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Women and Household Cash Management: Evidence from Financial Diaries in India

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Abstract

Using an innovative data-set that involved 90 poor women logging-in daily household financial diaries for a period of eleven months in 2008-09 in the town of Ramanagaram, Karnataka, India; we address the following question – do women use money differently from men? Comparing weekly cash-expenses of 19 women headed households with similar male-headed households; we arrived at several nuanced conclusions. For example, among the poorest households, women showed greater tendency towards spending household cash on food-items and they had lower spending on fuel and entertainment as compared to the male-headed households. Among the micro-finance borrowers in our sample, the poorest among the women headed households showed a spending on jewelry, in contrast to the borrowers in the male headed households spending on household assets. Financial diaries data being more fine-grained and detailed than one-off surveys, allows us to generalize these results for the urban-poor working in the informal sector in India.

Keywords: women, financial diaries, women-headed households, Micro-finance India.

1. Introduction

Do women use money differently from men? This question is at the heart of research trying to decipher whether increase in female incomes within a household, especially poor households, leads to different outcomes in terms of health, nutrition and education. A question related to this, but with a broader perspective also gets asked about women as decision makers in public spheres (village chief or the local municipality head) - do public funds get diverted to more meaningful infrastructural usage like drinking water and schools when women are in charge of spending them (Chatopadhyay and Duflo, 2004)? A more controversial issue surrounding this question is tackled at length in vast microfinance literature, of whether the promotion of micro credit to women leads to their economic empowerment (Mayoux, 1999). There is increasing evidence being cited of how microfinance programs do not take into consideration the wider aspects of gender relations in a family (Goetz & Sengupta, 1996, Rahman, 1999 and Johnson, 2005). This question also lies at the root of contentious feminist debates about whether work can, if at all, bring about positive changes in a woman's life or her position in the household and society, especially in the lives of poor women living in developing economies (Mayoux 1995, Kabeer 1997).

Majority of the studies trying to answer these questions resort to household or individual surveys eliciting information on income, assets, expenditure, work status, health, education and financial status, response to shocks and some indicators on decision making. Surveys have been used to find more nuanced relationships between the kind of work that women do (work from home, work in the informal sector, work in garment factories) and outcomes on poverty (Kantor, 2008). Lake and Munshi (2011) for example, have gone on to analyse how female earnings impact the more long-run decisions about the educational attainment of children, their marriage choice and their future mobility. We believe that surveys along with other mixed methods (focused group discussions, unstructured interviews and narratives with women) do give a snap-shot about household characteristics and their economic outcomes. However, imputing causality between female earnings and measurable outcomes like assets, health, education, mortality, or even the more difficult to measure outcomes like agency and power to negotiate might be spurious, due to certain over-arching contextual factors like social norms, traditions or culture (Razavi, 1999). To take into account this problem of agency while answering our question: *"do women inherently*

handle money differently from men?"; we have to go beyond surveys and other methodologies that give a snap-shot picture of the households at a point of time. We need to understand how women handle money and how they manage their household expenses when they are given complete choice and freedom in running their households on a day-to-day basis. Would it be any different from situations when they may not be having this choice? The data calls for a more fine-grained, dynamic methodology, focusing on periodic household cash flows. The methodology of financial diaries among the poor, pioneered by Stuart Rutherford (2001) can be aptly used to answer this question. This methodology involves daily tracking of cash inflows and cash outflows of poor households with a view to recording the financial transactions of the household (income, expenditure, saving, borrowing and investment). It is compiled by means of periodic (weekly or fortnightly) interviews with a chosen sample of households over a long period of time, generally a year. Financial Diaries as an instrument for study of the financial practices of the poor and very poor was first carried out in Bangladesh by Stuart Rutherford and in India by Orlanda Ruthven and was extended by Daryl Collins in South Africa (Collins, et.al, 2009).

Studying 'decision-making agency' is not easy, as there are no clear-cut definitions, indicators and measures that are routinely used (Halovoet, 2005). We are upfront in stating that we are not directly measuring "agency" through the financial diaries methodology. However, we do have in our sample, a set of financial diaries of households that are headed by women, where women are the primary bread-earners and decision-makers. In our study, we had asked the women in all our chosen households to be our diary-writers. We were in regular contact with them during the process of collation of their diaries over an eleven-month period. This helped us understand who was in charge of running their households. Therefore, we came close to tackling the issue of agency with the women headed households. Agency is a complex issue, and we wanted to avoid setting norms ex-ante, on what genuine decision-making agency has to be. In the women headed households, it was our diary-writers (the women) who took the day-to-day cash-flow decisions of the house and we were clear that they had the agency insofar as these household financial decisions were concerned.

Women headed households occupy an important place in the literature on gender and development (Varley, 1996). We do not get into the reasons for the prevalence of such households and why women headed households are more vulnerable (Appleton, S., 1996). Instead, we carry out an exercise that has not been done before in this literature. We take financial diaries of similar households of type (a) where the woman is the head of the household and the primary earning member and compare them to households of type (b) where the woman is not the primary breadwinner and the man is the head of the household and the main income earner. We agree that in the non-women headed households, the issue of agency is not very clear. The women were either housewives or secondary earners; and though they were our diary writers, it seems quite likely that the household spending decisions were taken by the head of the household (a male) or jointly by both of them, the norm among them being that if the male is the primary income earner then he has a major say in the financial decisions of the households. We are thus in a better position to answer our question if the daily use of moneys is different in type (a) as compared to type (b), especially when we control for other structural differences between these two groups. Therefore comparing the financial diaries of both these sets of households under similar circumstances enables us to answer our basic question: *"Do women use money differently than men?"*.

We plan to do this in the following sections. Section 2 will give the context of our financial diaries project, called the Ramanagaram Financial Diaries. This project entailed logging-in of daily financial diaries of 90 poor households for a period of 11 months from September 2008 to July 2009 at Ramanagaram, in the southern state of Karnataka, India. Section 3 will describe the data set and the methodology used in detail. In section 4 we give the analysis. We begin with the 19 female-headed households in our sample, and compare their weekly consumption decisions with the remaining 71 households in the sample. One of the aims of the Ramanagaram financial diaries project was to study the cash flows of microfinance borrowers to understand the actual use made of the Microfinance (MFI) loans. We use this information to splice the data related to MFI borrowers further into two sub-sets (a) households where women are the primary decision makers and (b) where women are not the primary decision makers. This perspective is important because bulk of the microfinance credit in India is still directed towards women. Access to MFI loans therefore was a crucial structural factor to be considered. It would be crucial to know

whether MFI borrowers who are women and the head of their households take their financial decisions differently from those MFI borrowers, also women, but who are not the heads of their households. This will shed some more light on the debate about whether microfinance interventions routed through women have any impact on their decision-making spaces (Deshmukh-Ranadive, 2005). Lastly, we also make a distinction between the various households in our sample on the basis of assets in the household; and test the same question for sub-groups (a) and (b), but with the additional information on the economic class they belong to. In sections 5.1 and 5.2 we describe our procedure of classifying our households on the basis of assets-indicator and carry out a similar analysis. Our main results are discussed in section 6 and section 7 concludes.

2. Context – Ramanagaram Financial Diaries

The Ramanagaram Financial Diaries was a research project spanning around 18 months (including the pilot) that we carried out in 2007-09 in Ramanagaram town in the southern state of Karnataka, India. We initiated this project, specifically to understand the daily cash flows of urban poor households (many of who had borrowed moneys from MFIs) with the aim of tracking the actual use made of these MFI loans, as opposed to the stated purpose (Reference Withheld, 2010). Ramanagaram is a town, 60 kms. away from the city of Bangalore, on the Bangalore-Mysore highway in Karnataka. It was once known as the "silk capital of the country", with its proliferation of silk weaving units. Today, with the downturn in the indigenous silk industry, Ramanagaram is seeing an increasing informalisation of these silk or 'filature' units. Employment opportunities are not so easy to come by as Bangalore, and migration to Bangalore has increased. Two contiguous poor areas in Ramanagaram – Hajinagar and Ambedkarnagar, having a proliferation of Women's Microfinance Groups were chosen to be our study area and our initial participants would come from such MFI credit-groups. The financial diaries methodology involves repeated interactions with participants, giving an opportunity to researchers to get to know their respondents fairly intimately. It also involves inbuilt validation and clarification (Collins, et. al. 2009), making it more accurate than one-off surveys. Thus, smaller sample sizes through thick descriptions and rich insights can provide greater justification for generalizing the results.

We deviated from the original methodology of the financial diaries in a crucial way. The financial diaries methodology has field staff go to the poor households to chalk in the diaries on a regular basis. We gave a 'participatory' twist to the methodology by having our respondents, the women in the chosen households, log-in their financial diaries themselves. So our research respondents were our diary writers and this resulted in a unique experience of our doing research 'with' rather and 'on' those who are living in poverty. This also enabled an ongoing and regular relationship with the study participants – collating, cross-verifying and triangulating their diary entries, resulting in our being able to see them from their own perspective. To our knowledge, this was something that was being tried out for the first time, especially among the urban poor. A pilot study with 20 households was therefore carried out for three months from September 2007 to December 2007 to vet this change. Based on the findings (Reference Withheld, 2010), this change was retained for the final yearlong study. For the yearlong study, 90 poor families in these two contiguous areas kept financial diaries between September 2008 and August 2009, with details of their daily financial inflows and outflows. These households had to satisfy one specific selection criteria - since our participants were to be our diary-writers, the women in these households had to show an interest in keeping these diaries for a year. Therefore we went in for the snow-ball sampling method – asking for references from the original 20 pilot study participants to other participants (neighbors and friends living in the same locality) who were willing to participate in this yearlong study. We should mention here that the ongoing financial diaries project in the United States, tracking more than 200 low and moderate-income households over the course of a year, is also based on a purposeful selection of a sample, using the snowball sampling method[1]. Once these referrals were made, we visited her house to talk and discuss these diaries with her family members – husband and in-laws. We made sure that this discussion took place in front of her family members. Family finances are a sensitive issue in familial relationships – and we did not want any discord to crop up in the family because of this study. All clarifications regarding the diaries sought by the family were given. The family was also informed about the times the diary-writer would have to attend meetings with other diary-writers. We read out written statement explaining the purpose of the study, its process, benefits to participants, potential risks and the issue of confidentiality. We recruited all the interested

[1]Webinar- A Deep Dive into the Complex Financial Lives of American Families 10-23-13. See http://vimeo.com/77633676

participants in that area in our sample, and this reduced the chances of a biased selection. Participants of our pilot study accompanied us while visiting the houses of the potential participants; we found that since they had been through the process of keeping the diaries for the pilot study, their presence helped in recruiting other participants.

Since our diary-writers were our research subjects, the format for diary log-ins had to be kept very simple. Notebooks with such a simple format, one page per day, divided into two columns, one for cash outflows ("how money went out of your home") and the other for cash inflows ("how money came into your home") and some stationary were given to the 90 households. The notebooks were in the local language (Kannada), as were the diary-entries. We gave our diary writers complete freedom in writing down their household cash flows as they wished.

We had three field workers visit these households and record the diary entries made every week (generally on the same day of the week) that was later transcribed into soft copies. Since this was a compact neighbourhood, the collation of the diary entries by our field workers was done in groups. This also aided in triangulating and validating the diary entries. Our field investigators were also asked to make detailed field notes during the process of data-collection as we were able to interact closely with the households whose data we were analysing.

There were 19 women headed households and 71 male headed households in the sample. Of the total 90, we had 66 who had borrowed from multiple MFIs. Of these 66 indebted to MFIs, the women headed households were 14 in number. There were six MFIs operating in that area during the study period, all Grameen style, lending only to women groups. Of the 24 households that had not borrowed from MFIs (among them were five woman headed households), there were other informal borrowings from ROSCAs (Rotating Savings and Credit Associations, called *chitties* in the local language), private financiers and moneylenders (called *funds*). Such informal loans were also found among all those who had borrowed from MFIs.

The occupational profiles of the diary-writers are given below. All of them were working in the informal sector on daily wages, in the silk units of Ramanagaram (filature) or other sporadic daily wages jobs as and when available (*coolie)*. Some were involved in petty trading to generate some additional income (by selling vegetables, milk) or as a part of family run informal

businesses (selling *saris*, brass vessels, bangles). *Agarbatti* (incense stick) and *beedi* (indigenous cigarettes) rolling are a type of work-from-home job contracts endemic to the informal sector in India. These occupation profiles have been culled out from the cash inflow sources given in their diaries. Not only did the women have multiple occupations during a year, but they also had it for sporadic days, intermittently during the study period. Most of the incomes, needless to say, were low (below the minimum wages, in many cases) and unpredictable.

[Insert Table 1 here]

3. Dataset and Methodology

At the end of the study period, we collated the data from daily diaries kept by 90 households for 11 months from September 2008 to July 2009. Data for August 2009 was left out, since we got data only for 15 days of August from some households. Since the diaries were deliberately kept simple and unstructured, we got detailed information covering hundreds of variables under cash outflows. For the purpose of this paper, we concentrate these cash outflows of the households - on the 37 meta-variables that we collated as cash outflows related to consumption in the household. This meta classification was done after we got the more fine-grained information from the diaries. This included expenses on assets that they purchased during the year, food items (vegetables, staples – rice and grains, milk, meat, cooking-oil, snacks), health expenses, purchase of clothes, cosmetics (mostly items of personal hygiene like soaps, shampoos, hair-oil), accessories (footwear, bags), consumables (matchboxes, bulbs, candles, mosquito repellant coils), eating-out (food intake outside of home while working), education, social and religious expenses, travel, gifts, and jewelry, among others. All missing data was replaced by zero. However, we emphasize that these zeroes cannot be technically treated as 'missing data' in the diaries as these women had such meagre resources that they were quite particular in jotting down any non-zero expenses and the zero expense on a particular item is therefore revealing in itself. The diary maintained daily data, but that brought in too much granularity and sparsity (especially because many entries on a daily basis were zeros); therefore we added every consecutive seven days data into a weekly variable, and used these weekly variables for analysis. The data size we ended up with consisted of 37 variables for a period of 47 weeks for 90 households, namely, 4230 data points with 37 dimensions each, or a total of 47x37x90 or 1,56,510 individual data points.

The methodology we used to analyse this data was driven primarily by the data set we finally obtained. Collins et. al. (2009) and other studies using the financial diaries methodology use these financial diaries to create household level debt-asset balance sheets and income expenditure statements. While this has its advantages and can give a peek into the complex financial lives of the poor, we, on the other hand, are more interested in drawing out the "commonalities" or the "differences" in the cash-flows among the various groups in this sample. Our question here was to see if within this population, the cash-flows of women-headed households was any different from the male-headed households. Since we were interested in such sub-group comparisons, we decided to use the diary-data aggregately, across households. We chose consciously not to deal with the individual household diaries or the time-series aspect of the diary data. This choice was also borne out by the fact that on such a granular level, no two households showed any resemblance that allowed us to make meaningful generalizations across two households. The consumption variables reported by the diary-writers in their diaries are large in number (37), and they have very different patterns across time. Not only that, because the diary-writers were given complete freedom in writing their own diaries, the final data was unstructured and varied wildly across households. Therefore, we had to go beyond household level analysis and analyze the financial diaries data set as a whole. We have used each week's data from each household as an independent observation, that is, we have assumed as if each week's data is a representative for the expenses, and the entire data set is then analyzed. As we are comparing separate groups, this also increased the sample size in each group.

To begin with, our objective was to probe the variability in the diaries for the two types of households (a) woman headed and (b) male headed. We concentrated on reducing the dimension of the data to some relevant variables in these two groups. Considering the peculiar nature of data collection, we decided to use Principal Component Analysis (PCA) (Mardia et. al. 1979) to reduce the dimension of the data and concentrate only on the relevant expenditure variables. For carrying out the PCA, we had another particular usage of the data in mind -we could use it on different subsets of the data and compare the results. We wanted a general structure of the expenses over time, and thus it was necessary to figure out which variables contributed most this

variability in daily cash expenses and how. This descriptive focus, together with the type of data that we have, made PCA an appropriate tool (Joliffe, 2002) for discovery of such patterns.

We also note here that PCA is applicable to even small data set, as mathematically it does bring out the major directions of variation regardless of the sample size (Joliffe, 2002). Furthermore, our attempt was to include the whole population available to us, and we expected the subsets chosen from that to provide a fair picture among the population of our study, despite the relative smallness of some of the subsets.

The expenses in such different groups, if analyzed, should show different linear combinations of variables ("features") that explain the variability of data within those sets. Comparing these combinations, we would get an idea about the differences in the expenses, say between group (a) the woman headed households vis-à-vis group (b) the male headed households. The first combination of variables (First Axis) has the highest significance; the second combination of variables (Second Axis) has the next highest significance and so on. The variables contribute to the axes in a linear combination, and the variable with the highest absolute correlation is considered the strongest. The analysis was done in Tanagra 1.4.47 (Rakotomalala 2005).

4. Analysis – household cash outflows in female and male headed households

4.1 Cash outflows in households headed by women – are they different?

We had 19 women headed households in our sample of 90 households. Of the 19 woman headed households, five were employed in filature units, four each did daily wages *coolie* jobs and *beedi* rolling at home, respectively. Three of them were employed in petty trade of selling vegetables, cloth and bangles. Two of them were sweepers with the Ramanagaram Municipality (on contract basis), and one of them did tailoring jobs at home. The female headed households had similar occupational profiles that was found in our larger sample (in table 1). The household size of the female headed households was similar to that found in the male headed households, namely, between 4 and 5 members. However, the female-headed households were single-earner households, unlike the many male-headed households. Education profiles were also comparable for the two groups. In the female headed households set, majority of the primary income earners were illiterate (47 percent), followed by education up to class V (32 percent) and education up to

class VIII (17 percent). The corresponding figures in the male dominated households were 42 percent, 27 percent and 22 percent respectively. Thus, about a little less than half the income earners in both groups were illiterate.

We start with an analysis of the 19 woman headed households and their weekly consumption expenses and compare it with the 71 male headed households and their expenses. We give the top three axes as we are interested only in the top expenses. The scree plots also suggest a three axes exploration (Joliffe 2002), and the significance of the top three axes was also borne out by a parallel analysis (Horn 1965). We use the variables that have a correlation greater than 0.5. In the following tables, we list, for each axis, only those variables, which have such correlations

[insert table 2 here]
[insert table 3 here]

We observe from table 2 that the first axis giving the primary expenses of the women headed households comprises mostly food items – vegetables, milk, spices and snacks, together with an interesting item: cosmetics. Cosmetics, in this case, refer to most items of personal hygiene – soaps, shampoos and hair-oil. This is understandable given these households are poor and therefore most of their cash inflow gets used up towards everyday food. Also, the fact that these are women headed households, some expense on personal cosmetic items is not surprising. Of lower importance are some expense for gutkha (a mild narcotic), religious ceremonies and eating out (which is the expense these women bear when they go out for work). In our sample of the 19 woman headed households, there were only 5 households where the women worked from home (four did *beedi* rolling and one did tailoring jobs from home) – all the remaining left home daily, on work. Therefore, eating out is an expense these women bear when they have be out of the house on work, and do not have the time to cook meals at home. Talking to these women, we realized that cooking at home was indeed a luxury and that expenses on snacks and eating out were high. Spending on religious items refers to money spent on religious festivals religious rituals at home, or visits to temples.

A big difference in table 3 as compared to table 2 is that in male headed households (table 3), a major spending is on money “given to husband”, which refers to an amount of money handed over to her husband by the diary-writer, without any specific reason or purpose. Further analysis

will show that this item is conspicuous in the diaries of those male-headed households where the women (diary writers) were also clients of MFI groups. We also need to take special notice of the second axis (where the correlation between the variables takes opposite signs). The variability depends on an opposing combination between the money given to husband and expenses for entertainment, grains and accessories. Thus, in these households, even the secondary expenses are managed with respect to how much money is going out to the husband. Fuel is the other big spending item here, since cooking in these homes was done more regularly as compared to the households in table (2), the women not being the primary earners for these households. Spending on cosmetics is seen in table (2), while that on accessories is seen in table (3). Thus items of personal hygiene – soaps, shampoo, hair-oil, detergents, tooth-paste under cosmetics are used more in the women headed households; as compared to items of personal use (except clothing that was considered separately) like footwear, hair-accessories, bags that were classified as accessories. Entertainment expenses (going out for movies and suchlike) are also found in table (3) and not in table (2) – implying that most women in women-headed households did not have the time to spare from work, on entertainment.

4.2. MFI repayments and cash outflows in households headed by women – are they different?

One of the factors that could affect cash flows in these households was the access to MFI loans, given through all women credit groups. Ramanagaram, like the rest of south India, was to witness a huge surge in MFI expansion around the second half of 2000 (Shetty, 2012). Most of these MFIs were for-profit Grameen replicators (following the methodology of the Grameen Bank – lending to all women credit groups and entailing rigid, weekly repayments). In our sample, we had 66 households where the women were part of such MFI groups and had taken one or more MFI loans during that year. Every week, a fixed cash outflow were therefore seen in their diaries as repayments towards these MFI loans. Impact studies citing the impact of these MFI loans on borrowers, especially the woman borrowers shows mixed results (Rahman, 1999 and Johnson, 2005). We were able to test this specifically, not in terms of the loan impacts but in terms of the cash-flows, by contrasting the cash flows of MFI borrowers, all women, but those who were in charge of their woman headed households (14 in number) vis-à-vis those who were in male-headed households (52 in number). We give below the table showing the cash outflows of the 14 woman headed households who have borrowed from MFIs and compare them with the

52 male-headed households where our diary writers were MFI borrowers. Though the number of households is only 14, the actual data points are much larger in number as we flatten the data on a weekly basis; in particular we have 47x14 = 658 data points, each point being 37 dimensional (the number of expense variables was 37).

[insert table 4 here]
[insert table 5 here]

In table 4, we see a similar daily consumption pattern for woman headed households when we consider the total sample (19 households) versus a sub-sample of those that have taken a MFI loan (14 households). With MFI loans the first axis shows similar spending as seen in the bigger group of 19 female headed households (table 2), except an expenditure on Consumables crops up. Under consumables we clubbed items consumed on a regular basis by the household – mosquito coils, batteries, threads and needles, bulbs, tube-lights and matchboxes. There is no change in the variables in the second axis. The only other change we see in this sub-group is that expenditure on meat appears in the third axis. This implies that with MFI loans, these women are spending more on meat.

Comparing table 4 with table 5 above, i.e. comparing the woman-headed and male-headed households that are MFI borrowers, we again find that the woman-headed households are spending more on cosmetics, eating out, consumables, meat, and religious expenses. It is also interesting that "gutkha" (an addictive good) shows up for both sets after an MFI loan! The male-headed households, despite loans being given to women in their households, continue to show money being given to husbands, accessories, fuel and entertainment. The item "money given to husbands" and its relevance to MFI borrowings will be discussed in the later section.

4.3 Asset ranking and cash outflows in households headed by women – are they different?

The analysis so far considered the houses purely based on gender controlling for access to MFI borrowings, without any reference to their economic status. We now group the households according to their assets. We give below the list of assets owned by the households.

[insert table 6 here]

Assessing asset indices from this information is a well-known problem (Filmer and Scott, 2008) and several techniques have been suggested. We improve upon Morris, et.al. (2000), where we mark every asset as a categorical variable; with a yes-no marker (that is, we give no importance to the quantity of the asset, possession of asset in any number is considered equivalent). We assume that an asset that is present in a large number of households has less distinctive features than an asset, which is present in less number of households. That means, an asset, which is present in less number of households, gets greater weight.

We did not go the usual "replacement cost" route for creating an asset-index. Firstly, the replacement costs for most of these assets of everyday use (cots, tables, clocks/watches, almirah/cupboards) will be wide off the mark, given the sheer variety of these utility assets. The replacement costs data of such assets would be even more arbitrary than relative weight frequency of these assets within this sample. Secondly, the replacement cost concept is useful for assets like land or animals that can be sold and be converted into financial wealth of the household. Here the age of the asset does not matter, for example, the value of land is fixed at a given point in time irrespective of when it was bought by the household. These utility assets, on the other hand cannot be converted so easily into financial wealth. They were bought or obtained by different households at different points in time. Monetizing them with current prices would give a wrong picture of those households that bought them several years ago vis-à-vis those that acquired them more recently. Also, by using the relative frequency as a weight, we are making a case that for this section of the population, there are a set of 'assets' that can be found in most households – those are ones that almost everybody gives a priority and more important, could afford to buy (either through savings or borrowings). These are utility assets like cots and fans, not seen as an investment but more like assets needed for everyday survival. The less frequent assets like washing machines or vehicles are the ones that could be bought only by the economically better-off. Therefore, relative frequency weight summarizes this intuition, that those households having the less-frequently found assets are the ones who had more purchasing power than the others who did not have them. And this information was crucial to us in making our classification.

We use an inverse proportion; thus, the weight for an asset that is present in N households out of 90 gets a weight 90/N. We sum over all the assets, and for every household calculate the asset

index. However, this can mean that houses having different types of assets with same asset weight can get the same asset index; suppose a washing machine and a TV has the same weight. Then a house having only one washing machine (and nothing else) and another house having only one TV (and nothing else) will get the same index. One can argue that indeed these two houses are somewhat similar; however, in reality, with many asset materials, many combinations of the asset materials and different weights of the assets, the pattern is complicated and not obvious. Thus, it will be better if we can classify these houses based on both the asset index as well as the particular asset they have; this will give us a stronger notion about similar houses. Based on this index, we form a Kohonen self-organizing map (Haykin 1999) that groups the households into similar clusters. A Kohonen map is an unsupervised learning algorithm in which a low dimensional representation of the input samples is created while trying to preserve the topological structure of the input space. We choose households that are member of each of these clusters, and compute the principal components for the houses belonging to each cluster to find out most significant expense variables for those houses.

Below, we give the clustering information. The cluster names (relatively better-off, average, poor and very poor) are chosen based on the cluster's asset index values; these are chosen by us after the clustering is done only to facilitate the discussion. The cluster which we call *very poor* has households with asset index between 0 and 11 (there are some houses for which the asset index is indeed 0). The *poor* cluster has households with asset indices from 11-15, the *average* cluster contains asset indices between 15 and 21, and all asset indices from 24 onwards went to the cluster *relatively better off*.

Let us take a look at the two extremes, the very poor cluster and the relatively better off cluster. The very poor households mostly have the following assets: television, mixer-grinder, fan, almirah, clock, and jewelry; with some households having cellphone, table, cot, and cycle. It seems counterintuitive that the very poor group has jewelry or television. When we visited our households in the course of our study, we were surprised at many of these very poor households having a television set and nothing else in the sparse room in the house. We however realised that the TV was more than an a source of entertainment. It helped the women and their daughters in that household get through the sheer drudgery of the *beedi* and *agarbatti* rolling jobs they got done from home.

For the better off group, we have all the above assets almost on a regular basis, together with motorcycle, site, house, water tank, gas stove, radio/two in one. Also, assets like washing machine, auto, taxi, livestock occur in this group, but do not occur at all in the very poor group. The following table gives the distribution of households in the clusters. The numbers in the last column indicate the number of houses in each subgroup within a cluster.

[insert table 7 here]

Since our earlier analysis dealt with households that had loans from MFIs, we again restrict ourselves to the households indebted to MFIs and we will analyze the diary cash flows of the two types of households – woman headed and male headed, taken from the two extremes, the very poor group and the better off group.

[insert tables 8 and 9 here]

Among the better off women headed households in the sample, all of them borrowers from MFIs, a key difference we see is that 'eating out' is no longer an important expense. This verifies our hunch that 'eating out' is an expense found in poorer households, where the woman is the main earning member of the family. The items that we consistently find the male-headed households spending on, as compared to the woman headed households are, 'given to husband', 'fuel' and 'entertainment'. The better off woman headed households are again spending more on cosmetics, as compared to accessories on which the male-headed households seem to be spending money on. The second axis is again notable: the money given to husband and spent for snacks are in opposition to the amount spent for items like grains and accessories.

[insert tables 10 and 11 here]

This comparison is interesting for several reasons. It consists of the poorest households in our sample – all of them MFI borrowers. And we see that the woman headed households are spending on a variety of food items, consumables and gutkha. The male-headed households, on the other hand, have no prominent third axis variable. This group is spending mostly on day-to-day survival items, like travelling to their workplace, eating out and fuel. Interestingly, eating out is expenditure carried out by both sets of households. With the poorest among the MFI borrowers, assets show as an expenditure among the male headed. For the women headed

household, on the other hand it is jewelry – an asset over which the woman has more control. For the poorest male-headed households, we should also note that there is no major expense showing up as money given to the husband here. Do MFI borrowings among the poorest tend to be used more on day-to-day consumption within the household rather than being routed to the men in the household? This is an interesting hypothesis that would need further evidence. The woman headed households, despite the poor financial condition, manage to spend some amount to all wholesome food as well as some non-food items, while the male headed households do not seem to be able to do that.

5 Discussion

Luke and Munshi (2010), in talking of women as agents of change mention a common perception that 'money in the hands of women is used differently than money in the hands of men'. Using innovative data from financial diaries tracing the daily cash flows from 90 poor households in Ramanagaram town, in Karnataka state of India between September 2008 and July 2009, we were in position to make a more fine-grained analysis of this assertion. In these 90 households there were 19 women headed households, where the woman was the primary wage earner and the person responsible for making the major financial decisions for the household. In the remaining 71 households, the man was the main bread-earner, and the woman either was a housewife or the secondary wage earner. We compared the consumption related cash flows between these two sets of households to see if woman take their consumption decisions differently. All our diary-writers were the women in the households. Women took the decisions relating to day-to-day cash flows in the women-headed households. Though we can point to the presence of 'agency' here – it was not often clear-cut, since it not always their choice. In our conversations with L, one such woman left to fend for the family by her husband who was absconding, told us "*He married me and made me work. I am even repaying his loans. I made a mistake*." We got to hear similar sentiments from several women in this group.

The purpose of our study was to see if we are able to find some clear-cut differences in daily cash flows among the two sets of households. This would help us understand whether money gets used differently in the hands of women. There could be structural differences between the women-headed and male-headed households that could explain the differences in cash flow

patterns. We then took care of these structural differences by controlling for two major factors (a) access to MFI loans and (b) asset ownership.

Among these 90 households, there were 66 households that had borrowed from MFIs (some from multiple MFIs) and we analysed the consumption flows of the MFI borrowers belonging to both the sets. This enabled us to check whether microfinance impacts cash flows of these two types of households differently. Though both these sets of households were predominantly poor and shared several socio-economic and demographic characteristics relating to household size and education levels, we made a classification on the basis of the asset-ownership, and analysed the consumption flows of the two sets of these households for the most economically better-off and the worst-off households in our sample of the MFI borrowers. For this, we created an asset index and we classified these households based on both the asset index as well as the particular asset they have using a Kohonen self-organizing map (Haykin 1999) that grouped the households into similar clusters.

We used PCA (Principle Component Analysis) as an exploratory tool to answer this question. Our analysis threw up some expected answers and also some puzzles. The most glaring difference showed up between the two sets of economically worst off households in our sample of MFI borrowers. For the worst off MFI borrowers among our sample, the women headed households tend to spend more on a large variety of food items and consumables as compared to the male-headed households. For the male headed worst-off households, the PCA gave only two prominent axes in the first three positions, and the consumption was on day to day survival, like fuel for cooking, travel for work, vegetables and eating out. Therefore, for members in the poorest women-headed households, MFI loans meant having a more balanced consumption on a daily basis.

Among the MFI borrowers, the women headed households show a spending on jewelry, while the male-headed households show an expenditure on household assets. The use of microfinance loans into purchasing household assets was also found by Garikipati (2008). But among our woman MFI borrowers, in the woman headed households, we see the use of these loans not being put into household assets, but a personal asset namely, jewelry. This implies, even if MFI loans are spent in purchasing assets, there is no direct benefit of MFI loans to the women, with

the lack of women's ownership over the family's assets in male-headed households. Given a choice, she would rather spend money on jewelry, which is an asset she likely has more control over, as we see the women borrowers do in the woman-headed households.

If we are to look at expenses other than food that are "peculiar" to women headed households, not found among the corresponding male headed households – three stand out prominently – eating out, cosmetics and religious expenses. Women headed households tend to spend more on eating out, because less cooking gets done at home as most of these women had to leave home daily to earn their livelihoods and did not have the time to cook meals at home. At least far less cooking was done in their houses than the male-headed households, where the predominant expenditure was on fuel. Fuel does not appear as consumption expenditure in women headed households, across the board. It is only the better off women headed households that do not see an expenditure on eating out. On the other hand, eating out appears as an important cash outflow in the worst off male-headed households. Thus, in urban areas, given the nature of informal sector jobs and daily wages work, workers (both men and women) have to keep away from home for long period of times; cooking is a luxury and money inevitably gets spent on snacks and eating out. The classification of snacks as "temptation goods" (Mullainathan, 2006) among the poor, thus needs to re-examined.

Women tend to spend more on cosmetics, but male-headed households are showing a spending on accessories. In our data, we clubbed all expenses on items of personal hygiene as spending on cosmetics. Women, running the household finances therefore had a greater say in buying soaps, shampoos and hair-oil. Accessories included shoes, bags and other items of daily wear.

One item that stands out for the male-headed households who are MFI borrowers – except the worst off MFI borrowers is "money given to husband". The item "money given to husbands" appears only in the male-headed households where the women are MFI clients. This is absent in all female-headed households (some of who are MFI clients) and among those male-headed households who are not MFI borrowers. This item refers to an amount of money handed over to the husband, without any specific reason or purpose. On further discussions with our diary writers, we reaslised that this was a channeling of the MFI loans that the women got, to the men in the households. There is increasing evidence of this in other countries, as well (Mayoux,

2002). Seeing this item appear only in the cash flows of the MFI borrowers provides further evidence to the finding increasingly being cited that MFI loans made to women are usually controlled by their husbands, (Goetz and Sengupta, 1996; Leach and Sitaram, 2002). Given that there were as many as six MFIs operating in Ramanagaram at that time, women's groups could be conduits for loans taken by men; since this item does not appear among the non-borrowers. It also does not appear for the worst off among the MFI borrowers, so this phenomenon seems to be more prominent among the slightly better off households. Thus, analysis of daily cash flows throws up some nuanced findings regarding the role of MFI loans in the male-headed households as well. Most of the better-off MFI borrowers showed that they had to hand over money to their husbands – validating the finding directing micro-credit to women need not always lead to their economic empowerment.

Another item, peculiar to the women headed households, especially those that are better off and who take MFI loans is the expenditure of a religious nature. This could vary from expenditure during the time of religious festivals to expenditure on daily religious rituals. This item does not figure anywhere among the male headed households. We had an opportunity to probe this in greater detail, when we carried out detailed interviews on the life histories of nineteen women in our sample, some of whom who managed their households singly. The women heading their households were either widows or women deserted by their husbands. There was a sense of insecurity and vulnerability, of not having a male member in the house. C, a widow, recalled an incident when an insect bit her child and she had no one to turn to for help, till her mother came and took the child to the hospital. At times like that, she says, she misses having a man in her house – though even when he was alive, he never gave her any money to meet the household expenses. A, another widow, also mentioned being the target of taunting remarks from neighbors and relatives because she is a poor widow. Given this vulnerability in their lives, expenditure on religion needs to be seen as a ministration from this daily grind. It probably comes at the cost of "entertainment" expenditure that is seen in the male-headed households – that included visits to the cinema and other similar expenditures. Despite this vulnerability, what needs to be lauded is that these women, especially in the poorest households, are spending their moneys on large variety of food items; with the better off women with MFI borrowings – even spending on meat.

This is in contrast to some expenditure items peculiar to the male-headed households – money given to husband or money spent on entertainment.

The puzzle for us was that we did not get the more reassuring items of spending on health or education; but these households were far too busy eking out a day-to-day existence. Many of these women were particularly concerned about their daughters – worrying about them much more than their sons. As poor women themselves, they were acutely aware of this vulnerability of women and wish for security for their daughters. And therefore, we could only conclude that with women heading households, daily food on the table, at least seemed more likely.

7. Conclusion

In this paper, we try and answer an important question regarding decision-making by women. Do women especially those in the economically poor households use money differently in taking day-to-day decisions about household consumption? This question has a bearing on gender based policy interventions and also on livelihoods focused on the women among the poor, including micro-credit. If we could show that women are making "better" use of money in their day-to-day spending decisions, then it would be worthwhile having such interventions.

We were able to answer this question, through an innovative data set where 90 poor households in the urban town of Ramanagaram, in the Karnataka state in southern India maintained daily financial diaries about their cash flows for 11 months from September 2009 to July 2009. We compared the data from the diaries of 19 women headed households with the 71 male-headed households, over several factors. The robustness of our results comes from the methodology of financial diaries. This methodology gave us daily data from each of these 90 households for a period of 11 months. We collapsed the daily data into weekly data, and the data set consisted of data points on 37 consumption variables over 47 weeks for each of the households considered. The methodology was tweaked to include a participatory component where our research participants, the women in the households were our diary-writers. The methodology also involved iterative cross-checking and rectification by field workers on a weekly basis, as they were collating the data – so the data obtained was not just fine-grained and detailed, but more accurate than one-off surveys.

Based on the analysis of these diaries, we find that among the poorest households, women showed a greater tendency for spending household cash on food-items as compared to the male-headed households. Food and items of hygiene (classified as cosmetics in our data) dominated the spending by women headed households. Among these households, there was also a lower spending on fuel and entertainment as compared to the male-headed households. There was more spending on eating out, as the primary breadwinners in these households left homes for their jobs in the urban informal sector.

This data also helped us get a different perspective on the targeting of microcredit to women and its relation to the economic empowerment of women. Among the MFI borrowers (all women), the poorest among the women headed households showed an increased spending on jewelry, as compared to the male-headed households, where there was an increased spending on household assets. Among the better off microcredit borrowers, the woman borrowers in the male-headed households recorded cash given to the husband fairly regularly. Thus, these cash flows recorded by women MFI borrowers in the male-headed households raised fresh doubts on the issue of economic empowerment. In the better off households, they had to hand over money to their husbands, while in the poorest households, they spent money on household assets – something, over which they personally had no control. The MFI borrowers among the women headed households did not have any transfers to husbands for obvious reasons, and those in the poorest households were able to spend their money over an asset that they personally owned – namely jewelry. The borrowers in the better off women headed households also showed a greater spending on religion and religious rituals; indicating a need for succor in the precarious lives they were leading.

The reassuring conclusion of our study is that if you are very poor, then as compared to male-headed households, the chances of your getting your ‘daily bread’ in women headed households is greater.

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Table 1: Occupations of the diary writers

Occupations	**Households**
Housewives	28
Filature	12
Petty businesses (petty trade in vegetables, saris, cloth, vessels, bangles, milk)	13
Daily wages work (*coolie*)	14
Agarbatti and *beedi* rolling	9
Tailoring	5
Tuitions, typists, outreach workers	5
Sweepers	4
Total	90

Table 2: Analysis of household cash outflows - woman headed households (19)

PCA of household cash outflows - woman headed households (19)					
First Axis		Second Axis		Third Axis	
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*	*Correlation*
Vegetables	-0.77609	Gutkha	-0.63032	Misc.	-0.56552
Milk	-0.72526	Eating out	-0.56171		
Spices	-0.63724	Religious	-0.50708		
Cosmetics	-0.59086				
Snacks	-0.58058				

Table 3: Analysis of household cash outflows - male headed households (71)

PCA of household cash outflows - male headed households (71)					
First Axis		Second Axis		Third Axis	
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*	*Correlation*
Misc.	0.70178	Entertainment	0.73983	Eating out	-0.71847
Vegetables	0.65128	Accessories	0.59804	Gutkha	-0.59617
Accessories	0.6034	Grains	0.5162		
Sweets	0.54441	Given to husband	-0.51206		
Given to husband	0.54328				
Fuel	0.54314				
Grains	0.52193				

Table 4: Cash outflows in woman headed households who are MFI borrowers (14)

PCA of household cash outflows - woman headed households who are MFI borrowers (14)					
First Axis		Second Axis		Third Axis	
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*	*Correlation*
Vegetables	-0.82725	Gutkha	-0.55267	Meat	-0.51622
Milk	-0.80118	Eating out	-0.54507		
Consumables	-0.63515	Religious	-0.52676		
Spices	-0.62689				
Snacks	-0.57728				
Cosmetics	-0.55702				
Grains	0.52193				

Table 5: Role of debt in cash outflows – male headed households

PCA of household cash outflows - MFI borrowers among male headed households (52)					
First Axis		Second Axis		Third Axis	
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*	*Correlation*
Misc.	0.74247	Misc.	0.50151		
Vegetables	0.69415	Accessories	0.62122		
Accessories	0.58406	Grains	0.68216		
Grains	0.57587	Entertainment	0.79231		
Given to Husband	0.56346				
Sweets	0.55898				
Fuel	0.55661				
Entertainment	0.51456				
Milk	0.51264				

Table 6: List of assets owned by households

Assets	**No. of households having one or more of these assets**
Clock/Watch	73
Mixer-Grinder	71
Jewelry (gold)	71
Almirah (cupboard)	67
Fan (table, ceiling)	62
Television	61
Cot	47
Table-chair	46
Cell phone	44
Cycle	33

Gas Stove	25
CD/DVD player	21
Water Tank	19
Radio/Two-in-one	18
Sewing Machine	14
Site (land on which house is built)	10
Landline Phone	10
House	9
Livestock (goats, sheep)	5
Motor cycle	6
Refrigerator	5
Land (agricultural)	2
Auto-rikshaw	2
Milch Animals (cows, buffaloes)	2
Washing Machine	1
Taxi	1

Table 7: Asset classification of households

Cluster 1 (relatively better off)	Indebted to MFIs	Woman headed households	4
		Male headed households	10
	Not Indebted to MFIs	Woman headed households	1
		Male headed households	3
Cluster 2 (average)	Indebted to MFIs	Woman headed households	1
		Male headed households	8
	Not Indebted to MFIs	Woman headed households	0
		Male headed households	5
Cluster 3 (poor)	Indebted to MFIs	Woman headed households	4
		Male headed households	6
	Not Indebted to MFIs	Woman headed households	0
		Male headed households	4
Cluster 4 (very poor)	Indebted to MFIs	Woman headed households	4
		Male headed households	29
	Not Indebted to MFIs	Woman headed households	5
		Male headed households	6

Table 8: Household cash outflows -woman headed, indebted, better off group (4)

PCA of household cash outflows - woman headed, indebted, relatively better off group (4)					
First Axis		Second Axis		Third Axis	
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*	*Correlation*
Vegetables	-0.78445	Meat	-0.62506	Snacks	-0.60574
Milk	-0.73	Religious	0.73337	Accessories	0.56858
Meat	-0.55727	Travel	0.65684	Gutkha	-0.52654
Cosmetics	-0.52498	Miscellaneous	0.64789		

Table 9: Household cash outflows –male headed, indebted, relatively better off (10)

PCA of household cash outflows - male headed, indebted, relatively better off (10)					
First Axis		Second Axis		Third Axis	
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*	*Correlation*
Vegetables	0.80956	Misc.	0.53221	Gutkha	0.82113
Misc.	0.75806	Given to husband	-0.52293	*Sambhar*	0.77596
Sweets	0.66488	Accessories	0.73166	Asset Installment	0.67322
Given to husband	0.64328	Snacks	-0.52998	Eating Out	0.62092
Accessories	0.63455	Grains	0.73613		
Meat	0.62183	Entertainment	0.81368		
Snacks	0.59614				
Fuel	0.59514				
Fruits	0.55683				
Milk	0.55528				
Spices	0.51469				
Grains	0.51036				

Table 10: Household cash outflows -woman headed, indebted, very poor (4)

PCA of household cash outflows - woman headed, indebted, very poor (4)					
First Axis		Second Axis		Third Axis	
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*	*Correlation*
Milk	-0.83416	*Sambhar*	-0.76922	Jewelry	-0.75438
Fruits	-0.80577	Rice	-0.7485	Sweets	-0.64986
Vegetables	-0.80393	Eating Out	0.64006	Misc.	-0.54474
Spices	-0.76727				
Gutkha	-0.76435				
Oil	-0.73514				
Consumables	-0.70815				
Snacks	-0.55081				

Table 11: Household cash outflows – male headed, indebted, very poor (29)

PCA of household cash outflows - male headed, indebted, very poor (29)				
First Axis		Second Axis		Third Axis
Variables	*Correlation*	*Variables*	*Correlation*	*Variables*
Assets	0.64114	Vegetables	-0.52594	-
Travel	0.58014	Eating out	0.51539	-
Fuel	0.50039			-