
Radio	0.0625	(0.42)	0.875***	(6.89)	24
Internet access in the village	0.188	(1.11)	0.125	(1.28)	24
Mobile post office in the village	3.12e-17	(0.00)	0.250*	(3.01)	24

Results are estimated using OLS with district fixed-effects. Each line is a separate regression. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

TABLE XVII: SUB-VILLAGE CHARACTERISTICS: : TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Subvillage head:					
Has at least high school edu.	-0.125	(-0.62)	0.375*	(2.63)	24
Population size	-77.37	(-0.46)	1125.3***	(8.09)	24
Number of households	-17.44	(-0.42)	270.5***	(8.55)	24
Religious composition – share of:					
Moslems	0.0294	(1.04)	0.968***	(36.76)	24
Protestants	0.00188	(0.51)	0.00125	(0.58)	24
Catholics	-0.0312	(-1.22)	0.0312	(1.27)	24
Agricultural subvillage	0.125	(0.69)	0.750***	(5.26)	24
Average daily wage (Rp.)					
Male	8625.0*	(2.31)	33750***	(8.61)	24
Female	1875	(0.41)	26875***	(6.90)	24
Average daily working hours	0.0625	(0.12)	6.875***	(13.72)	24
Experienced [...] in the last 12 months:					
Natural disaster	-0.185	(-1.20)	0.17	(1.24)	20
Failed harvest	0.167	(0.56)	0.630*	(3.04)	23
Commodity price shock	-0.188	(-0.88)	0.500**	(3.11)	24
Share of households receiving subsidized rice	-0.159	(-0.88)	0.661***	(5.62)	24

Results are estimated using OLS with district fixed-effects. Each line is a separate regression. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

TABLE XVIII: SUB-VILLAGE INFRASTRUCTURE: : TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Number of [...] per 1000 person in subvillage					
Puskesmas	-0.00946	(-0.11)	0.0594	(1.23)	24
Poskesdes	0.0342	(0.13)	0.588*	(3.00)	24
Posyandu	0.161	(0.53)	0.928**	(3.22)	24
Pharmacy	0.0376	(0.78)	-1.04e-17	(-0.00)	24
Number of [...] per 1000 person in subvillage					
Kindergarten	-0.168	(-0.27)	2.452***	(4.81)	24
Primary School	-0.42	(-0.71)	1.899**	(3.65)	24
Senior High School	-0.313	(-0.24)	2.022	(1.96)	24
Time from subvillage office to nearest [...] (minutes)					
Market	-1.75	(-0.57)	12.50**	(4.08)	24
Subdistrict Capital	-3.563	(-1.51)	10.13**	(4.24)	24
District Capital	-4.688	(-0.88)	21.88***	(5.28)	24
Cost from subvillage office to nearest [...] (Rp.)					
Market	484.4	(0.47)	2312.5	(2.08)	24
Subdistrict Capital	-415.6	(-0.45)	1937.5	(2.01)	24
District Capital	-1531.3	(-0.59)	7062.5*	(2.90)	24
Does subvillage have any [...]					
Cooperative?	0.0625	(0.45)	0.25	(1.90)	24
Domestic TV	-0.125	(-0.98)	0.875***	(7.71)	24
Radio	-0.188	(-1.57)	1***	(21.94)	24
Internet access in the subvillage	-0.125	(-1.14)	0.125	(1.18)	24
Mobile post office in the subvillage	0.125	(1.83)	-5.55e-17	(-0.00)	24

Results are estimated using OLS with district fixed-effects. Each line is a separate regression. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

4.2.2 Household-level Variables

We conduct a similar exercise for the household variables. For each of the 24 villages, 100 households were selected. This gives us a total of 2,400 observations. We estimated Equation 2 using OLS with district fixed-effects that is weighted by the probability weights of each household. The results for the basic household demographics and housing characteristics are presented in Table XIX; household economic welfare and access to social programs in Table XX; and household assets in Table XXI. As before, a statistically significant coefficient on the Treatment variable indicates meaningful differences between treatment and control households. Overall, we find that on most of the household-level variables, treatment and control households are comparable. As expected in any random assignment, we find some statistically significant differences in some of these variables. Remarkably, there are only two household variables where this difference is statistically significant: Treatment households are, on average, more likely to have access to scholarships (Table XX) and are more likely to have an air conditioner among their assets (Table XXI).



TABLE XIX: HOUSEHOLD AND HOUSING CHARACTERISTICS: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Household size	0.282	(1.94)	3.954***	(32.38)	2400
Number of children	0.195	(2.16)	1.447***	(20.31)	2400
Age 0-6	0.0434	(1.48)	0.540***	(27.56)	2400
Age 7-18	0.152	(2.01)	0.907***	(13.18)	2400
Number of adults	0.0866	(1.12)	2.506***	(31.09)	2400
Male	0.086	(1.46)	1.171***	(20.18)	2400
Female	0.000635	(0.02)	1.335***	(48.69)	2400
Dependency ratio	0.0462	(1.30)	0.618***	(21.68)	2250
House has [...]:					
Tile Roof	0.0144	(0.74)	0.598***	(40.12)	2400
Concrete Wall	-0.0363	(-1.17)	0.689***	(34.91)	2400
Non-earth Floor	-0.0285	(-0.70)	0.896***	(38.04)	2400
Clean Water	0.0291	(0.44)	0.791***	(15.26)	2395
State Electricity	0.0554	(1.22)	0.913***	(21.08)	2400
Toilet	0.0278	(0.47)	0.455***	(13.18)	2400
Squatting Latrine	-0.00948	(-0.43)	0.950***	(48.24)	1261
Wood/Charcoal	-0.0614	(-0.86)	0.640***	(11.54)	2393
Kerosene	-0.0218	(-0.80)	0.0976**	(3.67)	2393

Estimated using OLS with district fixed-effects. Each line is a separate regression. Standard errors are robust and clustered at the village. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

TABLE XX: ECONOMIC WELFARE, ACCESS TO FINANCE AND SOCIAL PROGRAMS: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Monthly per-capita expenditure	10874.1	(0.24)	553557.9***	(19.70)	2386
Monthly per-capita income	180159.7	(1.50)	335771.2**	(3.56)	2400
Household has some savings	-0.0332	(-1.19)	0.438***	(13.43)	2400
Per-capita savings	13609.5	(0.10)	329964.4*	(2.92)	2389
Have loans from [...]					
Bank	-0.0309	(-1.25)	0.155***	(6.44)	2400
Non-Bank Institution (e.g. cooperatives)	-0.0503	(-1.25)	0.181***	(4.47)	2400
Pawn Shops	0.00165	(0.24)	0.0139*	(2.74)	2400
PNPM Program	0.0453	(1.73)	0.0481**	(3.65)	2400
Own Employer	-0.000679	(-0.03)	0.0856***	(4.88)	2400
Loan Sharks	-0.0123	(-0.96)	0.0267	(2.15)	2400
Own Family	0.0102	(0.24)	0.413***	(18.19)	2400
Informal Groups	-0.045	(-1.52)	0.194***	(10.01)	2400
HH member is beneficiary of [...]					
Askeskin	-0.00172	(-0.03)	0.320***	(8.44)	2400
PNPM	0.038	(1.44)	0.0477**	(3.96)	2397
Conditional Cash Transfer (PKH)	0.00279	(1.47)	-0.0000509	(-0.09)	2395
Scholarship	0.0402*	(2.65)	0.0943***	(12.61)	2398
Unconditional Cash Transfer (BLT)	0.0242	(1.27)	0.314***	(18.81)	2400
Subsidized Rice (Raskin)	0.0773	(0.94)	0.610***	(9.24)	2400

Estimated using OLS with district fixed-effects. Each line is a separate regression. Standard errors are robust and clustered at the village. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE XXI: HOUSEHOLD ASSETS: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Land Ownership					
Irrigated Rice Field	0.0282	(0.35)	0.227**	(3.47)	2400
Rainfed Rice Field	0.00306	(0.09)	0.117***	(5.01)	2400
Dry Field	0.0737	(1.53)	0.198***	(7.45)	2400
Land and/or Current House	0.00704	(0.35)	0.866***	(52.90)	2400
Other Land	0.00685	(0.36)	0.0731***	(4.74)	2400
Appliances					
Cupboard	-0.0181	(-1.87)	0.951***	(105.19)	2400
Stove	0.0423	(0.86)	0.646***	(16.35)	2400
Refrigerator	0.0369	(0.87)	0.238***	(8.77)	2400
Rice Cooker	0.0449	(0.91)	0.493***	(12.28)	2400
Fan	0.0621	(1.60)	0.449***	(13.02)	2400
Air Conditioner	0.00964*	(2.62)	0.000255	(0.20)	2400
Radio	-0.046	(-0.93)	0.360***	(9.04)	2400
TV	0.0168	(0.54)	0.769***	(25.32)	2400
DVD	0.0144	(0.44)	0.405***	(18.00)	2400
Parabolic Antenna	-0.0176	(-0.83)	0.194***	(11.40)	2400
Laptop	0.0105	(0.41)	0.0637**	(3.98)	2400
Vehicles					
Mobile Phone	0.0474	(1.35)	0.729***	(20.50)	2400
Bicycle	-0.043	(-1.00)	0.599***	(19.02)	2400
Motorcycle	0.0455	(0.94)	0.645***	(21.05)	2400
Car	-0.000111	(-0.01)	0.0462***	(5.01)	2400
Boat	-0.0253	(-0.54)	0.0736	(1.74)	2400
Motorboat	-0.0243	(-1.33)	0.0335	(1.82)	2400
Farm Animals					
Chicken	-0.06	(-1.41)	0.523***	(16.91)	2400
Goat	-0.00426	(-0.16)	0.0931***	(5.40)	2400
Cow	-0.0371	(-0.90)	0.121**	(4.07)	2400

Estimated using OLS with district fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.2.3 Individual-level Variables

Tables XXII - XXVI compare the characteristics of individual adults while Table XXVII compares those of children between treatment and control groups. Comparisons of these individual variables further suggest that treatment and control groups are broadly comparable. There are some differences between the two groups. In terms of adult characteristics, there are less female adults in the treatment group compared to the control group (Table XXII). Those in treatment group are less likely to be doing housework in the past week and are more likely to be casual workers (Table XXIII). In terms of their subjective assessments of their future, those in the treatment group are, on average, more positive in their outlook compared to those in the control group: They are more likely to think that their future is at least as good – if not better – than the present (Table XXIV).

With regards to community participation and social interactions, adults in the treatment group are more likely to participate in local administrative organizations such as *Rukun Tetangga* or *Rukun Warga*. They also tend to participate in more organizations than those in the control group (Table XXV). However, they tend to have less close friends to discuss important issues in their lives.

Meanwhile, in terms of children human capital, older children – to wit, between 7 and 15 years old – in the treatment group spend more time to work around the house compared to those in the control groups. Children under 36 months are also more likely to receive complete immunizations in the treatment group compared to those in the control group (Table XXVII).



TABLE XXII: ADULT CHARACTERISTICS: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Female	-0.0169*	(-2.24)	0.526***	(84.57)	6632
Age (years)	-1.029	(-1.39)	40.24***	(60.38)	6631
Can read	0.0298	(1.68)	0.800***	(62.52)	6632
Years of education	0.17	(0.48)	6.482***	(23.19)	6632
No schooling	-0.00134	(-0.07)	0.119***	(8.06)	6632
Some Primary school	-0.0259	(-0.66)	0.483***	(16.22)	6632
Some Junior High School	0.0237	(1.79)	0.161***	(16.48)	6632
Some Senior High School	0.000446	(0.02)	0.183***	(9.22)	6632
More Than Senior High School	0.00314	(0.18)	0.0546***	(4.87)	6632
Risk aversion	0.0851	(1.21)	2.755***	(37.86)	3819
Patience	0.0241	(0.41)	1.287***	(30.43)	3828

Estimated using OLS with district fixed-effects. Each line is a separate regression. Standard errors are robust and clustered at the village. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE XXIII: LABOR MARKET CHARACTERISTICS: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Main activity in the past week:					
Working	0.036	(1.14)	0.550***	(37.28)	6632
Looking for work	0.0051	(1.25)	0.0101***	(5.78)	6632
In school	0.00923	(1.57)	0.0428***	(8.06)	6632
Housekeeping	-0.0739*	(-3.09)	0.336***	(21.70)	6632
In labor force	0.0187	(0.69)	0.778***	(29.16)	6632
Employed	0.0177	(0.56)	0.745***	(25.69)	6632
Employed in the [...] sector					
Agriculture	-0.0132	(-0.19)	0.419***	(8.94)	4936
Manufacturing	0.0696	(1.85)	0.148***	(11.87)	4936
Services	-0.0564	(-1.23)	0.434***	(11.71)	4936
Work status:					
Self employed	-0.0398	(-1.68)	0.219***	(9.91)	4939
Self employed w/ unpaid workers	-0.0291	(-2.11)	0.176***	(20.71)	4939
Employer	0.00407	(0.41)	0.0460***	(7.20)	4939
Employee	0.0214	(0.84)	0.261***	(14.97)	4939
Casual Worker	0.0539**	(3.23)	0.0879***	(6.41)	4939
Unpaid	-0.0104	(-0.73)	0.210***	(58.64)	4939

Estimated using OLS with district fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

TABLE XXIV: SUBJECTIVE WELFARE AND MENTAL HEALTH STATUS : TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Believe future is similar to or better than today	0.0109*	(2.60)	0.972***	(289.16)	6632
Subjective ranking of current ability to fulfill needs on [...]					
Health	-0.00775	(-0.65)	0.566***	(53.97)	3821
Food for Children	-0.0143	(-1.11)	0.608***	(42.48)	2631
Health for Children	0.00138	(0.09)	0.590***	(36.93)	2631
Education for Children	0.0165	(0.70)	0.528***	(17.18)	2590
Are you currently happy?	0.0099	(1.46)	0.484***	(70.11)	3827
Index of mental health status:					
Negative states	0.000986	(0.07)	0.157***	(15.42)	3824
Positive states	0.0384	(1.07)	0.613***	(17.66)	3827

Estimated using OLS with district fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

TABLE XXV: COMMUNITY PARTICIPATION AND TRUST: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Participate in any organization	0.000147	(0.00)	0.745***	(23.33)	3829
Number of groups	0.226**	(3.49)	1.888***	(41.75)	2677
Holds leadership position in group	-0.00122	(-0.12)	0.124***	(9.66)	2677
Do you participate in [...]?					
Religious/Adat Groups	-0.00988	(-0.14)	0.588***	(11.09)	3828
Social Institutions (e.g., school committees, neighborhood watch)	-0.0523	(-1.56)	0.242***	(8.10)	3828
Sports and Arts Groups	0.00362	(1.04)	0.0147**	(3.74)	3828
Worker Associations	0.0342	(1.79)	0.0496**	(4.10)	3828
Credit Associations	-0.0359	(-1.22)	0.247***	(7.60)	3828
Number of friends to discuss important issues	-0.262*	(-2.75)	0.994***	(14.15)	3829
Do you think that [...] can be trusted?					
People in this hamlet	-0.00331	(-0.07)	2.927***	(84.68)	3828
Head of the hamlet	0.0194	(0.39)	2.937***	(76.48)	2941
Head of the village	0.054	(0.77)	2.965***	(49.46)	3825
District Head	0.00721	(0.26)	3.027***	(162.26)	3827
People of Different Ethnicities	-0.0112	(-0.22)	2.669***	(60.55)	3827
People of Different Religion	-0.0318	(-0.42)	2.543***	(46.19)	3827
Willing to help other villagers.	-0.103	(-2.13)	3.407***	(104.92)	3828
More trusting of coethnics	-0.0406	(-1.00)	2.982***	(107.11)	3827
Willing to entrust [...] with neighbor					
Child	-0.0326	(-0.61)	2.918***	(83.50)	3828
House	0.0107	(0.22)	2.970***	(75.47)	3827
How likely will lost wallet return if found by [...]					
Somebody who lives close by	0.101	(1.25)	2.799***	(43.12)	3795
Police	0.0167	(0.28)	2.979***	(56.49)	3696
Strangers	0.0514	(0.73)	1.612***	(52.19)	3751

Estimated using OLS with district fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE XXVI: POLITICAL PARTICIPATION AND LEGAL STATUS: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Do you participate in [...]?					
Local Governing Institutions (RT/RW)	0.0569**	(3.38)	0.183***	(6.02)	3828
Mass or Political Organizations	0.00317	(1.98)	0.000793	(1.26)	3828
Use their right for election	0.00279	(0.44)	0.980***	(275.93)	3824
Did you vote in the last [...] election?					
Presidential	-0.00396	(-0.49)	0.958***	(188.24)	3822
Legislative	0.0182	(1.60)	0.921***	(97.52)	3822
District Head	-0.0082	(-0.73)	0.946***	(113.32)	3818
Village/Nagari Head	0.0169	(1.07)	0.920***	(98.81)	3788
Do you have [...]?					
Birth Certificate	0.00345	(0.09)	0.242***	(8.93)	6632
Marriage Certificate	0.0384	(0.79)	0.627***	(15.81)	4659
Identity Card	0.0363	(1.00)	0.705***	(23.20)	6632
Married under [...] law					
Civil	0.0495	(1.01)	0.633***	(15.35)	4656
Religious	-0.0384	(-0.84)	0.342***	-10.16	4656
Cultural	-0.0112	(-0.64)	0.0246	(1.37)	4656
None (living together)	0.0000825	(0.38)	0.000591	(1.29)	4656

Estimated using OLS with district fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE XXVII: CHILDREN EDUCATION AND HEALTH: TREATMENT VS. CONTROL GROUPS

	Treatment		Constant		N
Education: Children 7-15 years old					
Are your children [...]?					
Aged 7-12 in school	0.0012	(0.11)	0.977***	(152.32)	1345
Aged 7-12 in primary school	0.0112	(0.79)	0.910***	(62.62)	1345
Aged 13-15 in school	0.0195	(0.53)	0.830***	(35.22)	686
Aged 13-15 in junior high school	-0.0183	(-0.31)	0.624***	(15.67)	686
Do your children work for more than 20 hrs a month, [...]					
Not Including Household Work					
	0.0157	(0.54)	0.0757**	(3.38)	2324
Including Household Work					
	0.0672**	(4.37)	0.195***	(21.75)	2324
Health: Children under 36 months					
Did your children under 36 month receive [...]					
Complete Immunizations for Given Age					
	0.148*	(2.86)	0.387***	(9.27)	474
Complete Immunizations					
	0.149**	(3.15)	0.336***	(7.95)	492
Complete Immunizations (for children > 10 month)					
	0.174*	(2.58)	0.455***	(8.23)	347
Is your children under 36 month [...]					
malnourished by weight-for-age (<2 std. dev.)					
	-0.00998	(-0.40)	0.202***	(8.67)	584
severely malnourished by weight-for-age (<3 std. dev.)					
	0.00642	(0.24)	0.0357	(1.94)	584
malnourished by height-for-age (<2 std. dev.)					
	0.0269	(0.52)	0.281***	(5.84)	576
severely malnourished by height-for-age (<3 std. dev.)					
	0.0177	(0.61)	0.0782**	(3.27)	576
malnourished by weight-for-height (<2 std. dev.)					
	0.0423	(1.59)	0.0694***	(4.52)	602
severely malnourished by weight-for-height (<3 std. dev.)					
	0.00444	(0.30)	0.0116	(1.06)	602

Estimated using OLS with district fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

V. The relative welfare of female-headed households

This baseline dataset can also provide useful insights regarding welfare in different types of households. One of the rationales for programs such as PEKKA is that female household heads face particular obstacles that limit their social mobility. These obstacles create a welfare disadvantage that may lead to inter-generational transmission of poverty to children in these households. The empirical evidence for this supposed disadvantage, however, has been mixed (see review by Fafchamps and Quisumbing, 2007). A review of existing studies by Buvinić and Gupta (1997) found that female-headed households were disproportionately represented among the poor. However, based on poverty measures using household PCE's, Drèze and Srinivasan (1997) did not find that widows are disproportionately concentrated in poor households in India. Similarly, an analysis of household datasets from 10 developing countries by Quisumbing, Haddad and Peña (2001) found that the differences in the poverty status between male- and female-households are insignificant in eight out of the ten countries, including Indonesia.

Using our dataset, we can do a preliminary analysis of the extent to which poor female-headed households in our sample regions are disadvantaged compared to the male-headed households. Furthermore, we can also compare the individual welfare of female household heads to male household heads or their spouses. There are some caveats. First, naturally these results are descriptive, and should not be interpreted as an analysis of the causal impact of being in a female-headed household or being a female household head.⁷ Second, the findings may not be generalizable beyond our sample population, since villages that are included are not randomly drawn, but are selected from those located in subdistricts with relatively numerous female-headed households compared to other subdistricts in the district. Nonetheless, since PEKKA (and other programs similar to it) is likely to be interested in villages with such characteristics, insights from the following results may be useful in informing designs of program targeted at female-headed households.

5.1 Methodology

The objective of this analysis, therefore, is to examine whether, in terms of their welfare, female-headed households are on average significantly different from male-headed households. As before, we use the regression framework to examine this question. In particular, we estimate the following specification for the household outcomes:

$$(3) \quad Y_{jfd} = \alpha_0 + \beta_D D_j^{fhh} + X_j \cdot \beta_j + X_v \cdot \beta_v + \varepsilon_{jfd}$$

where like before, Y denotes the outcome of interest, X are vectors of control variables, and j and v respectively indexes household, community, and district. D_j^{fhh} is a dummy variable that takes on the value of 1 if household j is female-headed. Estimates are made using OLS and observations are weighted by their household probability weights. We eliminate potential unobservable variables at the village level that might influence the results by implementing a village fixed-effects. Standard errors are clustered at the village level. We utilize a similar framework to examine differences in individual-level variables for the household heads and children living in the different types of households.

We consider two definitions of household headship. The first definition follows the standard definition in national surveys conducted by BPS-Statistics, which is the person in the household who is responsible to provide for the economic needs of the household or who is appointed to be the household head. One criticism of this definition is that the

⁷ Fafchamps and Quisumbing (2007) discuss the difficulties in trying to identify the causal impacts of being in a female household – in particular, the fact that the female household status is often endogenous to many of the outcomes of interest.

latter part of this definition creates an ambiguity with regards to the economic role of the household head. Our second definition, which hereafter is referred to as “economic headship”, sharply distinguishes this economic role by defining the household head as the person responsible for the economic needs of the household. In our discussions of the household head characteristics, we will consider both definitions. We show that the results based on either one of these definitions are similar. As such, in the sections following that discussion, our analysis focuses only on results based on the economic headship definition.

5.2 Household Head Characteristics

We begin by examining differences in the exogenous characteristics of female and male household heads. Table XXVIII presents an individual-level regression of the age, literacy, education, risk aversion and discount factor (or patience) of household heads. These are results from the specification without any control variable. Columns (1) - (3) are results based on BPS’s household head definition, while columns (4) - (6) are results based on the economic household head definition. A statistically significant coefficient on FHH for a particular characteristic would indicate a difference between female- and male-headed household.

Overall, results based on these two definitions give a reasonably similar picture on the relative characteristics of female household heads compared to their male counterparts. Based on the first definition, however, female household heads are about 11 years old older than male household heads. They are also less literate, more likely to have no schooling, and are less likely to have some secondary education. In general, female household heads have about 3.3 years less education than male household heads. These differences are smaller under the economic headship definition, but they are qualitatively similar. Meanwhile, there do not appear to be significant differences between female and male household heads in terms of their risk and time preference parameters.

TABLE XXVIII: COMPARISONS OF INDIVIDUAL CHARACTERISTICS OF HOUSEHOLD HEADS AND SPOUSES

	BPS Definition			Economic HH Head		
	FHH	Constant	N	FHH	Constant	N
	(1)	(2)	(3)	(4)	(5)	(6)
Age (years)	10.74*** (13.57)	46.06*** (367.93)	2391	7.348*** (10.26)	44.34*** (400.81)	2220
Can read	-0.413*** (-9.92)	0.884*** (134.20)	2391	-0.334*** (-8.22)	0.901*** (143.73)	2220
Years of education	-3.321*** (-16.18)	6.288*** (193.80)	2391	-2.741*** (-9.94)	6.523*** (153.08)	2220
No schooling	0.353*** (7.47)	0.0596*** (7.98)	2391	0.270*** (7.05)	0.0508*** (8.59)	2220
Some Primary school	-0.111 (-1.78)	0.591*** (60.03)	2391	-0.0584 (-1.14)	0.578*** (72.86)	2220
Some Junior High School	-0.108*** (-7.10)	0.167*** (69.20)	2391	-0.0888** (-4.02)	0.178*** (52.10)	2220
Some Senior High School	-0.106*** (-6.75)	0.133*** (53.40)	2391	-0.103*** (-6.83)	0.140*** (60.42)	2220
More Than Senior High School	-0.0268 (-1.82)	0.0486*** (20.90)	2391	-0.02 (-1.76)	0.0526*** (30.06)	2220
Risk aversion	0.104 (1.18)	2.764*** (244.05)	1912	0.138 (1.20)	2.753*** (160.63)	1821
Patience	0.0227 (0.31)	1.290*** (137.67)	1919	-0.0122 (-0.20)	1.304*** (144.00)	1828

Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and FHH column contains coefficients for the female-household status in the regression without any individual and household control variables.
t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.3 The Economic Welfare of Female-Headed Households

Hereafter, our analysis will be based on the economic definition of household headship. In this section, we will examine the relative economic characteristics of female-headed households compared to their male-headed counterparts. In most cases, the analysis will be done for two sets of sample. First, we will focus on the full sample. Then, considering the possibility that our findings might hold differently for poorer households, we perform the analysis for a subset of households whose per-capita expenditure are among the lowest two quintiles in our sample population.⁸ We begin by examining differences in the demographic characteristics of the different types of households before looking at the different economic welfare measures.

TABLE XXIX: HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS: FEMALE- VS MALE-HEADED HOUSEHOLDS

	All			Poorest Subset		
	FHH	Constant	N	FHH	Constant	N
Household size	-1.155*** (-10.94)	4.420*** (271.03)	2220	-0.992*** (-5.71)	4.734*** (167.62)	1062
Number of children	-0.708*** (-13.05)	1.734*** (206.88)	2220	-0.752*** (-7.14)	1.998*** (116.66)	1062
Age 0-6	-0.358*** (-10.33)	0.646*** (120.66)	2220	-0.395*** (-12.72)	0.753*** (149.10)	1062
Age 7-18	-0.350*** (-6.66)	1.089*** (133.83)	2220	-0.357* (-3.00)	1.245*** (64.48)	1062
Number of adults	-0.446*** (-5.25)	2.686*** (204.50)	2220	-0.240* (-2.79)	2.736*** (196.20)	1062
Share of female adults	0.274*** (13.64)	0.482*** (155.74)	2220	0.241*** (10.89)	0.492*** (136.76)	1062
Dependency ratio	-0.03 (-0.85)	0.652*** (131.70)	2139	-0.0618 (-1.88)	0.754*** (146.98)	1032

Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and *FHH* column contains coefficients for the female-household status in the regression without any individual and household control variables. Household head status is based on the economic headship definition. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table XXIX present the results of the estimates of raw correlations – i.e., without any control variables – between household demographics and the household type. The first three columns are results from the regressions on the full sample, while the last three are results from the regressions on the poorest subset of the sample. Nonetheless, the results

of the two sets of regressions are similar. The size of female-headed households tend to be smaller by around one member. In most cases, the smaller household size comes from having a smaller number of children. The share of female adults tend to be higher by 27 percentage points in female-headed households. However, there is no difference in terms of the dependency ratio – to wit, the number of people of productive age (15-65 years old) divided by the number of people that are not of the productive age.

Meanwhile, in Table XXX, we find the raw correlations between various economic welfare measures, as well as access to finance and government programs of households. Based on PCE's, we do not find statistically significant disadvantages among female-headed households – in fact, the coefficient on FHH is positive, although it is not statistically significant. However, female-headed households tend to have lower per-capita income and are less likely to have savings.

Moreover, we do not find significant differences in access to finance between female- and male-headed households. On the other hand, female-headed households have better access to the different types of social programs provided by the government, such as the health insurance for the poor (Askeskin), the unconditional cash transfer (BLT) and the subsidized rice (raskin).

⁸

Recall that our sampling procedure oversampled poor households (i.e., households whose PCE – calculated based on a quick expenditure survey prior to the full survey – are in the bottom two quintile) and particular poor female-headed households. Each observation is then given a probability weight based on its poverty status and household type constructed before the full survey. To construct the poorest 40%, we use the probabilistically weighted observations to find the 40th percentile PCE. Households with per-capita expenditure equal to or below this threshold is included in this subset. Because of oversampling of poor households, more than 40% of the sampled households fall under this category.

TABLE XXX: ECONOMIC WELFARE, ACCESS TO FINANCE AND SOCIAL PROGRAMS IN DIFFERENT HOUSEHOLD TYPES

	FHH		Constant		N
Monthly per-capita expenditure	21573.6	(0.68)	552449.8***	(112.64)	2209
Monthly per-capita income	-130184.6**	(-3.44)	495786.0***	(84.78)	2220
Household has some savings	-0.111**	(-4.09)	0.448***	(107.20)	2220
Per-capita savings	-171702.9	(-1.10)	382480.8***	(15.80)	2210
Have loans from [...]					
Bank	-0.0435	(-1.40)	0.148***	(30.91)	2220
Non-Bank Institution (e.g, cooperatives)	-0.00673	(-0.21)	0.156***	(32.26)	2220
Pawn Shops	-0.00196	(-0.22)	0.0161***	(11.51)	2220
PNPM Program	0.0077	(0.61)	0.0806***	(41.07)	2220
Own Employer	-0.0129	(-1.00)	0.0920***	(46.35)	2220
Loan Sharks	0.00249	(0.38)	0.0194***	(18.86)	2220
Own Family	-0.0634	(-1.90)	0.436***	(84.55)	2220
Informal Groups	0.00635	(0.20)	0.174***	(36.16)	2220
HH member is beneficiary of [...]					
Askeskin	0.171**	(3.42)	0.283***	(36.63)	2220
PNPM	0.0192	(1.15)	0.0734***	(28.36)	2218
Conditional Cash Transfer (PKH)	-0.000365	(-0.17)	0.00194***	(5.77)	2216
Scholarship	0.00712	(0.38)	0.125***	(42.59)	2219
Unconditional Cash Transfer (BLT)	0.158***	(4.61)	0.292***	(55.00)	2220
Subsidized Rice (Raskin)	0.143***	(4.66)	0.632***	(132.77)	2220

Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and *FHH* column contains coefficients for the female-household status in the regression without any individual and household control variables. Household head status is based on the economic headship definition. *t* statistics in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

As we have seen in the previous section, female household heads tend to be older and to have less education. The differences in these exogenous characteristics may play a more important role than household types for the aforementioned differences. To explore this possibility, we include the age and years of education of the household head in the regressions for all of our outcome variables. In addition, except for monthly per-capita expenditure and income, and per-capita savings, we also included the logarithm of the per-capita expenditure to control for overall household economic welfare status. As before, we control for unobservable village differences using the village fixed-effects.



TABLE XXXI: ECONOMIC WELFARE, ACCESS TO FINANCE AND SOCIAL PROGRAMS: FEMALE- VS. MALE-HEADED HHS

	FHH	Age (years)	Years of education	Log. PCE
Monthly per-capita expenditure	46586.1 (1.26)	3260 (2.11)	18021.3** (3.56)	290489.3* (3.00)
Monthly per-capita income	23465.1 (0.48)	7544.5 (1.94)	76283.8* (2.94)	-336323.1 (-1.01)
Household has some savings	-0.0359 (-1.29)	-0.00134 (-1.04)	0.0241*** (6.50)	-1.132** (-4.36)
Per-capita savings	1330.6 (0.01)	11988 (2.19)	95590.7** (3.18)	-771333.1 (-1.81)
Have loans from [...]				
Bank	0.00621 (0.24)	0.00152* (2.22)	0.0222*** (7.74)	-0.589 (-2.00)
Non-Bank (e.g. cooperatives)	0.00933 (0.29)	0.00207* (2.53)	0.0110** (3.64)	0.2 (1.64)
Pawn Shops	0.00789 (0.95)	0.000206 (1.74)	0.00410* (3.05)	-0.00864 (-1.38)
PNPM Program	0.00876 (0.87)	-0.00183** (-3.15)	-0.00486 (-1.44)	-0.0263* (-2.52)
Own Employer	-0.00248 (-0.28)	-0.00286*** (-6.71)	-0.00406 (-2.13)	-0.0176 (-1.99)
Loan Sharks	-0.000787 (-0.09)	0.000262 (0.69)	-0.00049 (-0.49)	-0.00313 (-0.77)
Own Family	-0.0588 (-2.08)	-0.00518** (-4.27)	-0.0131* (-3.09)	-0.0960* (-2.91)
Informal Groups	0.0312 (0.85)	0.00139** (3.80)	0.0111** (3.44)	-0.162** (-3.48)
HH member is beneficiary of [...]				
Askeskin	0.153* (3.05)	-0.00153* (-2.39)	-0.0127** (-4.05)	-0.148*** (-5.79)
PNPM	0.021 (2.01)	-0.00169* (-2.89)	-0.00425 (-1.28)	-0.0310* (-2.36)
Conditional Cash Transfer (PKH)	-0.000573 (-0.24)	-0.000071 (-1.95)	-0.000274 (-0.92)	-0.000806 (-1.00)
Scholarship	0.017 (0.97)	0.000631 (1.02)	0.00555 (1.74)	-0.0325 (-1.74)
Unconditional Cash Transfer (BLT)	0.0891* (2.46)	0.0000465 (0.07)	-0.0268*** (-5.68)	-0.0401 (-0.92)
Subsidized Rice (Raskin)	0.0722* (2.73)	-0.00197* (-2.46)	-0.0316*** (-9.33)	-0.109* (-3.04)

*Log(PCE) is not included as a control for the regression of this variable. Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and *FHH* column contains coefficients for the female-household status. Household head status is based on the economic headship definition. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The results of the regressions that control for these characteristics are presented in Table XXXI. They indicate that many of the economic welfare differences between female- and male-headed household found above become insignificant once we control for the education and age of the household head. The lower per-capita income of female-headed households, for instance, appears to be attributable to the lower average education of the female household heads. Nonetheless, even after controlling for household head characteristics and the average welfare of the household, the advantages in access to the different social programs of female-headed households persist.

One possibility, however, is that the supposed economic disadvantages of female-headed households are more severe among poorest households. To investigate this possibility, we take a subset of households with PCE within the first two quintiles in our sample population. Table XXXII present estimations similar to that for Table XXXI on this subset of observations. Our analysis of this subset once more suggests that there do not appear to be many significant differences in household welfare or access to social programs between female- and male-headed households among this poorest subset. We do find two differences: Female-headed households have a lower per-capita income and have better access to the insurance for the poor.



TABLE XXXII: ECONOMIC WELFARE, ACCESS TO FINANCE, SOCIAL PROGRAMS:
FEMALE- VS. MALE-HEADED HHS (POOREST 40%)

	FHH	Age (years)	Years of education	Log. PCE	Constant	N
Monthly per-capita expenditure	-188.2 (-0.04)	140.7 (0.80)	1208.2 (1.77)		288288.0*** (44.34)	1062
Monthly per-capita income	-44236.5** (-3.48)	-1326.3 (-0.84)	11628.8 (1.73)		275798.6* (2.58)	1062
Household has some savings	0.00944 (0.22)	-0.00224** (-3.66)	0.0161** (3.62)	0.122 (2.14)	-1.17 (-1.67)	1062
Per-capita savings	69014.2 (1.24)	2637.2* (2.77)	15219.0* (3.08)		-142700.9 (-2.04)	1060
Have loans from [...]						
Bank	0.00974 (0.46)	0.00121* (2.37)	0.0180** (4.16)	0.00535 (0.23)	-0.116 (-0.37)	1062
Non-Bank (e.g. cooperatives)	-0.0108 (-0.36)	0.00253* (2.47)	0.0117** (3.49)	0.00208 (0.04)	-0.07 (-0.12)	1062
Pawn Shops	0.0159 (1.29)	0.000573 (1.37)	0.00535 (1.69)	0.000587 (0.07)	-0.0477 (-0.35)	1062
PNPM Program	0.0503 (1.54)	-0.000344 (-0.49)	-0.000732 (-0.15)	-0.0133 (-0.55)	0.267 (0.90)	1062
Own Employer	0.00503 (0.15)	-0.00208 (-1.94)	-0.000407 (-0.17)	-0.0247 (-0.55)	0.507 (0.88)	1062
Loan Sharks	0.00452 (0.71)	-0.0000123 (-0.10)	0.000113 (0.26)	-0.00584 (-1.33)	0.0829 (1.55)	1062
Own Family	-0.0213 (-0.34)	-0.00579* (-3.03)	-0.0068 (-1.87)	-0.0855 (-1.34)	1.843* (2.42)	1062
Informal Groups	0.0788 (1.32)	0.00329* (3.02)	0.0213*** (4.80)	-0.256*** (-4.56)	3.202*** (4.80)	1062
HH member is beneficiary of [...]						
Askeskin	0.177** (3.26)	-0.00152 (-1.21)	-0.00385 (-1.13)	-0.191** (-3.99)	2.831*** (4.96)	1062
PNPM	0.0678 (1.66)	-0.000146 (-0.28)	-0.0000931 (-0.02)	-0.0233 (-0.81)	0.374 (1.02)	1061
Conditional Cash Transfer (PKH)	-0.00488 (-1.42)	-0.000163 (-1.30)	-0.000746 (-0.78)	0.0171 (1.24)	-0.199 (-1.22)	1060
Scholarship	-0.0135 (-0.35)	0.000146 (0.10)	-0.00133 (-0.31)	-0.0213 (-0.50)	0.428 (0.90)	1061
Unconditional Cash Transfer (BLT)	0.0175 (0.41)	-0.000611 (-0.38)	-0.0302** (-4.17)	0.00352 (0.03)	0.466 (0.31)	1062
Subsidized Rice (Raskin)	0.0826 (1.92)	-0.00267 (-1.03)	-0.0300*** (-4.67)	-0.246** (-4.28)	4.076*** (6.55)	1062

*Log(PCE) is not included as a control for the regression of this variable. Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and *FHH* column contains coefficients for the female-household status. Household head status is based on the economic headship definition. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Meanwhile, access to productive assets is often cited as among the obstacles faced by female household heads. To explore this possibility, we examine asset composition differentials between the different types of households. Land is one of the very important productive assets in rural societies. However, as shown in Table XXXII, we do not find evidence for the notion that female-headed households are disadvantaged in terms of land ownership. In both the full sample and the sample of poorest households, female-headed households are more likely to own the land and/or the house in which they live. On the other hand, in the full sample, female-headed households are less likely to own other land. This difference, however, is not present among the poorest households. However, in the full sample, female-headed households are also less likely to have many household appliances and the various types of vehicles. They are also less likely to have cows as one of their assets. The differential ownerships of some of these assets, however, are absent in the poorest household subset.



TABLE XXXIII: ASSET OWNERSHIP: FEMALE VS. MALE-HEADED HOUSEHOLDS

	All			Poorest Subset		
	FHH	Constant	N	FHH	Constant	N
Land Ownership						
Irrigated Rice Field	0.00866 (0.61)	0.251*** (115.26)	2220	0.0307* (2.29)	0.264*** (121.12)	1062
Rainfed Rice Field	0.00159 (0.07)	0.120*** (33.55)	2220	0.045 (0.98)	0.0935*** (12.46)	1062
Dry Field	-0.0243 (-1.18)	0.256*** (80.73)	2220	-0.0283 (-0.69)	0.243*** (36.14)	1062
Land for house	0.0728*** (5.42)	0.859*** (414.04)	2220	0.0978*** (6.70)	0.866*** (364.51)	1062
Other Land	-0.0488*** (-5.05)	0.0893*** (59.83)	2220	-0.00729 (-0.37)	0.0498*** (15.50)	1062
Appliances						
Cupboard	0.00247 (0.17)	0.944*** (423.02)	2220	0.0153 (0.60)	0.924*** (221.96)	1062
Stove	-0.148*** (-7.20)	0.708*** (223.59)	2220	-0.109** (-3.37)	0.602*** (114.76)	1062
Refrigerator	-0.0871* (-2.87)	0.283*** (60.29)	2220	-0.0659 (-1.87)	0.153*** (26.71)	1062
Rice Cooker	-0.120* (-2.58)	0.550*** (76.34)	2220	-0.073 (-1.32)	0.416*** (46.23)	1062
Fan	-0.200*** (-7.14)	0.529*** (122.23)	2220	-0.109** (-4.07)	0.381*** (87.30)	1062
Air Conditioner	-0.00541 (-1.78)	0.00532*** (11.36)	2220			
Radio	-0.0813*** (-5.14)	0.346*** (141.82)	2220	-0.0424 (-0.81)	0.340*** (39.83)	1062
TV	-0.212*** (-8.35)	0.831*** (211.95)	2220	-0.170*** (-6.59)	0.767*** (182.65)	1062
DVD	-0.225*** (-6.93)	0.462*** (92.12)	2220	-0.165** (-3.32)	0.372*** (46.16)	1062
Parabolic Antenna	-0.105** (-3.15)	0.209*** (40.73)	2220	-0.0934 (-2.06)	0.167*** (22.64)	1062
Laptop	-0.0114 (-0.66)	0.0729*** (27.16)	2220	-0.0163 (-1.27)	0.0190*** (9.18)	1062
Mobile Phone	-0.195** (-4.43)	0.811*** (119.03)	2220	-0.0796 (-2.14)	0.742*** (123.04)	1062
Vehicles						
Bicycle	-0.144** (-3.40)	0.609*** (93.17)	2220	-0.0688 (-1.42)	0.671*** (85.39)	1062
Motorcycle	-0.335*** (-9.18)	0.755*** (133.86)	2220	-0.257*** (-6.63)	0.657*** (104.16)	1062
Car	-0.0403*** (-9.76)	0.0528*** (82.82)	2220	-0.0127** (-3.44)	0.0151*** (25.10)	1062
Boat	-0.0192 (-1.86)	0.0620*** (38.86)	2220	-0.0233 (-1.52)	0.0773*** (31.00)	1062
Motorboat	-0.00587 (-0.77)	0.0195*** (16.51)	2220	-0.00202 (-0.17)	0.0175*** (9.22)	1062
Farm Animals						
Chicken	-0.0341 (-0.82)	0.496*** (76.99)	2220	0.0199 (0.35)	0.493*** (52.44)	1062
Goat	0.00226 (0.09)	0.0933*** (25.17)	2220	-0.026 (-0.95)	0.114*** (25.77)	1062
Cow	-0.0271* (-2.45)	0.106*** (62.34)	2220	-0.0287 (-1.25)	0.117*** (31.54)	1062

Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and *FHH* column contains coefficients for the female-household status in the regression without any individual and household control variables. Household head status is based on the economic headship definition. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.4 Children's Welfare in Female-Headed Households

We also explore whether there are welfare differentials between children living in different types of households. As mentioned before, if female-headed households faced special challenges, these difficulties may get inter-generationally transmitted to children – among others, by forcing children out of school. Furthermore, if these households are less able to access social services or do not have adequate resources to care for their young, younger children may not receive the necessary health service such as complete immunizations or proper nutrition.

TABLE XXXIV: CHILDREN EDUCATION, HEALTH, AND LABOR FORCE PARTICIPATION: FEMALE- VS MALE-HEADED HOUSEHOLDS

	All			Poorest Subset		
	FHH	Constant	N	FHH	Constant	N
Education: Children 7-15 years old						
Are your children [...]						
Aged 7-12 in school	-0.0314 (-1.59)	0.982*** (560.79)	1293	0.00253 (0.19)	0.974*** (776.89)	709
Aged 7-12 in primary school	-0.00499 (-0.23)	0.920*** (470.52)	1293	0.0361 (1.62)	0.916*** (436.05)	709
Aged 13-15 in school	-0.0743 (-1.41)	0.852*** (128.59)	649	-0.119 (-1.73)	0.815*** (83.85)	339
Aged 13-15 in junior high school	0.00678 (0.10)	0.618*** (74.94)	649	-0.0613 (-0.99)	0.610*** (69.57)	339
Do your children work for more than 20 hrs a month, [...]						
Not Including Household Work	0.0655 (1.96)	0.0817*** (24.45)	2225	0.0244 (0.71)	0.0815*** (22.40)	1218
Including Household Work	0.118* (3.10)	0.230*** (60.27)	2225	0.0257 (0.52)	0.232*** (44.53)	1218
Health: Children under 36 months						
Did your children under 36 month receive [...]						
Complete Immunizations for Given Age	-0.0952 (-1.10)	0.499*** (90.65)	456	-0.185 (-1.58)	0.551*** (49.58)	260
Complete Immunizations	-0.0862 (-1.48)	0.445*** (101.11)	473	-0.194* (-2.41)	0.480*** (61.84)	269
Complete Immunizations (for children > 10 month)	-0.0826 (-1.27)	0.584*** (142.68)	334	-0.157 (-1.61)	0.593*** (68.57)	192
Is your children under 36 month [...]						
malnourished: weight-for-age (<2 std. dev.)	-0.079 (-1.82)	0.204*** (76.29)	560	-0.0224 (-0.29)	0.202*** (27.98)	311
severely malnourished: weight-for-age (<3 std. dev.)	-0.0242 (-1.22)	0.0420*** (34.39)	560	-0.00777 (-0.39)	0.0389*** (21.09)	311
malnourished: height-for-age (<2 std. dev.)	-0.0289 (-0.76)	0.299*** (132.00)	553	0.042 (0.54)	0.347*** (49.42)	306
severely malnourished: height-for-age (<3 std. dev.)	0.00637 (0.14)	0.0870*** (30.90)	553	0.0393 (0.51)	0.0897*** (13.02)	306
malnourished: weight-for-height (<2 std. dev.)	-0.0115 (-0.26)	0.0958*** (28.79)	576	0.0303 (0.44)	0.0773*** (12.45)	319
severely malnourished: weight-for-height (<3 std. dev.)	0.00106 (0.08)	0.0128*** (13.44)	576	-0.0122 (-2.06)	0.0148*** (28.04)	319

Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and FHH column contains coefficients for the female-household status in the regression without any individual and household control variables. Household head status is based on the economic headship definition. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table XXIV looks at whether educational and health status of children varies in different types of households. Again, we find very weak evidence that children in female-headed households are worse off than those in male-headed households. In the full sample, we do not find evidence of differences between female- and male-headed households in the measures of educational and health status of children considered in this analysis. We only find a significant difference in one variable: Older children in female-headed households are more likely to work more than 20 hours a month on both household and non-household work. Meanwhile, in poorer households in the sample, we find that female-headed households are less likely to obtain complete immunizations. We find qualitatively similar results – which are not reported here – when we control for the age and education of the household heads, as well as the log PCE of the households.

5.5 Attitudes, Social Capital, and Leadership of Female Household Heads

In this section, we will look at and compare the different aspects of the individual lives of female household heads. First, we will look at the subjective welfare and mental health status. Then, we examine a number of social capital measures such as trust, tolerance, and participation in the communities. In particular, we will also look at whether individuals assume leadership positions in the groups that they participated in. We will first compare these aspects between female and male household heads. However, given well-documented gender differences in individual preferences and social attitudes (see e.g., Eagly and Crowley, 1986; Croson and Gneezy, 2009; Gaduh, 2012) as well as mental health status,

such as depression (Grigoriadis and Robinson, 2007), we worry that significant differences between the female and male household heads may merely reflect gender effects. Therefore, we also compare between female household heads and the spouses of the male household heads.

There is no significant difference between female and male household heads in terms of whether they think that their overall welfare will get worse. However, overall female household heads assess themselves to be less confident than male household heads in their ability to fulfill their daily needs. In the full sample (the first two sets of columns in Table XXXV), the coefficients on FHH are negative for subjective assessments regarding the ability to fulfill the food and health needs of children are negative. They are even less confident when compared to the spouse of the male household heads. Compared to the spouses, female household heads are also less likely to be confident of their ability to fulfill the needs for their own health, although this difference disappears once we control for age, years of education, and the logarithm of household per-capita expenditure.

When we look at only the poorest subsets of our sample (Panel B in Table XXXV), however, most of these differences in the subjective assessments of their ability to fulfill the needs of their households disappear. Without the control variables, the coefficient for the regression on fulfilling the health needs of children was negative and significant in the comparison between female and male household heads, but its significance disappears when age, education, and per-capita expenditure variables are included. Similarly, significant differences between female household heads and spouses of male household heads among the poorest subsets are not robust to the inclusion of these control variables.

Nonetheless, female household heads are less happy with their lives overall compared to male household heads or their spouses. These differences are present in the full sample as well as the subset of only the poorest households, and they are robust to the inclusion of the aforementioned control variables. One plausible explanation is that the stress from being the single provider for the household might have taken a toll on their mental health. In Table XXVI we find evidence that female household heads tend to experience negative mental states more frequently than male household heads. When we looked at individual questions on mental health, we find female household heads more often experience difficulties to sleep, depression, loneliness, fearfulness, and are less likely to feel happy compare to male household heads, both in the full sample and poorest household subset. It is possible that these results simply reflect gender effects given the higher incidences of depression among women (Grigoriadis and Robinson, 2007). However, similar findings in our comparisons between female household heads and spouses of male household heads suggest that gender differences cannot fully account for these differences.⁹



⁹ Ideally, to test whether these results come from the responsibility for being a single provider or uniquely from the female household head status, we would like to compare between female and male household heads in households with a single provider. However, we do not have a large enough single-provider households with male household heads.

TABLE XXXV: SUBJECTIVE WELFARE RANKING: FEMALE VS MALE HOUSEHOLD HEADS AND SPOUSE

	Vs. Male Household Head				Vs. Spouse of Male Household Head			
	Without Control Variables*		With Control Variables**		Without Control Variables*		With Control Variables**	
	FHH	N	FHH	N	FHH	N	FHH	N
A. FULL SAMPLE								
Future will be similar or better than now	-0.00828 (-0.48)	2220	-0.00335 (-0.20)	2209	-0.00983 (-0.68)	2107	-0.00538 (-0.34)	2098
Subjective ranking: Current ability to fulfill needs on [...]								
Health	-0.0242 (-1.83)	1826	0.00643 (0.41)	1822	-0.0528*** (-5.27)	1924	-0.0163 (-1.22)	1919
Food for Children	-0.0750** (-3.50)	1259	-0.0480* (-2.73)	1256	-0.0995*** (-4.64)	1334	-0.0598** (-3.93)	1330
Health for Children	-0.0482*** (-4.84)	1259	-0.0221* (-2.68)	1256	-0.0943*** (-9.75)	1334	-0.0608** (-3.69)	1330
Education for Children	-0.047 (-1.71)	1241	-0.0249 (-1.06)	1238	-0.0854** (-3.50)	1315	-0.0747* (-2.94)	1311
Are you currently happy?	-0.0541*** (-5.99)	1828	-0.0411*** (-4.87)	1823	-0.0484*** (-7.35)	1928	-0.0307*** (-4.97)	1922
B. POOREST SUBSET								
Future will be similar or better than now	-0.00603 (-0.44)	1062	-0.00539 (-0.40)	1062	-0.0114 (-0.76)	1023	-0.0134 (-0.99)	1023
Subjective ranking: Current ability to fulfill needs on [...]								
Health	-0.0258 (-1.67)	888	0.00496 (0.45)	888	-0.0515** (-3.20)	938	-0.0242 (-1.84)	938
Food for Children	-0.0602 (-1.85)	653	-0.0351 (-1.13)	653	-0.0831* (-2.22)	690	-0.0398 (-1.36)	690
Health for Children	-0.0346* (-2.34)	653	-0.00335 (-0.24)	653	-0.0664* (-2.92)	689	-0.0324 (-1.37)	689
Education for Children	-0.0437 (-0.95)	642	-0.0255 (-0.64)	642	-0.0815 (-1.60)	680	-0.0827 (-1.55)	680
Are you currently happy?	-0.0523*** (-5.77)	888	-0.0388*** (-5.21)	888	-0.0458*** (-4.69)	940	-0.0322** (-3.84)	940

*Constant is included but not shown. **Controlled variables included in the regressions but not shown are: age, years of education, and logarithm of the household PCE.

Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and FHH column contains coefficients for the female-household status. Household head status is based on the economic headship definition. *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE XXXVI: MENTAL HEALTH STATUS: FEMALE VS MALE HOUSEHOLD HEADS AND SPOUSE

		Vs. Male Household Head				Vs. Spouse of Male Household Head						
		Without Control Variables*		With Control Variables**		Without Control Variables*		With Control Variables**				
		FHH	N	FHH	N	FHH	N	FHH	N			
A. FULL SAMPLE												
How often do you feel [...]?												
Annoyed	-0.00626	(-0.21)	1828	-0.0032	(-0.11)	1823	0.0031	(0.23)	1928	-0.0034	(-0.15)	1922
Difficult to concentrate	0.0633	(0.99)	1828	0.0402	(0.63)	1823	0.0497	(0.97)	1928	0.0203	(0.34)	1922
Difficult to sleep	0.217*	(2.91)	1828	0.166	(2.15)	1823	0.132*	(2.21)	1928	0.0526	(0.81)	1922
Depressed	0.148*	(3.10)	1827	0.136*	(2.53)	1822	0.143**	(3.83)	1927	0.105*	(2.95)	1921
Lonely	0.397***	(4.95)	1827	0.353**	(4.31)	1822	0.384***	(5.09)	1928	0.351**	(4.27)	1922
Scared	0.131***	(4.89)	1827	0.139***	(4.47)	1822	0.0119	(0.33)	1928	0.0551	(1.62)	1922
Difficult to start something	0.036	(0.51)	1828	0.0221	(0.33)	1823	0.0706	(1.49)	1928	0.0394	(0.76)	1922
Have tried everything	0.0676	(0.79)	1828	0.134	(1.45)	1823	0.195*	(2.52)	1928	0.206**	(3.12)	1922
Happy	-0.219***	(-4.51)	1827	-0.137*	(-2.89)	1822	-0.0951	(-1.11)	1928	-0.0457	(-0.49)	1922
Have good future	-0.025	(-0.39)	1828	0.00474	(0.07)	1823	0.0306	(0.46)	1928	0.0438	(0.73)	1922
Index of Mental Status:												
Negative states	0.0441***	(5.15)	1825	0.0411***	(5.12)	1820	0.0411***	(6.53)	1927	0.0342***	(6.90)	1921
Positive states	-0.0403**	(-3.16)	1827	-0.0221	(-1.52)	1822	-0.0107	(-0.54)	1928	-0.00032	(-0.02)	1922
B. POOREST SUBSET												
How often do you feel [...]?												
Annoyed	0.0176	(0.42)	888	0.0345	(0.79)	888	-0.012	(-0.39)	940	-0.0165	(-0.42)	940
Difficult to concentrate	0.121*	(2.39)	888	0.114	(1.87)	888	0.148*	(2.44)	940	0.119*	(2.54)	940
Difficult to sleep	0.401**	(3.77)	888	0.355*	(3.08)	888	0.309**	(3.19)	940	0.243*	(2.57)	940
Depressed	0.212**	(3.35)	888	0.192*	(2.83)	888	0.238**	(3.36)	940	0.234**	(4.02)	940
Lonely	0.278**	(3.85)	888	0.233*	(2.91)	888	0.263***	(5.39)	940	0.221**	(3.84)	940
Scared	0.0629	(1.63)	888	0.0823*	(2.48)	888	0.02	(0.61)	940	0.048	(1.31)	940
Difficult to start something	0.0737	(0.88)	888	0.0637	(0.81)	888	0.130*	(2.57)	940	0.0949	(1.68)	940
Have tried everything	0.176	(1.42)	888	0.232	(2.13)	888	0.253	(1.72)	940	0.254	(1.64)	940
Happy	-0.175*	(-2.63)	888	-0.121	(-1.91)	888	-0.0688	(-0.51)	940	-0.0301	(-0.20)	940
Have good future	0.0919	(1.14)	888	0.124	(1.26)	888	0.00334	(0.05)	940	-0.00653	(-0.10)	940
Index of Mental Status:												
Negative states	0.0560***	(5.09)	888	0.0544**	(4.41)	888	0.0562***	(5.48)	940	0.0499***	(4.91)	940
Positive states	-0.0138	(-0.68)	888	0.000583	(0.03)	888	-0.0109	(-0.33)	940	-0.00611	(-0.19)	940

*Constant is included but not shown. **Controlled variables included in the regressions but not shown are: age, years of education, and logarithm of the household PCE. Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and FHH column contains coefficients for the female-household status. Household head status is based on the economic headship definition. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

Next, we look at differences in the social capital. We first look at helpfulness and trusting attitudes. If female headed households receive unequal treatments from their communities, we would expect them to be less trusting of their neighbors and less willing to contribute and participate to their communities. Table XXXVII looks at the social cooperative attitudes while Table XXXVIII explores the question of community participation.

Our results on the social cooperative attitudes suggest that here, gender effects appear to play an important role in explaining differences in attitudes. Compared to male household heads, female household heads are less trusting of strangers, people of different religion and ethnicities, and consequently are more trusting of coethnics, and are less willing to help their neighbors. These differences in the level of trust however are consistent with previous findings on gender differences in trust (Croson and Gneezy, 2009) and helpfulness (Eagly and Crowley, 1986). Similar results on Indonesia were also found in a study that utilized the national-level dataset, namely the Indonesian Family Life Survey (Gaduh, 2012). Further evidence of this can be seen here in the comparisons between female household heads and the spouses of male household heads: In all social cooperative attitude variables in the full sample, none of the coefficients is significant. We find similar results in the poorest household subset, except for one variable: Female household heads appear to be more trusting of the district head compared to male household heads and their spouses.

Meanwhile, in terms of community participation, there is no difference in the overall likelihood that female household heads participate compared to male household heads or their spouses (Table XXXVIII). Female household heads are also neither more or less likely to hold leadership positions in the groups they participated in compared to male household heads. However, we find that women and men tend to participate in different types of community organizations. There is hardly any difference in the various aspects of community participation between female household heads and spouses of male household heads. However, in the full sample, female household heads are more likely to participate in credit associations and less likely to participate in sports/arts and worker associations. Female household heads are also more likely to participate in religious or adat groups compared to both male household heads and their spouses, but these differences are not robust to the inclusion of the control variables in the regressions. Most of these differences disappear in the poor household subset. Interestingly, in the poorest household subset, female household heads tend to participate more compared to the male household heads.



TABLE XXXVIII: COMMUNITY PARTICIPATION AND LEADERSHIP: FEMALE VS. MALE HOUSEHOLD HEADS AND SPOUSE

	Vs. Male Household Head			Vs. Spouse of Male Household Head		
	FHH	N		FHH	N	
A. FULL SAMPLE						
Participate in any organization	0.0545 (1.57)	1828	0.0449 (1.57)	0.019 (0.91)	1823	-0.0248 (-1.47) 1923
Number of groups	0.0897 (0.54)	1277	0.195 (1.22)	0.178 (1.93)	1273	0.078 (1.54) 1365
Holds leadership position in group	-0.0732 (-1.82)	1277	-0.0313 (-0.94)	0.000113 (0.00)	1273	0.0177 (0.57) 1365
Do you participate in [...]?						
Religious/Adat Groups	0.107* (2.21)	1828	0.0677 (1.51)	0.100* (2.54)	1823	-0.0121 (-0.35) 1922
Social Institutions (e.g., school committees, neighborhood watch)	-0.0276 (-0.60)	1828	-0.00154 (-0.04)	-0.0544 (-1.82)	1823	-0.00406 (-0.12) 1922
Sports and Arts Groups	-0.0266*** (-4.86)	1828	-0.0147* (-2.21)	-0.00261 (-0.42)	1823	-0.00183 (-0.26) 1922
Worker Associations	-0.0764** (-4.18)	1828	-0.0846** (-3.97)	0.0173 (1.05)	1823	0.0133 (0.84) 1922
Credit Associations	0.164** (3.89)	1828	0.180** (4.03)	0.0114 (0.51)	1823	-0.011 (-0.46) 1922
B. POOREST SUBSET						
Participate in any organization	0.0592 (1.86)	888	0.0597* (2.26)	0.00529 (0.18)	888	-0.0241 (-1.31) 940
Number of groups	0.165 (1.25)	635	0.296 (1.41)	0.308 (1.73)	635	0.204 (1.63) 683
Holds leadership position in group	-0.0368 (-0.73)	635	-0.00366 (-0.08)	0.0409 (1.03)	635	0.0588 (1.54) 683
Do you participate in [...]?						
Religious/Adat Groups	0.088 (1.12)	888	0.0494 (0.56)	0.0615 (0.92)	888	-0.0424 (-0.72) 940
Social Institutions (e.g., school committees, neighborhood watch)	-0.0104 (-0.21)	888	0.0235 (0.55)	-0.021 (-0.56)	888	0.0432 (0.86) 940
Sports and Arts Groups	-0.0223* (-2.24)	888	-0.00759 (-0.67)	0.00616 (0.84)	888	0.00783 (0.92) 940
Worker Associations	-0.0664 (-1.49)	888	-0.0801 (-1.70)	0.0435 (1.19)	888	0.0406 (1.14) 940
Credit Associations	0.181*** (5.83)	888	0.209** (4.19)	0.0252 (1.08)	888	0.00416 (0.16) 940

*Constant is included but not shown. **Controlled variables included in the regressions but not shown are: age, years of education, and logarithm of the household PCE. Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and FHH column contains coefficients for the female-household status. Household head status is based on the economic headship definition. t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.6 Political Participation and Legal Access of Female Household Heads

Moreover, we also find that female household heads tend to participate less in political organizations compared to male household heads. As shown in Table XXXIX, in the full sample, female household heads are less likely to participate in local governing institutions (such as the *Rukun Tetangga* or *Rukun Warga*) and mass or political organizations, while in the subset, the difference is only robust for the latter. These differences are robust to the inclusion of the aforementioned individual and household characteristics. However we do not find such differences when we compare female household heads with spouses of male household heads. In terms of their use of their political rights in elections, we do not find robust differences between female and male household heads. Female household heads appear to be less likely to use their political rights compared to spouses of male household heads when we control for characteristics.

In terms of access to legal documents, we find mixed evidence. In the full sample, female household heads appear to be less likely to have access to the different legal documents. However, when we control for age, education, and the logarithm of per-capita expenditure, we find female household heads to be more likely to have access to birth certificate, but less likely to have access to the identity card. We do not find statistically significant differences in terms of access to the marriage certificate. When we compare with spouses, we again find that female household heads have less access to birth and marriage certificate when the control variables are not included; however, these disadvantages disappear once the control variables are included. In fact, female household heads are more likely to have access to the identity card compared to spouses. We find similar results for the poorest household subset. When we examine the control variables in the regressions (which are not reported here), we find that years of education appear to play a significant role in increasing the likelihood of having access to these legal documents.

Meanwhile, we also find that female household heads are less likely to have been married under the civil law (which tends to confer better legal protection) and are more likely to be married under the religious law. Again, these differences disappear once we control for age, years of education and per-capita expenditure. As before, our examination of the control variables (which are not reported here) indicates that among the control variables, the years of education is the only important variable explaining the likelihood of marrying under the civil vs. religious law. Furthermore, given the weaker legal standings of marriages under the religious law, we would also expect that in many cases, the female household status might have been the result, and not the cause, of the choice of the marriage's legal arrangements.



TABLE XXXIX: POLITICAL PARTICIPATION AND LEGAL STATUS: FEMALE VS MALE HOUSEHOLD HEADS AND SPOUSE

	Vs. Male Household Head		Vs. Spouse of Male Household Head	
	FHH	N	FHH	N
A. FULL SAMPLE				
Do you participate in [...]?				
Local Governing Institutions (RT/RW)	-0.137** (-3.31)	1828	-0.0264 (-1.39)	1922
Mass or Political Organizations	-0.00683** (-3.12)	1828	-0.00129 (-1.02)	1922
Use their right for election	-0.0076 (-1.07)	1828	-0.0172* (-2.50)	1919
Presidential	-0.00312 (-0.30)	1826	-0.0270** (-3.34)	1919
Legislative	0.0105 (0.51)	1826	-0.0114 (-0.77)	1919
District Head	-0.00307 (-0.17)	1824	-0.0327 (-2.10)	1917
Village/Nagari Head	0.0296* (2.44)	1812	-0.0104 (-0.87)	1899
Do you have [...]?				
Birth Certificate	-0.103*** (-9.73)	2220	0.00714 (0.67)	2098
Marriage Certificate	-0.0981* (-2.83)	2105	-0.00166 (-0.05)	2075
Identity Card	-0.121*** (-6.68)	2220	0.0781** (3.29)	2098
Married under [...] law?				
Civil	-0.0847* (-2.63)	2104	0.00639 (0.19)	2074
Religious	0.0727* (2.20)	2104	-0.0169 (-0.50)	2074
Cultural	0.012 (1.90)	2104	0.0105 (1.26)	2074
B. POOREST SUBSET				
Do you participate in [...]?				
Local Governing Institutions (RT/RW)	-0.172* (-2.66)	888	-0.0535 (-1.11)	940
Mass or Political Organizations	-0.00417* (-3.09)	888	888	939
Use their right for election	0.0012 (0.21)	888	-0.000457 (-0.10)	939
Presidential	-0.00405 (-0.33)	887	-0.0117 (-0.82)	939
Legislative	0.00937 (0.48)	887	0.00469 (0.37)	939
District Head	-0.00914 (-0.56)	888	-0.0159 (-1.33)	937
Village/Nagari Head	0.0248** (3.54)	884	0.015 (1.28)	932
Do you have [...]?				
Birth Certificate	-0.0902** (-3.27)	1062	0.024 (0.98)	1023
Marriage Certificate	-0.111* (-2.55)	1007	-0.0284 (-0.98)	1011
Identity Card	-0.135*** (-6.41)	1062	0.0649 (1.65)	1023
Married under [...] law?				
Civil	-0.0945* (-2.21)	1006	-0.0253 (-0.83)	1010
Religious	0.0875 (2.08)	1006	0.0207 (0.66)	1010
Cultural	0.00699 (2.01)	1006	0.00466 (0.95)	1010

*Constant is included but not shown. **Controlled variables included in the regressions but not shown are: age, years of education, and logarithm of the household PCE. Estimated using OLS with village fixed-effects. Standard errors are robust and clustered at the village. Each line is a separate regression and FHH column contains coefficients for the female-household status. Household head status is based on the economic headship definition. *t* statistics in parentheses. * p<0.05, ** p<0.01, *** p<0.001

VI. Conclusion

We use the baseline dataset for PEKKA impact evaluation to examine two questions. First, we examine the extent to which villages, sub-villages, households, and individuals in treatment and control villages are comparable. On this question, we find that the two groups are comparable with some minor differences. Second, we also examine the question of whether female household heads and members of their households are systematically disadvantaged in all dimensions. On this second question, we do not find strong evidence in the affirmative.

On the difference between treatment and comparison groups, the baseline data suggest that at various levels of aggregation (village/sub-village, household, individual), the two groups are comparable. We find minor differences in baseline community characteristics between two groups. Similarly, households in the two groups are also comparable in their characteristics. In terms of the individual characteristics, there are less female adults in the treatment group compared to the control group. Adults in the treatment group tend to participate in more organizations, and are also more likely to participate in local governing organizations such as *Rukun Tetangga* or *Rukun Warga*. Children under three years old are also more likely to receive complete immunizations in the treatment group. However, in many other individual characteristics listed above, the two groups are similar. At any rate, in the final analysis, we can utilize the baseline characteristics to control for pre-treatment differences.

Meanwhile, in terms of the difference between female- and male-headed households, we do not find evidence for the claim that female-headed households are disadvantaged across all dimensions. We find that female household heads tend to be older and less educated compared to the male household heads. However, we find no differences in per-capita expenditure between female- and male-headed households – both in the overall sample and the poor household sample. Female-headed households have lower per-capita income, but in the overall sample, the difference disappears after we control for age and education. We also do not find strong evidence for this claim when we examine differences in access to financial services and government social programs, or in assets. In terms of access to legal documents, female household heads are somewhat disadvantaged, but these disadvantages appear to be correlated more with their level of education instead of their female household head status. We find similar results for the law under which their marriage is certified.

At the same time, we find that female household heads have a lower subjective welfare and a bleaker view of their future. They are also more likely to experience negative mental states (such as loneliness and depression) and are less likely to experience positive mental states (such as the feeling of happiness) compared to male household heads. These results persist when we control for age and education. The results also do not seem to be rooted in gender effects, since female household heads have a lower subjective welfare and are more likely to be in a negative mental state when compared to the spouses of male household heads.

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