The Effect of Remittance Related Financial Education on Financial Inclusion: A Singapore-Indonesia Corridor Case Study*

Rashmi Barua[†] & Shawn Hunter[‡]

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Abstract

We examined the effect of remittance related financial education given to 20 Indonesian Female Domestic Workers in Singapore. A key feature of the study was that we conducted back-to-back classes for the migrant workers' families in Indonesia. Our descriptive results are indicative of the effectiveness of financial education. Our results suggest that financial education has a positive effect on savings and a negative effect on frequency of remittances. We find asymmetry in information between the migrant and the household and find some evidence of increased communication between household members after taking the classes. Further research, in particular a large scale randomized controlled trial, is needed to address some important observational findings that we report in this study.

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[†]barua.bhowmik@gmail.com, Research Affiliate, Singapore Management University & Visiting Scientist, Indian Statistical Institute (New Delhi).

[‡]shawnhunter@fdc.org.au, Networks Manager, The Foundation for Development Cooperation, Australia.

Contents

1 Background & Previous Studies

Financial decisions are complicated, particularly for those with little experience with formal financial products. If the individual in question is a migrant worker, then there are additional complications as the migrant and the main remittance recipient are geographically separated, often for long periods of time. As a result, families may not make optimal saving, borrowing or remittance expenditure decisions as the geographical separation leads to asymmetric information between the migrant and the household. For instance, the migrant may want to save more but the family prefers to spend on entertainment and celebrations.

Women play an increasingly important role in international labour migration and currently constitute 49.6 percent of all labour migrants globally (IOM, 2008). This recent trend towards changing gender patterns of migration has been termed as the *Feminization of Labour Migration*. The remittances that these migrants send to their home countries are an important type of international financial flow, sometimes as large as Foreign Direct Investments. However, there is extensive evidence that much of remittances is consumed and not saved or invested. Though much research has been conducted to study remittance flows to developing countries, little has been done in terms of educating migrant workers on the benefits of managing their money and making them aware of the different remittance methods available.

Financial literacy, the ability to process financial information and make informed decisions regarding the use and management of money, is one of the interventions through which remittances can ultimately be channeled towards productive usage. Recent research suggests that financial illiteracy is an important contributory cause of low savings levels and poor financial management. Financially illiterate households tend not to plan for future or unexpected events, borrow at high interest rates, and acquire fewer assets (Lusardi and Mitchell 2007; Lusardi and Tufano 2009; Maarten, Lusardi and Alessie 2011). As a result, policy makers are increasingly focusing on financial education as a tool to empower individuals to manage their finances effectively.

Existing research yields mixed results as to whether financial literacy improves either performance on knowledge-based tests of financial literacy or actual measures of financial wellbeing such as savings and wealth (Lusardi and Mitchell 2007). Randomized evaluations in developing countries have demonstrated modest, but by no means overwhelming, success.

Cole, Sampson and Zia (2010) find that a financial literacy program in Indonesia caused some financially illiterate households to open a savings account. Gibson, McKenzie, and Zia (2012) evaluated a randomized controlled trial targeted at improving Australia and New Zealand based migrant remittance decision-making and find limited impacts. Doi, McKenzie, and Zia (2012) distinguish between the impacts of training Indonesian migrants alone, family members alone, or migrants and family members together. They find that training both the migrant and the family member together has large impacts on knowledge, behaviors, and savings. In particular, households in which both the migrant and their family member were trained are 19 percentage points more likely to be aware of financial terms, 12.5 percentage points more likely to have saved in a bank account, and have twice the savings out of remittances compared to a control group that does not receive training. Training the family member alone has some positive, but smaller effects, whilst training only the migrant leads to no impacts on the remaining family members. Seshan & Yang (2012) explore issues of control among migrant Indian workers in Qatar and their wives in India. They find that financial literacy increased the savings levels among those with below median baseline incomes. When they compare the effects of their intervention between the migrant and the wife, they find evidence of substantial information asymmetries within the household. This re-emphasizes the importance of giving financial education to both the migrant and their immediate family members.

Despite the recent emphasis on financial education among migrants, to date, we know very little about how female migrant workers make their remittance-sending decisions including the amount and frequency of remittances, methods of remitting money, access to formal financial channels and the final use of the remittances. It is also unknown whether female migrants desire greater control over how their family members back home use the remittances. Moreover, more research needs to be devoted to understanding the level of financial literacy among female migrants and the effect of financial education on migrant savings and remittance behaviors.

The scope of this study is threefold. *First*, we study the effect of financial literacy training given to 20 Indonesian domestic workers in Singapore on their financial decision making and behavior. *Second*, we study the effect of giving back-to-back training to both the migrant and their immediate family members in Indonesia. If geographical separation is the main reason migrant families are not able to save or make optimal remittance decisions, then financial literacy given to both the worker and the family may lead to better communication between them. *Third,* we study the different remittance means available to Indonesian migrant workers in Singapore and analyze the reasons why they use those particular methods.

Our descriptive results, though only from observational data as opposed to a randomized experiment, are indicative of the effectiveness of financial education. Our results suggest that financial education has a positive effect on savings and a negative effect on frequency of remittances. The decline in frequency of remittances could be a result of migrants learning that it is cheaper to bundle remittances in order to save on the fixed cost of remitting money. We also find some evidence of increased communication between the migrant and the household. One interesting observation is that women who take a financial education class are less likely to apply for loans. This could just reflect that they now put more importance on saving and planning for the future.

Our research also suggests there are several factors influencing choice of remittance provider and services, including cost, speed, exchange rates, convenience of access, quality of service, and trust of the service provider. Thus, there should be increasing pressure on remittances services providers to provide more market-led rather than conventional financial products and services, particularly as mobile technology and branchless banking enables greater depth and reach of financial services to the previously unbanked.

2 Indonesian Foreign Domestic Workers (FDWs) in Singapore

Our study focuses on the effect of financial education on financial decision making and the use of remittance and related financial services. We focus on Singapore based Indonesian FDWs. Indonesia is the largest country in South East Asia and one of the poorest with a population of 246.9 million and Gross Domestic Product (GDP) per capita of $3,557 (World Development Indicators, 2012). Estimates suggest that approximately 2.7 million legal Indonesian migrants were working in Asia in 2007, with more than 1 million in Malaysia and Singapore alone (Hugo 2009; ADB 2005). Thus it is not surprising that in 2008, remittances to Indonesia reached USD 6.6 billion (Bank of Indonesia, 2008).

In Asia, the largest category of female employment among migrants is in the domestic services. These domestic workers, mainly from Indonesia, Philippines and Sri Lanka are based in Hong Kong, Malaysia, the Middle East and Singapore. According to the National Authority for the Placement and Protection of Indonesian Overseas Workers, in 2007 alone, out of the approximately 700,000 migrants leaving Indonesia, 78% were women. Due to the high levels of unemployment in the country as well as the economic effects of numerous recent natural disasters, migration out of Indonesia has increased dramatically over the last two decades facilitated by the government of Indonesia. Due to the lower costs of migrating to a nearby country as well as the ease of moving to a country with cultural similarities, temporary migration to Malaysia and Singapore is very common.

Singapore is an important case-study because it hosts a large migrant worker population, approximately one-fourth of its total population of 5 million (Singapore Department of Statistics, 2011), and is also a major receiving country for female migrant labour. As of December 2010, there were 201,000 FDWs and the majority of them came from Indonesia and Philippines (Ministry of Manpower, Singapore). It has been estimated, that one in five households employ a live-in maid in Singapore.[1]

Though reliance on live-in help has historically been an integral part of Singapore since British colonization, it was only in 1978 when the first Foreign Maid Scheme was established. According to this scheme, domestic workers from other Asian countries were allowed to come and work in the country.

Following this scheme, there has been an increased influx of domestic helpers in Singapore. The majority of FDWs come from Indonesia, Philippines and Sri Lanka. FDWs must be between 23 and 50 years old when first entering Singapore and may work up to the age of 60. The government of Singapore also requires that the women have atleast 8 years' minimum formal education. Domestic workers are not covered by the Employment Act. Thus, there are no minimum wage regulations and until recently, there was also no minimum number of days off stipulated by the government.

Even though Singapore has witnessed an increasing inflow of Indonesian FDWs, no study has documented the availability of access to financial services for this group.

[1] http://www.mom.gov.sg/newsroom/Pages/SpeechesDetail.aspx?listid=235

According to a 2009 World Bank report, 17% of the total households in a nationwide study lived without any access to financial institutions (formal or non-formal). Another 31% relied heavily on informal and semi-formal services. The numbers are even more striking when one divides the sample by poverty status. Among the poor households, where most domestic workers in Singapore come from, 79% were left out of access to formal financial services.

In the remainder of this paper, we document the financial behavior of a small sample of Indonesian FDWs in Singapore and study the effect of financial literacy on their financial well being.

3 Data and Descriptive Statistics

3.1 The Program and Partners

The intervention evaluated in this study was implemented in conjunction with Alalay sa Kaunlaran (ASKI), Inc., a non-profit organization based in Singapore that is dedicated to providing financial education and entrepreneurship skills to female migrant workers. ASKI Global Ltd. is a registered public company limited by guarantee with Singapore's Accounting and Corporate Regulatory Authority. Its mother organization, Alalay sa Kaunlaran, Inc., is a 25 year old non-government organization registered with the Philippines' Securities & Exchange Commission.

ASKI Global Ltd. directly helps both the overseas migrant workers and their families set up, operate and grow enterprises in their home country, mostly in the Philippines. To this end, ASKI Philippines coaches and mentors migrant families on business management while the global office in Singapore does the same for migrant workers. Aside from these training programs, ASKI offers a variety of loan products in the form of housing loans and credit for potential income generating projects and in particular, agribusiness activities.

The main aim of ASKI Global is to direct the productive use of remittances and address employment problems in many developing countries, through SME development. They reach this objective mainly through two courses that they offer to migrant workers in Singapore, namely, a three month course on financial education and a slightly longer duration course on basic entrepreneurship. A key feature of ASKIs module is that in addition to the worker taking classes in Singapore, family representatives in the home country are also invited to participate in a one day financial education workshop. We examine the effect of ASKIs financial education course which consists of a 10 module training program on improving one's financial management skills through the following three areas:

- Financial Understanding: To understand finance and women's personal relationship with money.
- Financial Competence: To develop skills on analyzing the uses and power of certain financial products as well as an awareness of the risks associated with some financial products and services.
- Financial Responsibility: To equip the participants with the ability to make personal decisions about financial issues.

Since ASKI does not have current outreach in Indonesia for conducting the back-to-back training of migrant families, we collaborated with Rekadesa to conduct and implement the training of families' of Singapore based migrant workers in Indonesia. Rekadesa is an Indonesian consulting firm in rural finance established in late 2001. Its main aim is to assist community groups and Microfinance institutions through consultancy, training, technology, publications and other activities in accordance with the real needs on ground.

We surveyed 20 Indonesian female domestic migrant workers who were invited to take a 3 month Financial Education class with ASKI in Singapore. A representative, usually the main remittance recipient, from the migrants families in Indonesia was invited to attend a one day financial literacy workshop conducted by Rekadesa. Topics covered in this day long workshop included a basic financial education training in budgeting and planning, savings, investing, credit management and the importance of having financial plans and commitment.

We conducted a baseline survey at the beginning of the classes and a follow up survey was implemented one month after the end of classes. In both baseline and follow up survey, information was collected on individual and household characteristics, decision-making, expenditure, borrowing, savings and several questions related to remittances. In addition, following Lusardi and Mitchell (2011), the questionnaire included several simple math-based and problem-solving questions including a question that would indicate risk aversion. Following the standard measure of this variable in the literature, these questions form the basis for our measure of financial literacy. A back to back survey was conducted for the migrant's family members in Indonesia and 8 households completed this survey in both baseline and endline.

3.2 Descriptive Statistics (Baseline)

3.2.1 Demographic Characteristics

Table 1 and 2 give baseline summary statistics of key demographic features of the migrants and their family member respectively. The sample consists of relatively younger women with an average age of 32 years. 40% of the sample is currently married even though divorce rates are quite high at 30%. Most of the women have at least a high school degree, in fact only 3 of the women reported less than high school education.

Table 1: Summary Statistics of Baseline Individual Characteristics	
Age	31.89
	(5.75)
% Married	40 %
	(0.50)
% With High School	85 %
	(0.37)
Number of Children	0.94
	(0.24)
Monthly Earnings (SG$)	522
	(189)
Years in Singapore	7.25
	(2.67)
Monthly Expenses (SG$)	124
	(128)
Financial Literacy	68 %
	(0.25)
Risk Aversion	0.31
	(0.48)
Sample Size	20

Standard Deviations in Paranthesis

Among those who are (or, have in the past been) married, the average number of children is 1.5. The mean monthly earnings are SGD522. This is high relative to starting salaries for domestic workers in Singapore and probably explained by experience i.e. average years spent in Singapore (7.3 years). The average monthly expense is \$124. Financial literacy at baseline is 68% i.e. the average migrant answered about two thirds of financial literacy questions correctly. These questions ranged from simple addition and multiplication to questions on simple and compound interest rates. Finally, we asked respondents a probability question which measured their baseline risk aversion. Based on the answer to this question, 31% of the sample are deemed to be risk-averse.

Table 2 gives the main remittance recipient's characteristics in Indonesia. Among the 8 participants of the baseline held in Indonesia, 2 were spouses of the migrants, 3 identified themselves as the parent, 1 of the women identified herself as the daughter and the remaining two comprised of a nephew and a sibling.

The average age of the household member is 37 years with 75% of the sample having completed at least high school. Three fourths of the sample has some form of savings while half of the households report owning some assets. Average earnings of the migrants household is between Rp.1,000,000 to Rp.2,000,000. Financial literacy is higher at 78% compared to the migrant at 68%. 50% of the sample is risk averse using the same measure as before.

Table 2: Summary Statistics of Baseline Household Characteristics

Age	36.71
	(11.91)
% With High School	75 %
	(0.46)
Earnings in Indonesia	1.62
	(0.74)
Savings	75 %
	(0.46)
Asset	50 %
	(0.53)
Financial Literacy	78 %
	(0.13)
Risk Aversion	50 %
	(0.53)
Sample Size	8

Standard Deviations in Paranthesis

3.2.2 Savings, Assets and Credit

Table 3 presents summary statistics of migrant saving and remittance patterns. Two thirds of the migrants report having some form of savings and also report that they have an average of 1.3 bank accounts. However, the saving amount in Singapore is low at \$65 relative to the monthly income of \$522. Note that out of the 17 women who answered the question about amount of savings, 13 reported no savings in Singapore. On the other hand, everyone who reported having savings has at least some amount saved in Indonesia with the average amount equal to Indonesian Rupiah (IDR) 8676471 or approximately Singapore Dollars (SGD) 1100. Thus, most women with savings report these savings to be in Indonesia. Almost everyone reports having some form of assets and 42% of the sample reported taking a loan in the past. However, interestingly, less than 50% of the women knew what a credit history means and only 40% believed that it was important for acquiring a loan.

Table 3: Summary Statistics of Baseline Savings and Remittances

% With Savings	70 %
	(0.47)
Savings amount in Singapore (SG$)	64.71
	(172.10)
Savings amount in Indonesia (IDR)	8676471
	(10001470.5)
% With Assets	94 %
	(0.24)
% Taken Loans	42 %
	(0.51)
% Who know credit history	46 %
	(0.52)
Know Importance of credit history	40 %
	(0.50)
Number of Accounts	1.29
	(1.11)
Remittance Amounts (SG$)	258.9
	(66.81)
Sample Size	20

Standard Deviations in Paranthesis

Table 3 also shows that the average remittance amount is \$259 every time money is sent home to Indonesia. When we looked at frequency of remitting money, a surprisingly high proportion of women report remitting money every week (50% of the sample) as opposed to monthly (44.4%). A point worth noting is whether financial literacy can teach individuals that it is cheaper to bundle remittances as a single transaction than to send weekly and pay the fixed remittance fee every week. We show this effect in the next section.

3.2.3 Remittances

We asked the workers about the methods they have used in the past to remit money but have ceased to use them now. Six women report that they have used Western Union in the past and report the reason for switching to another means as "Too Expensive" or "Easier to send via a bank". In addition, five women report that they have used bank transfers in the past but found them either "Too Expensive" or "Exchange rate was too Low". The average fee for the methods that were stopped is $11.6.

The table below gives names of the remittance means currently used by the migrants. Banks and Western union are less popular methods of remitting money while exchange houses are commonly used by the migrants.

Table 4: Frequency of Usage of Remittance Service Providers & Desired Improvement in Service

Name	**% Migrants who use this service**	**Desired Improvements**
Allbest Exchange	18.18	Convenience
BCA Remittance	9.09	Exchange rate
BDO Remit International Network.	18.18	Cost
Bank Negara Indonesia (BNI)	9.09	Exchange rate
Pay2home	18.18	Cost and Convenience
Remit Express	18.18	Cost and exchange rate
Western Union	9.09	Speed
Sample Size	11	

The last column in the table also gives the migrants view regarding desired improvements to the current remittance service provider. As can be seen from the above table, cost of remitting money is the most frequently stated factor for desired improvements, followed by convenience and raising the exchange rates offered by the service provider.

Six (75% sample) of the eight households report receiving remittances periodically. Surprisingly none of the households reported receiving the money weekly, whereas half of the migrant workers reported remitting money every week. In fact 50% of the recipient households claim to receive money once every two or three months. Two households also claim that they only receive money when they ask for it. The discrepancy in reporting between the migrant and the household suggests intra-household information asymmetries. Related research finds that such miscommunication and asymmetric information is common among migrant households (Seshan and Yang, 2012). Literature also finds that the most optimal model of financial literacy is one that trains both the worker and the immediate remittance recipient (Doi, McKenzie and Zia, 2012). Another interesting aspect of the household survey is that everyone reports receiving money through bank transfers. Thus, migrant households do not seem to be aware about the remittance means used by the migrants in Singapore.

We asked the household members to tell us about the desired improvements that were required in the current method of remitting money used by the migrant worker. None of the family members thought that **cost** is important pointing towards the asymmetric information between the migrant and the remittance recipient. In fact, 75% of the sample believes that **speed** is the most important change they would like to see. If we find that there is more homogeneity in responses between the migrant and the household in the endline survey, it is likely that families communicate more often after being financially educated. We will study this in detail in the next section.

We asked the household members questions about who decides which service providers are used. Six of the eight households said that it was a joint decision between the migrant and the household while one respondent said that they decided and another said that the migrant decided. In terms of remittance usage, spending on education and emergency seems to be the most common expenditure. Sixty two percent of the sample says that they use the money for education while 37.5 % say that they spend it for emergency needs.

Finally, the household member was asked to point out the factors that were most important when choosing a remittance service provider. One third of the sample pointed out that standard or quality of service is most important, followed by convenience. The households also stated the speed of remittance, riskiness and trust with the service provider as additional important factors.

4 Results

This section presents results from comparing the data for baseline and endline surveys. In the analysis that follows we present the effect of taking a financial education class on various savings, remittance and credit outcomes after controlling for baseline characteristics. We present regression results for the migrant worker. However, due to the small sample size of households who completed the survey, a formal regression analysis is not possible. Thus, we will compare mean outcomes for the households without controlling for any baseline characteristics. First, the results for the migrant worker are discussed.

4.1 Effect of Financial Education on Financial Literacy (Migrant)

Table 5 presents the regression coefficients from the effect of taking the financial education class on the financial literacy variable. This variable is defined by the percentage of questions answered correctly out of four standard financial literacy questions. We measure numeric skills through a series of four mathematics questions on addition, division and simple and compound interest rates.

Column (1) presents results from the effect of a post dummy variable (i.e. post=1 if the period under study corresponds to the endline survey and 0 if baseline) on financial literacy while column (2) also controls for baseline characteristics including a dummy variable for completing high school, age, marital status, number of years in Singapore and monthly income in Singapore. The means and standard deviations for these variables were shown earlier in Table 1.

The effect is positive though not significant. The addition of control variables does not change the results too much and the estimated effect is 11.6%. In other words, taking a class in financial literacy leads to 11.6% more questions being answered correctly. However, the effect is not significant at conventional levels of significance. Number of years spent in Singapore has a negative effect on math related financial literacy questions. This could mean that people forget what they learn overtime. However, we are cautious about not inferring causality as it could also reflect a selection bias such that individuals with lower levels of financial literacy are more likely to continue to work in Singapore as domestic workers.

Table 5: Effect of Financial Education on Financial Literacy		
	(1)	(2)
Post Class	0.099	0.116
	(1.41)	(1.88)
Highschool		-0.098
		(1.00)
Marital Status		0.130
		(1.62)
Years in Singapore		-0.049
		(3.54)**
Age		-0.003
		(0.33)
Earnings		0.000
		(0.92)
Constant	0.680	1.273
	(13.85)**	(4.70)**
Observations	39	33
R-squared	0.05	0.48

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

4.2 Effect of Financial Education on Savings (Migrant)

Table 6 shows results from the effect of financial education on saving outcomes. Columns (1) to (4) do not control for any characteristics while columns (5) to (8) also control for five baseline characteristics.

Attending financial education class has a positive effect on all three saving outcomes including probability of having any savings, savings amount in SGD in Singapore and savings in Indonesia in IDR.

The financial education class increases probability of saving by 19% but when additional controls are added, this effect marginally decreases to 14.6%. Though none of these effects are statistically significant, interestingly the effect on savings in Singapore in column (2) is positive and significant. In particular, the class increases savings in Singapore by a little over SGD 600 and this effect is significant at the 10% level with a t-statistics of 2.45. Note that controlling for baseline characteristics decreases this effect significantly to SGD 156. Though this coefficient loses significance, it is not clear whether this is driven solely by sample size considerations. Similarly, savings in Indonesia is positive and even after adding controls, doesn't decrease by a large amount. In Indonesia, from column (7) we can see that savings increased by approximately SGD 540 (i.e. IDR 4526056) but the effect is not significant.

Table 6: Effect of Financial Education on Saving Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Savings	Savings			Savings	Savings	
	Savings	Singapore	Indonesia	# of accounts	Savings	Singapore	Indonesia	# of accounts
Post Class	0.195	616.063	5776222.000	-0.031	0.146	156.203	4526056.000	0.041
	(1.51)	(2.45)*	(0.80)	(0.11)	(1.12)	(1.43)	(0.56)	(0.14)
Highschool					0.153	62.379	-1078779.000	-1.110
					(0.74)	(0.40)	(0.09)	(2.44)*
Marital Status					0.179	-7.978	1.30e	-0.289
					(1.05)	(0.06)	(1.34)	(0.75)
Years in Singapore					-0.090	20.634	-2053424.000	-0.054
					(3.09)**	(1.00)	(1.23)	(0.79)
Age					-0.006	6.678	-421797.600	0.059
					(0.28)	(0.50)	(0.37)	(1.35)
Earnings					0.000	-0.149	-9591.038	0.000
					(0.80)	(0.33)	(0.29)	(0.38)
Constant	0.700	64.706	8676471.000	1.294	1.052	-267.824	3.77e	1.066
	(7.78)**	(0.39)	(1.83)	(6.20)**	(1.83)	(0.67)	(1.15)	(0.85)
Observations	39	30	30	36	33	25	28	31
R-squared	0.06	0.18	0.02	0.00	0.41	0.18	0.19	0.36

Absolute value of t-statistics in parentheses

* significant at 5% level; ** significant at 1% level

An interesting observation from column (5) is that the probability of saving is negatively related to the years in Singapore. This could either imply that migrants tend to remit bigger proportions of their income with their tenure in Singapore or it could mean increased expenses and decreased tendency to save overtime. Finally, in columns (4) & (8) we study the effect on number of accounts. The sign on this variable flips after controlling for baseline characteristics. But the standard errors are too large to draw any conclusions i.e. it seems that financial education has no effect on number of accounts held by migrant workers.

4.3 Effect of Financial Education on Loans and Credit (Migrant)

Table 7 reports estimates from the effect of financial education on two outcomes namely, probability of taking a loan and knowing the importance of credit history. For the question on credit history, we asked the migrant "Is it important to have a good credit history to get a loan from a financial institution?". Interestingly, financial literacy has a negative effect on the probability of applying for a loan. In particular, there is a 32% decline in probability of applying for a loan in column (1) and this effect is statistically significant at the 10% level. The effect is still large (26%) when controls are added though the small sample size makes the estimate noisier and it loses significance.

Table 7: Effect of Financial Education on Loans and Credit Outcomes

	(1)	(2)	(3)	(4)
	Loan	Credit History	Loan	Credit History
Post Class	-0.316	0.126	-0.261	0.146
	(2.30)*	(0.78)	(1.58)	(0.80)
Highschool			0.406	0.296
			(1.58)	(1.03)
Marital Status			-0.107	-0.329
			(0.49)	(1.39)
Years in Singapore			-0.030	-0.039
			(0.81)	(0.97)
Age			0.005	0.053
			(0.19)	(1.89)
Earnings			0.000	-0.001
			(0.30)	(0.67)
Constant	0.421	0.400	0.033	-0.819
	(4.35)**	(3.52)**	(0.04)	(1.03)
Observations	38	39	32	33
R-squared	0.13	0.02	0.18	0.16

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

In conversations with ASKI officials, it came to light that students in the financial education class become more cautious about applying for loans as they prefer to save in the short term. As opposed to entrepreneurship training where students are more likely to apply for bank or microfinance assistance, the financial education classes make students more risk averse. Thus, it is not surprising that we find a negative effect on probability of loan applications.

We attempted to test this theory using another variable in our data. We asked respondents a question on probabilities that proxied for their risk aversion. We asked them, "Suppose we had a jar with three green balls and one red ball. You are playing a game and you have two choices. You can receive $100 for certain. Or you can pick a ball from this jar with your eyes shut, and if you choose a green ball you will receive $200. Do you want $100 for certain, or do you want to have a chance of getting $200?"

The regression of the effect of financial education on risk aversion using this proxy generated imprecise estimates. These results are not shown here but we do not find any conclusive evidence of increase in risk aversion after taking the financial education class.

In columns (2) and (4) we find a positive effect on probability of knowing the importance of credit history but once again the standard errors are too large to make any confirmed conclusions about this relation.

4.4 Effect of Financial Education on Remittances (Migrant)

Next, we study the effect of financial education on several remittance and expenditure outcomes. Table 8, Column (1) and (5) report estimates for monthly expenses excluding remittances, columns (2) and (6) report estimates for the amount of remittances in SGD, columns (3) and (7) measure the effect on frequency of remittances where larger numbers correspond to less frequent remittance transfers. Finally columns (4) and (8) show results for the effect on control over remittances.

There does not seem to be any effect of financial education on monthly expenses though the sign on the coefficient is negative. Consistent with most of the literature, we don't find any effect of financial education on remittance amount.

As noted earlier, an important question that needs to be answered is whether financial literacy can teach individuals that it is cheaper to bundle remittances as a single transaction rather than send money weekly and pay the fixed remittance fee every week (Gibson, McKenzie, and Zia, 2012).

We tested this using the frequency variable, results for which are shown in columns (3) and (7). Note that the variable is coded in such a way that higher numbers correspond to less frequent remittances. The effect is highly statistically significant and positive implying that after taking the class workers are more likely to reduce the frequency of remittances. This effect stays significant even after controlling for baseline characteristics. This is extremely reassuring as it implies that the migrants learnt that it is cheaper to bundle remittances and save on the fixed cost of remitting money. At the same time, this also reflects that any cost saving method of remitting money is preferred by the migrant. Workers are likely to adopt any cost saving strategy, such as bundling of remittances, if they are given the opportunity to learn how to find and use such products, services and strategies.

Table 8: The Efffect of Financial Education on Expenditures and Remittance Outcome

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Monthly Expenses	Remittance amount	Remittance Frequency	Control over Reittances	Monthly Expenses	Remittance amount	Remittance Frequency	Control over Reittances
Post Class	-9.549	-12.662	1.401	-0.278	-12.793	-34.187	1.287	-0.349
	(0.29)	(0.20)	(4.64)**	(1.32)	(0.30)	(1.03)	(4.03)**	(1.53)
High school					33.691	23.867	0.488	0.481
					(0.47)	(0.49)	(0.96)	(1.68)
Marital Status					-64.299	-38.933	-0.013	0.061
					(1.24)	(0.93)	(0.03)	(0.22)
Years in Singapore					-5.326	0.719	-0.130	-0.084
					(0.59)	(0.08)	(1.58)	(1.77)
Age					6.121	5.264	-0.043	0.021
					(1.01)	(1.14)	(0.86)	(0.64)
Earnings					-0.120	0.236	0.003	0.000
					(0.58)	(1.13)	(1.54)	(0.45)
Constant	124.286	258.873	1.389	0.857	23.917	-24.600	1.900	0.189
	(4.97)**	(5.27)**	(6.43)**	(4.74)**	(0.13)	(0.16)	(1.29)	(0.20)
Observations	33	31	37	26	27	26	31	20
R-squared	0.00	0.00	0.38	0.07	0.12	0.19	0.51	0.46

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

There is little evidence that taking the class had any effect on the amount of control that a migrant worker had on her families' expenditure patterns. This is not surprising since migrant workers are separated by geographical distances, making it hard to control remittance expenditures of households. In fact the effect is negative i.e. financial literacy has a negative effect on control over remittances. But we cannot reject the hypothesis of no effect as the standard errors are quite large.

Table 9: The Efffect of Financial Education on Remittance Use in Indonesia

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Savings	Bills	Luxury	Investment	Education/ Health	Entertain't	Savings	Bills	Luxury	Investment	Education/ Health	Entertain't
Post Class	0.292	-0.116	-0.189	0.226	-0.011	0.126	0.264	-0.089	-0.227	0.258	0.001	0.008
	(2.03)*	(0.81)	(1.28)	(1.44)	(0.08)	(0.78)	(1.47)	(0.57)	(1.36)	(1.49)	(0.01)	(0.05)
High school							-0.125	-0.402	0.123	0.034	-0.376	0.053
							(0.44)	(1.62)	(0.47)	(0.13)	(1.67)	(0.18)
Marital Status							-0.029	0.122	0.033	0.170	0.422	0.076
							(0.12)	(0.60)	(0.15)	(0.76)	(2.29)*	(0.32)
Years in Singapore							-0.018	-0.031	-0.018	-0.013	0.001	-0.017
							(0.44)	(0.89)	(0.49)	(0.34)	(0.03)	(0.40)
Age							0.019	-0.021	-0.007	0.046	-0.003	-0.027
							(0.70)	(0.89)	(0.29)	(1.76)	(0.15)	(0.95)
Earnings							0.000	0.000	0.001	-0.001	0.000	0.001
							(0.06)	(0.11)	(0.71)	(1.36)	(0.34)	(1.36)
Constant	0.550	0.800	0.400	0.300	0.800	0.400	0.182	1.940	0.331	-0.605	1.160	0.722
	(5.47)**	(8.05)**	(3.86)**	(2.73)**	(8.63)**	(3.52)**	(0.23)	(2.82)**	(0.45)	(0.80)	(1.86)	(0.88)
Observations	39	39	39	39	39	39	33	33	33	33	33	33
R-squared	0.10	0.02	0.04	0.05	0.00	0.02	0.12	0.15	0.11	0.23	0.24	0.10

Absolute value of t-statistics in parentheses
* significant at 5% level; ** significant at 1% level

Finally, in Table 9 we show results for the effect of financial education on the usage of remittances in Indonesia. We asked migrants several questions regarding how they think their families used the money that was remitted to Indonesia. Based on the answers, we segregated the data by the type of usage including savings, payment of bills, expenditure on luxury commodities such as electronics, cars etc., investment expenditures, expenditure on education and health, and entertainment. The results are reported in the table above.

The signs on all outcome variables is as expected. We find a positive effect on savings (in column (1) this effect is also statistically significant) and investments and a negative effect on payment of bills and purchase of luxury commodities. The effect on education and health is almost zero once baseline characteristics are controlled for in the regression analysis. Similarly the coefficient on entertainment expenses is positive though not significant. Both these results are surprising and counter-intuitive. Note that, as expected, marital status has a positive and significant effect on health and education expenditures.

4.5 Methods of Remitting Money (Migrant)

Due to the lack of responses in the baseline data, we do not have enough data points to run a regression to see the effect of financial education on the choice of provider or the reason for using a particular provider. We asked migrants to tell us about the methods of remitting money that they used in the past but have stopped using now. Among those who answered the question, 70% named Western Union and cited the reason as "Too Expensive" and/or "Low exchange rates".

Next, we asked respondents which service provider they use currently and why they use that particular provider. Table 10 gives the different responses from the endline survey. While "Pay to Home" is the most popular remittance provider, the least popular seems to be Western Union. The main reason for using a particular service is either cost or speed considerations with more than 82% of the migrants choosing one of these two options. Regardless of the sample size considerations, it is useful to know that speed and cost are both equally important for migrants when choosing a desired remittance provider.

Table 10: REASON FOR USING A PARTICULAR REMITTANCE PROVIDER						
INSTITUTION	*Convenience & Quality*	*Cost*	*Less Risk*	*Speed*	*Trust*	*Total*
Allbest Exchange	0	0	0	1	1	2
BRI	0	2	0	0	0	2
Express Remittance	0	2	0	2	0	3
Haratan	0	0	1	1	0	2
Mass Express	0	0	0	1	0	1
Pay to home	1	3	0	1	0	4
Western Union	0	0	0	1	0	1
Total	1	7	1	7	1	17

In terms of the desired improvements, as noted in the baseline, migrants still consider cost and speed to be of utmost importance when it comes to remittance provider. An interesting observation though is that compared to the baseline, where most women desired improvement in cost while households desired improvement in speed, now even the migrant workers put equal emphasis on speed. This could simply be a result of the increased household communication about remittance service providers as a consequence of the financial education class.

4.6 Financial Education and its Effects on the Household

Due to the small sample size of households who completed the survey (8 households in each round), a formal regression analysis is not possible. Thus, we will compare mean outcomes for the households without controlling for any baseline characteristics.

Table 10: Comparing Baseline and Endline Household Attributes		
	Baseline	**Endline**
Financial Literacy	78 %	82.5%
	(0.13)	(0.07)
Risk Aversion	50%	75%
	(0.53)	(0.46)
Savings	75%	75%
	(0.46)	(0.46)
Assets	50%	62.5%
	(0.53)	(0.52)
Receive Remittances	75%	50%
	(0.46)	(0.53)
Sample Size	8	8

Standard Deviations in Paranthesis

Table 10 compares some of the key variables among migrant households across the baseline and endline survey. Financial literacy is higher after taking the financial literacy class at 82.5% compared to 78% at baseline. At the same time, risk aversion seems to have increased to 75% relative to baseline value of 50%. There is no change in savings, however, the percentage of households reporting assets has gone up to 62.5%. Unfortunately, not everyone answered the question on types of assets. Thus, we are not able to determine what assets were purchased in the period between the baseline and endline. An interesting observation from the above table is with respect to the question on receiving remittances periodically. While 75% of the sample claimed that it received remittances during the baseline survey, this number reduces to one half of the sample in the endline. Note that not everyone answered the question on frequency of receiving remittance. Thus, we are not able to compare the frequency relative to the baseline.

We see a major change in the answer to the question "If you or your family are receiving money through a formal remittance service, are there any particular aspects of this service which you think could be improved?" Recall that in the baseline, 6 out of the 8 households said that *Speed* of the service provider needs to be improved. However, in the endline, only one household gave this response. The remaining households chose the other options, namely, convenience, cost and risk. This change could reflect several things. For instance, household communication with the migrant worker may have increased or the migrant may have changed the remittance provider after taking the financial education class and chosen a provider that had faster service. It could also reflect that the financial education class taught the household to value convenience, cost and risk more than speed.

We asked the household "Who is responsible for deciding what method is used for sending the money?". In the baseline, as discussed earlier, six of the eight households said that it was a joint decision between the migrant and the household. However, three of the households which had earlier said that the decision is made jointly now switched to "The migrant worker". This is an interesting observation as it may mean that the migrant is in more control of remittances after taking a financial education class.

No significant differences were found in the baseline and endline to the answer to the following question "Which factor do you think is most important for remitting money?". Finally, we asked the household what were the remittances used for. The factors where we see an increase in number of responses were:

1. Savings for your family (12.5% to 43%)
2. To buy land (one more household chose this option)
3. Utilities (25% to 71%)
4. Medical and health insurance (12.5% to 43%)
5. Food (12.5% to 43%)
6. Celebrations (0% to 43%)
7. Emergency (37.5% to 86%)

Though the households are savings for themselves, for their medical needs and for purchase of assets, we also see a significant increase in expenditure on utilities, food and celebrations. Due to the paucity of data, we cannot compare between these options to see which of the changes was a consequence of the financial education class. However, it is interesting to note that some of the remittances are now being used for daily needs.

5 Discussion

We studied the effect of remittance related financial education given to Indonesian female domestic workers in Singapore on various financial and remittance related outcomes. A key feature of the classes that we study is that it provides back to back financial education training to the families of the domestic worker in Indonesia.

We find evidence of some asymmetry in information between the migrant and the household. For instance, the household thought that speed was most important factor that should be improved with the existing service provider while the migrant thought that cost was most important. However, after taking the class, even the migrant workers put equal emphasis on speed. This could reflect increased household communication about remittance service providers as a consequence of the financial education class.

For financial outcomes, we find evidence of increased savings by the migrant and a decrease in frequency of savings suggesting a bundling of remittances. The bundling of remittances is an important finding as it may reflect that increased awareness that it is cheaper to bundle remittances and save on the fixed cost of remitting money. At the same time, this also reflects that workers are likely to adopt any cost saving strategy, such as bundling of remittances, if they are given the opportunity to learn how to find and use such products, services and strategies.

Wth respect to outcomes of remittance service providers, we find a decrease in the number of users of *Western Union.* Migrants cited the cost of remitting money and the unfavorable exchange rates as the main reason for stopping this service. There seem to be several remittance options available for Indonesian migrants in Singapore though a majority (10 out of 17) used either *Pay-to-Home* or *Express Remit* and cited the reasons for using these service providers as either lower cost or faster speed.

Among the households, we see an increase in financial literacy as measured by five standard math questions on addition, division, multiplication and simple and compound interest rates. We also see a increase in risk aversion as measured by a probability question. We find some evidence that suggests that the migrant worker has more control over remittances sent to Indonesia.

6 Future Research Agenda

Though our results suggests that financial education can be effective when given to both the migrant and their family members, we are aware of the shortcomings of our data and are cautious about inferring causality. In particular, individuals who are more able and self-motivated enough to enroll in financial literacy training are also more likely to make sound financial choices. There is an obvious selection bias if those with high levels of financial literacy are different than those with low levels of financial literacy. Linear regression estimates of the effect of financial literacy on financial decisions and outcomes would be biased as we might end up attributing differences in savings levels to unobserved differences rather than financial literacy.

Thus, a large scale randomized controlled trial (RCT) needs to be conducted to go deeper into understanding the issues highlighted in our study. This ensures that those who receive training are statistically indistinguishable from those who do not, and that any ex-post observable difference between the groups can be attributed solely to the training program. RCTs are the gold standard in the impact evaluation field. This rigorous methodology ensures that the measured effects are indeed attributable to the program and not to other confounding factors. Because of their credibility, randomized evaluations are particularly influential in determining policy decisions. In the light of the evidence presented in our paper, such a study is important from the point of view of policy-makers, regulators and remittance service providers for several reasons:

First, we find some evidence that the households value different attributes such as speed of receiving money while the migrant values cost. However, financial literacy given to both has the potential to align the needs of the workers with that of the families. An important point that we raise is that back-to-back training of workers and households may deliver better outcomes than training of migrant workers alone. Further research needs to be done to understand what behavioral or financial changes leads to more joint decision making between households. Is it the increased communication and conversations about financial matters between family members that leads to the observed changes? Or is it that financial education given to both the worker and the family members makes their financial choices more aligned through behavioral changes?

Second, if the savings and remittances are ultimately channeled towards a self-sustaining goal, then financial literacy has the ability to improve the overall wellbeing of transnational households. In our study, though the households are saving for themselves, for their medical needs and for purchase of assets, we also see a significant increase in expenditure on utilities, food and celebrations. A more detailed large scale study needs to incorporate questions on the end use of these remittances to understand what proportion of remittances go into savings and productive investments.

Third, Indonesia is the largest country in South East Asia and one of the poorest, has approximately 2.7 million legal Indonesian migrants working in Asia, with migration out of Indonesia facilitated by its government, and proximity (geographically and culturally) to Singapore. And, the majority of poor households in Indonesia do not have access to formal financial services. On the demand side, Singapore hosts a large migrant worker population (201,000 female migrant workers from Indonesia and Philippines alone) and, this relatively sizable corridor is one of the least we know about. A large scale study would be important not only to know about the developmental impact of remittances in Indonesia but also from the point of view of remittance service providers.

Fourth, is there any level of customer loyalty with a service provider or are migrant workers only concerned about the provider that gives them expedited service in the cheapest way? A large scale research project could also explore in details the factors influencing choice of service provider. This question would be important for service providers in devising their costing and customer relation strategies.

Finally, we find that workers reduced remittance costs by bundling remittances. A larger research study should explore other means of reducing cost besides bundling, and the appeal of this to workers and households, and viability of this to service providers. We could tie-up with a service provider to offer such a product to the migrant worker and through randomization offer it to some “treatment groups” but not others.

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