

The Impact of Financial Literacy Training for Migrants^{1*}

John Gibson, David McKenzie, and Bilal Zia

Remittances are a major source of external financing for many developing countries, but the cost of sending them remains high in many migration corridors. Despite efforts to lower these costs by offering new products and developing cost-comparison information sources, many new and promising inexpensive remittance methods have relatively low adoption rates. The lack of financial literacy among migrants has been identified as one potentially important barrier to competition and new product adoption. This paper presents the results of a randomized experiment designed to measure the impact of providing financial literacy training to migrants. Training appears to increase financial knowledge and information-seeking behavior and reduces the risk of switching to costlier remittance products, but it does not result in significant changes in the frequency of remitting or in the remitted amount. JEL codes: F24, O12, C93

International migration from a poor country to a rich one is the single act that is perhaps most likely to contribute to dramatically increasing the income of an individual (e.g., Clemens et al. 2009; McKenzie et al. 2010) as well as the income of the family members who remain behind (e.g., Yang 2008; Gibson et al. forthcoming; Yang and Martinez 2005). The most direct channel through which international migrants can reduce poverty for the members of their households who remain in developing countries is through remittances. However, the high costs of sending remittances limit both the amounts that can be received by the remaining household members from a given remittance

1. David McKenzie (corresponding author) is lead economist in the Development Economics Research Group at the World Bank; his email address is dmckenzie@worldbank.org. John Gibson is professor of Economics at the Waikato Management School, University of Waikato, Hamilton, New Zealand; his email address is jkgibson@waikato.ac.nz. Bilal Zia is economist in the Development Economics Research Group at the World Bank; his email address is bzia@worldbank.org. A supplemental appendix to this article is available at <http://wber.oxfordjournals.org/>

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transfer and the incentives of migrants to send remittances if such transfers are effectively taxed by these high transaction costs (Aycinena et al. 2011; Gibson et al. 2006). Reducing the cost of sending remittances has thus become one of the most frequently discussed policy intervention areas in recent years (see the United Nations Global Forums on Migration and World Bank 2006) because doing so is viewed as politically uncontroversial compared to efforts to increase opportunities for migration.

Two important policies aimed at lowering the costs of remittances are the regulatory reforms to allow the introduction of new financial products and efforts to increase the disclosure of the transaction costs of each remittance product, which were pioneered by Mexico (www.remesamex.gob.mx and the United Kingdom (www.sendmoneyhome.org)²). However, despite the entry of new products and increased cost disclosure, there is still a wide variation in the costs of different remittance methods in many markets. Furthermore, several promising inexpensive remittance methods have had relatively low adoption rates.³ The lack of financial literacy among migrants has been identified as a potentially important barrier to competition and new product adoption (e.g., Jaramillo 2008; Suki 2007). Although systematic evidence on the financial literacy of migrants is scarce, the available data suggest that migrants often lack knowledge about the components of remittance transaction costs, available remittance methods, or comparing methods (Gibson et al. 2006; 2007). Hence, financial literacy training is a potentially promising way to change remitting behavior.

There is also growing interest from policy makers in providing financial literacy training related to remittances. Much of the focus on financial literacy training for migrants and their families has traditionally been placed on either integrating immigrants into the financial systems of their destination countries by building knowledge of banking services and basic household budgeting and savings techniques (LIRS, undated) or encouraging remittance receivers to make better use of the money they receive, which is the focus of the Microfinance Opportunities/Freedom from Hunger Global Financial Education Program.⁴ However, a number of initiatives, including activities in migrant-sending countries such as the Philippines and Indonesia and pilot programs for seasonal migrants from the Pacific Islands working in New Zealand and Australia, have begun to focus on teaching migrants themselves about the costs and details of different remittance methods. However, to date, no rigorous evidence has been collected on the effectiveness of such programs.

2. This website has since expanded and changed its name to www.fxcompared.com. The World Bank has also launched a remittance prices database (<http://remittanceprices.worldbank.org>) that covers remittance costs in 165 corridors.

3. Beck and Martínez-Pería (2011) examine the correlates of the cost of remitting across different bilateral corridors and find that financial access and more competition are correlated with lower costs.

4. <http://www.globalfinancialeducation.org/future.html#remittance>.

This paper presents the results of a randomized experiment designed to measure the impact of providing financial literacy training to migrants in New Zealand and Australia, which recently launched a remittance cost comparison website (www.sendmoneypacific.org) for sending money to the Pacific Islands and, in the case of New Zealand, where regulatory reform had led to the introduction of new remittance methods. The training taught migrants the different elements involved in the cost of sending remittances and how to compare costs across methods, explained how different methods of remitting work, including alerting participants to the presence of new methods, and provided information on comparing the costs of different methods of short-term credit financing for immigrants. The experiment was conducted with three groups that had differing levels of existing education and financial knowledge and differing intensities of remitting. The first group consisted of Pacific Island migrants in New Zealand, who remitted relatively frequently and had a relatively low baseline level of education and financial literacy. The second group included East Asian migrants in New Zealand, who remitted relatively infrequently but had relatively high levels of education and financial literacy. The final group was composed of Sri Lankan migrants in Melbourne, Australia, who remitted relatively frequently and had relatively high education and financial literacy levels.

We found that the training led to increases in financial knowledge among the Pacific Island and East Asian migrants but not the Sri Lankans, which is consistent with the notion that this type of training is most important for those with low knowledge or low experience. This increased knowledge was coupled with changes in behavior, with Pacific Island and East Asian migrants being more likely to use information to compare the costs of different remitting methods and the Pacific Island sample being less likely to switch remitting channels to methods that were not obviously better. However, we found no significant change in the frequency of remitting and no significant impact on the remitted amount. Although our sample size and the variation in remittance data mean that we cannot rule out relatively large percentage changes in the remitted amount, the range of potential impacts on the level of remittances is small relative to migrant incomes. Unfortunately, the comparison of the Pacific Island group with the other two groups is hampered by the fact that few members of the East Asian sample regularly sent remittances, whereas attrition was high and unbalanced by treatment status for the Sri Lankan sample. Thus, the results are most reliable for the sample for which the content was initially developed, the Pacific Island migrants.

In addition to the implications for remitters, our work contributes to the broader literature on the effectiveness of financial literacy programs. The most relevant early contribution in this field is by [Bernheim et al. \(2003\)](#), who find that financial education mandates in the United States have a significant positive effect on the future savings of students who participate in the program. However, these conclusions are subsequently challenged by [Cole and Shastry](#)

(2009), who replicate and extend [Bernheim et al. \(2003\)](#) using a much larger sample from census data and do not find any significant effects. In the experimental literature, the most convincing evidence of the role of financial education comes from [Duflo and Saez \(2003\)](#), who conduct an experiment on retirement savings at a U.S. university and find small but significant positive effects. The only comparable evaluation in the developing world is by [Cole et al. \(2010\)](#), who find no significant effects of financial literacy training on the overall population. However, slight increases are observed in the probability of opening savings accounts among those with low initial levels of financial and formal education.

Although the measured effects of financial education in the extant literature appear to be low, a key constraint is that it is often difficult to expect large changes to result from generic curricula. In this vein, [Bertrand and Morse \(2011\)](#) conduct a specific experiment with individuals who borrow from payday lenders in the United States. Their experimental timing is such that their intervention occurs precisely when individuals are making the decision to borrow, which is arguably a “teachable moment” when financial education could be most effective. Although their treatment is quite simple and emphasizes the dollar cost of repeated borrowing using visual cues, the authors find a significant reduction in the probability of individuals renewing payday loans. Our intervention complements this type of approach by introducing information on less expensive remittance methods to individuals seeking to send money back home and providing them with actionable rather than generic content, although an important difference is that our information is not delivered at the moment of the transaction.

The remainder of the paper is structured as follows. Section 2 provides information on the surveys and financial literacy training that were conducted in the randomized experiment and the context of the studied remittance corridors. In section 3, the results of the experiment are described, focusing on financial knowledge, information seeking, remittance frequency, remittance amounts, remittance methods, credit use, and qualitative evaluations by study participants. Section 4 discusses the results, and section 5 contains the conclusions.

CONTEXT, SAMPLE, AND FINANCIAL LITERACY INTERVENTION

The cost of remitting money has fallen dramatically in a number of migration corridors over the past 15 years as a result of increased competition, new product offerings, and the advent of price-comparison websites. For example, Profeco, Mexico’s consumer protection agency, began reporting the cost of sending money from several U.S. cities to Mexico on a weekly basis in 1998, and [Hernández-Coss \(2005\)](#) reports that the cost of sending US\$300 fell from approximately US\$32 in 1999 to US\$12 in 2003. By September 2011, US\$300

could be sent for \$3.60 through Bank of America's account-to-account or cash-to-cash products.⁵

Nevertheless, the costs of sending money remain high in other migration corridors, with transfer costs between several African countries of 15–20 percent on a US\$200 transaction in 2011.⁶ This was the context of our study, which examined remittance costs in the Pacific in the mid-2000s. We found that the cost of sending money from New Zealand or Australia to several Pacific Islands was in the range of 15–20 percent on a typical NZ\$200⁷ transaction (Gibson et al, 2006, 2007; McKenzie 2007). This research revealed that although average costs were high, lower cost possibilities were available that were not being used and that few migrants were aware of, such as the use of debit cards to make ATM withdrawals. Moreover, although a typical remittance transaction incurs both a fixed fee and an exchange rate commission, the latter component was often opaque, leading migrants to compare remittance methods purely on the basis of the fixed fee component.

Spurred by these research findings, the governments of New Zealand and Australia and their aid agencies along with the World Bank attempted to lower the costs of remitting in the region. In New Zealand, this attempt resulted in changes in know-your-customer regulations, which had previously required banks to see every customer to whom they issued an ATM card. This change allowed banks to give migrants one ATM card for themselves and one for their families back home without having to verify the identity of the second cardholder in person. Westpac Bank was the first to release a new product under these revised regulations. The Westpac Express prepaid debit card was targeted at migrants and received positive reviews (Stock 2009). Furthermore, these organizations launched a new website for both Australia and New Zealand (www.sendmoneypacific.org) based on the U.K.'s successful [sendmoneyhome](http://www.sendmoneyhome.org) website. This website provides detailed information on the cost of sending remittances from Australia and New Zealand to the Pacific Islands through various channels and is updated regularly.

Despite the introduction of new products and a new information source, the adoption of the Westpac Express product and the volume of transfers using it have not been as high as expected (Pacific Islands Forum Secretariat 2011). One plausible reason for this situation may be lack of financial literacy. Only 12 percent of the Pacific Island migrants in our sample had heard of this card at baseline, and less than half had ever used any source of information to compare the costs of sending money through different methods. Given the increasing policy interest in providing financial education to migrants, we decided to conduct a randomized experiment to measure the impact of

5. <http://remittanceprices.worldbank.org/Country-Corridors/United-States/Mexico/> [accessed March 6, 2012].

6. <http://remittanceprices.worldbank.org>.

7. At the time of the intervention, NZ\$1 was approximately US\$0.75–0.80, and the New Zealand minimum wage was NZ\$13 per hour.

financial education programs on the financial knowledge and remitting behavior of migrants.

The Sample

The Westpac Express card and sendmoneypacific were both designed for Pacific Island migrants in New Zealand. However, to examine whether training, which focuses on understanding how to remit and how to compare prices, is effective for immigrants in general, we decided to also consider other migrant groups. Because migrants are minority populations, especially migrants from specific countries, obtaining a representative sample can be prohibitively expensive (McKenzie and Mistiaen 2009). Therefore, we decided to recruit study participants through intercept points where migrant populations are known to congregate, mimicking the approach that would typically be used by policy makers and financial institutions attempting to reach migrant populations. This method has the advantage of making our results relevant for the population that is most likely to be the subject of financial literacy efforts, although it does not allow for measurement of the impact on migrants not found in these locations, who are typically less connected to their home countries (and less likely to remit).

Our first group consists of Pacific Islanders living in urban areas in the upper North Island of New Zealand. Approximately one-third of the recruited participants were attendees at a Pacific cultural festival in Hamilton, which drew participants from up to 60 miles away (including South Auckland, which has the largest concentration of Pacific immigrants). The remainder of the participants was recruited from the main Pacific outdoor market (which operates every Saturday morning) in South Auckland and from churches in Auckland and Hamilton. The church-based recruitment tended to bring in older participants, whereas the cultural festival participants were typically in their twenties. The Pacific Islanders were predominantly (three-quarters) from Tonga, with the remainder born in Samoa, the Solomon Islands, Fiji, Australia, and New Zealand. In the Pacific Island community, even second-generation migrants send remittances due to on-going linkages with their extended families in the islands (Lee 2003). Therefore, we did not exclude any New Zealand- or Australian-born participants.

The second chosen group included East Asians, the other main immigrant group in New Zealand. Chinese and Korean participants from Auckland (four-fifths of the total of the East Asian group) were recruited from five different churches located in Northern, Western, and Central Auckland and from a Tai Chi group and a Chinese health organization, both located in Northern Auckland. The remaining Chinese participants were from Hamilton (60 miles south of Auckland), where they were recruited from several churches and from the pre-existing research networks of the Chinese team leader (who was based in Hamilton). No single church or locality contributed more than one-seventh of the sample. This sample was restricted to first-generation migrants.

The final group in our study consisted of first-generation Sri Lankan migrants in Melbourne, Australia,⁸ who were recruited through snowball sampling. Initially, 20 people were selected from various Sri Lankan organizations (both formal and informal) in Melbourne. These organizations were selected to represent different demographic and economic groups in terms of length of time residing in Australia, type of migration (skilled, family reunification, and student), education level, ethnicity (predominantly Sinhalese), and location in the greater Melbourne urban area. Each individual from these organizations was asked to provide the names and contact details of five individuals who could be interviewed. Of the 100 potential participants identified in this way, 80 agreed to participate in the baseline survey. When the interviews with these 80 people were conducted, they were asked to provide further referrals, leading to another 129 people who were interviewed. Some of the participants who were obtained through the second round of referrals were uncomfortable with the questions on financial information and remittances and refused to provide any contact addresses, which excluded them from being invited to the training or participating in the four follow-up surveys.

A common concern about randomized experiments involves the generalizability of their results, particularly when studies are conducted on a single population. Consequently, we chose three migrant groups, which include a range of educational levels and differing intensities of remitting frequencies, to gauge the impact of financial literacy training across different migrant groups.

To ensure that the surveys and financial literacy training were conducted in the most effective and culturally appropriate way, we recruited individuals from these migrant populations to lead the field work for each of the component studies. Because each of these team leaders had a PhD, two of which were in economics and one of which was in psychology (specializing in field studies of migrants), the level of training and skill of the financial literacy intervention providers is likely to be atypically high. Each of the team leaders recruited assistants who were local individuals drawn from the population groups that were being studied. The questionnaires, PowerPoint presentations and written materials were available in English, Mandarin, and Korean for the participants in the East Asian group and in English for the Pacific and Sri Lankan groups (English is the language of education throughout the Pacific, and the Sri Lankan group was highly educated although English was not their first language).

Baseline Survey, Randomization, and Financial Literacy Levels

Respondents were recruited from December 2010 to January 2011 (Pacific Island sample), December 2010 to February 2011 (East Asian sample), and

8. We planned to include a sample of Pacific Island migrants living in Sydney, Australia, but the field leader in charge of this process experienced health problems during the recruitment and training processes, leading to the exclusion of this sample from the study.

January 2011 to March 2011 (Sri Lankan sample). The resulting sample sizes were 349 Pacific Islanders, 352 East Asians, and 209 Sri Lankans. A baseline questionnaire collected information on the respondents' background characteristics, their use and awareness of different remittance methods, and their financial literacy, with specific emphasis on knowledge relevant to remittances and the use of financial instruments.

Within each of the three samples we formed eight strata based on three baseline characteristics: (i) reported frequency of remitting (remitting at least every three months); (ii) knowledge of the savings in transactions costs from bundling two remittances of NZ\$100 into a single remittance of NZ\$200; and (iii) knowledge of which credit card repayment patterns would lead to the highest charges. Individuals were then randomized by computer into a treatment group, whose members were invited to financial literacy training, and a control group, whose members were not invited to the training.

Table 1 displays the baseline characteristics of each of the three samples by treatment status. An F-test cannot reject joint orthogonality for each sample, confirming that we did not obtain an unlucky draw and that the randomization succeeded in achieving balance on baseline characteristics.

We observe that the three migrant groups differ from one another in a number of important ways. The Pacific Island migrants are younger and less educated than members of the other groups, with almost half under 35 years of age and only 9 percent having a university degree. Of the Pacific Island migrants, 39 percent are male, and just under half have a parent or child in a Pacific Island home country. They are relatively frequent remitters, with 59 percent remitting a mean amount of NZ\$299 (US\$244) and a median of NZ\$200 at least once every three months. The East Asian migrants are older, with only one-third under 35 years of age, and are more settled, with only one-quarter having immigrated in the past five years. Of the East Asian migrants, 43 percent are male, and 57 percent have university degrees. They are infrequent remitters, with only 6.5 percent remitting within the past three months despite the fact that 66 percent have a parent or child in the home country. The few remittances that occur are for relatively large amounts, with a mean (median) of NZ\$4,235 (NZ\$1,000). The Sri Lankan migrants differ in that they are mostly male (73 percent) and have the highest education and employment rates, with 59 percent having a university education. They are also relatively frequent remitters, with 55 percent remitting a mean (median) amount of NZ\$1,525 (NZ\$675) at least every three months and 75 percent having a parent or child in Sri Lanka. It is likely that these differences across groups reflect different immigration patterns: Pacific Islanders tend to immigrate to New Zealand as a result of family reunification and special concessionary migration quotas (McKenzie et al. 2010), whereas Asian migrants to New Zealand typically entered through points systems that reward skills and wealth. The Sri Lankan migrants are typically individuals who either entered Australia

TABLE 1. Characteristics of Sample by Treatment Status

	Pacific Islanders in New Zealand		East Asians in New Zealand		Sri Lankans in Australia	
	Treatment	Control	Treatment	Control	Treatment	Control
<i>Variables stratified on</i>						
Remit at least every three months	0.59	0.59	0.08	0.05	0.54	0.56
Knows it is cheaper to bundle remittances into large transaction	0.49	0.49	0.64	0.65	0.78	0.78
Knows only paying minimum on credit card costs the most	0.41	0.41	0.55	0.54	0.44	0.44
<i>Personal Characteristics</i>						
Male	0.36	0.42	0.45	0.41	0.76	0.69
Age is under 35	0.47	0.49	0.33	0.33	0.28	0.30
First generation migrant	0.81	0.81	0.99	0.98	1.00	0.99
Migrated within last five years	0.34	0.35	0.25	0.27	0.47	0.41
Has a parent or child in the origin country	0.47	0.42	0.69	0.64	0.75	0.76
Married	0.69	0.65	0.69	0.70	0.84	0.93
Education of Fifth Form (10th grade) or less	0.46	0.39	0.09	0.11	0.01	0.02
University degree	0.10	0.08	0.59	0.54	0.64	0.54
Employed	0.63	0.59	0.42	0.47	0.81	0.80
Uses email at least weekly	0.31	0.33	0.59	0.56	0.73	0.79
<i>Financial Characteristics</i>						
Ever compared costs of sending remittances	0.48	0.47	0.40	0.41	0.62	0.59
Has a cheque account	0.35	0.33	0.56	0.58	0.79	0.75
Has an ATM card	0.80	0.76	0.80	0.76	0.88	0.85
Has a credit card	0.15	0.16	0.64	0.60	0.76	0.72
Last amount remitted conditional on remitting (NZD)	288	310	4235	4234	1200	1884
Gets APR on two week loan correct	0.02	0.03	0.44	0.47	0.42	0.41
Knows components of a remittance fee	0.03	0.02	0.13	0.11	0.20	0.15
Number of methods for sending remittances known	3.00	2.83	2.63	2.69	3.68	3.64
Sample Size	177	172	179	173	107	102
<i>p</i> value for test of joint orthogonality		0.913		0.978		0.356

as students and chose to stay or migrated by qualifying under Australia's points-based migration system as a result of civil conflict in Sri Lanka.

The baseline survey asked three questions to measure remittance-specific financial literacy as well as two questions on broader financial literacy related to credit (see appendix 1). The remittance-specific questions are direct knowledge-based questions that do not require mathematical knowledge and directly measure the information taught by the financial literacy course. The general financial literacy questions are similar to those that have been used in a number of countries around the world (e.g., Lusardi and Tufano 2009); they are what Carpena et al. (2011) call computational or numeracy-based measures.

Baseline financial literacy was lowest among the Pacific Island migrants. Only 49 percent knew that it was cheaper to bundle remittances as a single transaction than to send them separately (and pay the fixed fee twice), only 5.7 percent knew that the prepaid ATM card was the cheapest method of remitting (among the given options), and only 3 percent knew that the remittance fee consists of an exchange rate commission and a fixed fee. Knowledge of the available methods of remitting was also relatively low. When the migrants were asked whether they had heard of each of 10 different methods of sending money (e.g., Western Union, Melie Mei Langi, Travellers Check), the mean respondent had heard of only three such methods. Financial literacy related to credit was also relatively low; 41 percent knew that someone who makes only the minimum payment would have the highest credit card fees, and only 3 percent were able to correctly calculate the nominal APR on a two-week payday loan (which simply involves multiplying by 26 rather than any use of exponentiation).

Baseline financial literacy rates were higher among the Sri Lankans and East Asians, reflecting their much higher education levels and greater use of credit cards and checking accounts. In these groups, 65 percent of the East Asians and 78 percent of the Sri Lankans knew that it was cheaper to bundle remittance transactions, and more than 40 percent of both groups were able to correctly calculate the APR on a two-week payday loan. However, knowledge of the components of a remittance fee remained low, with only 12 percent of the East Asians and 18 percent of the Sri Lankans knowing the correct answer to this question. As with the Pacific Islanders, these migrant groups claimed to have heard of only three to four possible ways of sending remittances out of a list of 10–12 methods.

Potential Savings from Greater Financial Literacy and Potential to Switch Methods

Participants had a range of different remittance methods available to them in all samples. The remittance methods available to the participants had transaction costs that ranged from almost zero to almost 20 percent for a typical transaction at the start of the intervention. The greatest potential gains appear to be for the Pacific Island migrants in New Zealand as a result of substantial

heterogeneity in costs and lower typical remittance amounts. Figure 1 in the Online Appendix illustrates the variation in the cost of sending NZ\$200 (the median transaction) from New Zealand to Tonga (the main destination) over our sample period. Transaction costs approached 20 percent for a money transfer operator called Mana, 15 percent using a bank transfer, 12–14 percent using either Western Union or MoneyGram, 8–11 percent using the major indigenous money transfer operator (Melie Mei Langi), and 7–8 percent using the Westpac Express prepaid remittance card. One internet-based, peer-to-peer currency exchange provider (KlickEx) had transaction costs of less than 1 percent for its least expensive service and 2.75 percent for its fast service, although no participants had ever used this method. For the most commonly used methods, Western Union and Melie Mei Langi, bundling two transactions into one would save a fixed fee of NZ\$8–14, whereas switching from one of these methods to the Westpac Express Card would save NZ\$6–12 per NZ\$200 transaction.

There was less variation in costs for the East Asians in New Zealand and, because of the low level of remittances, fewer potential gains. For money transfers to China, the transaction costs of sending NZ\$200 varied between 14 percent for Western Union and the most expensive indigenous money transfer operator (Global FX) and 10 percent using the least expensive money transfer operator (Convergence Group). Some of the Chinese money transfer operators would only transfer a minimum of NZ\$1,000, for which the transaction costs were as low as 3 percent. Because the cost of remitting decreases as a percentage of the remitted amount as a result of the fixed fee component and the median amount remitted among East Asian migrants was NZ\$1,000 at baseline, the percentage cost of remitting was 3–6 percent.

For the Sri Lankan participants in Australia, spending A\$200 on a remittance would incur transaction costs of 16 percent using a bank transfer, 9 percent using Western Union, 5 percent using MoneyGram, and 3 percent using any of the inexpensive indigenous money transfer operators (FastCash, Remittance Plus, or Serandib). For their median remittance amount of A\$500 (NZ\$675), the transaction costs were 11 percent using a bank transfer, 5–6 percent using Moneygram or Western Union, 4 percent using Kapruka, and 3 percent using FastCash, Remittance Plus, or Serandib. Cash Express, which began operating after the intervention started, charged just 2 percent for a remittance of A\$500. Because the most common methods at baseline were Kapruka and FastCash, this sample had relatively limited potential gains from switching providers.

Although migrants have a variety of remittance providers from which they can choose, there are differences in the convenience of these methods for them and for their receiving family members. For example, Western Union has an exclusive agreement with the New Zealand Post Office (and is found in small grocery stores and other locations) and has a wide range of locations throughout the Pacific. In contrast, the use of bank transfers and ATM cards involves

limited banking hours and few ATM locations, with considerably less spatial coverage in the Pacific (see Gibson et al. 2007). Price competition among providers in New Zealand or Australia may therefore not be sufficient to entice consumers to switch providers if remittance receivers find it much easier to use one method over another. However, when viewing switching as an outcome, we observed that 16 percent of the control group switched remittance methods within a six-month period, demonstrating that switching is certainly possible for at least some migrants.

The Financial Literacy Intervention

The financial literacy training content was originally developed by the authors in collaboration with the Ministry of Pacific Island Affairs and was piloted on a Pacific Island population in 2009. The material begins with a discussion of the reasons people remit and the factors involved in the remittance method decision, such as cost, speed, convenience for both the sender and the receiver, familiarity, trust, and the financial provider's ability to offer other services. The focus is on helping participants to understand the components of remittance costs, providing strategies for reducing these costs, and highlighting sources of information for comparing costs and learning about new remittance products. This process includes explaining the fixed fee and exchange rate commission components of transaction costs and illustrating the extent to which they vary across different providers, showing how the transaction costs decrease with the amount sent so that bundling several smaller transactions into one large transaction saves money, and providing information about the sendmoneypacific website for comparing costs and the new Westpac direct debit card product.⁹

The remittance material was adapted for the East Asian and Sri Lankan populations. Because sendmoneypacific does not cover remittance transactions for these remittance corridors, both groups were given instructions and shown how to access rates and the expected amount received on the Western Union website as well as on ANZ Bank online and fxcompared.com for the Sri Lankans and MoneyBookers for the East Asians.

The randomly chosen survey respondents were then invited to the financial literacy training sessions, which were held at multiple times and venues to ensure maximum participation from those who were invited. The sessions were typically held at churches, community centers, and sports clubs and usually trained groups of about 30 people at a time for approximately two hours. In addition to a presentation of approximately 25 PowerPoint slides, written material was provided, examples were considered, and there was continuous discussion with the community. As previously noted, to minimize any

9. Because the baseline survey data for the Pacific Island group indicated that very few respondents had credit cards and that the media presented stories of hardship caused by the use of more expensive sources of financing, the Pacific Island group's presentation also included a small amount of content on how to compare the costs of different sources of credit. We do not expect this to directly affect remittance behavior over the considered time horizon.

cross-cultural communication barriers, the presenters were all members of the immigrant groups. It was emphasized that the aim of the training was not to advocate for any one particular remittance provider but instead to help the participants become more informed consumers who could shop for better remittance deals (see online appendix figure 2 as an example).

The attendance rate for the training session was 148 out of 177 for the Pacific Island treatment group (84 percent). Three members of the control group who were accompanying friends in the treatment group also attended (1.7 percent). For the East Asian migrants, attendance was 112 out of 179 (63 percent) in the treatment group, with 26 out of 173 (15 percent) members of the control group, who were friends of and attended the same churches as the treatment group participants, also attending. Among the Sri Lankans, the attendance rate was 60 out of 107 (56 percent) for the treatment group, and no participants attended from the control group. Meier and Sprenger (forthcoming) find that in a U.S. context, individuals who discount the future (and thus who may be in more need of financial planning) are less likely to attend financial literacy training. We do not measure time preferences in our study, but we find no significant relationship between education or baseline financial literacy measures and the likelihood of attending training among our samples.

Follow-up Surveys

For the three months following the financial literacy training, all respondents of the baseline survey were given brief monthly follow-up surveys on their remittance activity during the past month along with questions on major financial actions taken during the previous month, such as applying for a credit card.¹⁰ In addition, the one-month survey asked several financial literacy questions to measure whether financial knowledge had increased as a result of the literacy training. Six months after training, all participants from both the treatment and control groups were invited to participate in community forums. A final round of follow-up surveys was conducted at the beginning of this forum, after which both the treatment and control groups were given information on the main messages of the training course as well as on new products and developments in the market that had occurred since the original intervention.

The timing of these follow-up surveys means that our analysis only measures the short-term effects of financial literacy training. Unfortunately, the timing dictated by the funding cycle supporting this study meant that our interventions and follow-up surveys did not encompass the Christmas period, which is a prime remitting period (although remitting behavior during this period may be very different from the norm). However, our study incorporates periods during which people remit for many of the standard reasons: regular household maintenance, school fees, annual church fundraising in Tonga, and sudden household emergencies such as health visits. The advantage of a randomized

10. All survey questions are available online at <http://go.worldbank.org/COLFUHFU70>.

TABLE 2. Attrition Rates by Survey Round

	1 month	2 months	3 months	6 months
Pacific Islanders in New Zealand				
Treatment group	0.06	0.09	0.09	0.16
Control group	0.05	0.09	0.10	0.13
<i>p</i> value of equality	0.673	0.886	0.814	0.415
Asians in New Zealand				
Treatment group	0.10	0.18	0.25	0.74
Control group	0.08	0.16	0.20	0.76
<i>p</i> value of equality	0.359	0.526	0.228	0.547
Sri Lankans in Australia				
Treatment group	0.45	0.45	0.44	0.79
Control group	0.29	0.30	0.32	0.72
<i>p</i> value of equality	0.017	0.025	0.073	0.194

experiment is that any such seasonality will be netted out when comparing the treatment and control groups.

Table 2 shows the attrition rates by survey round and ethnic group sample. Attrition rates were lowest for the Pacific Island sample, averaging 5 percent at one month, 9–10 percent at two and three months, and 14 percent at six months. We cannot reject a balance between the treatment and control groups in any survey round. The East Asian sample had attrition rates of 9 percent at one month, 17 percent at two months, 23 percent at three months, and 75 percent at six months, again balanced by treatment status. The Sri Lankan group had the highest attrition, with 45 percent attrition in the treatment group by one month compared to 29 percent of the control group and 76 percent attrition in the six-month follow-up. The high attrition was attributed by the survey leader to the refusal of some participants to provide contact details at the time of the baseline survey and to discomfort about discussing financial matters by some members of the sample, which may have been exacerbated by the invitation to the training. Attrition was much higher among the noncompliers (69 percent) than among those who actually received training (27 percent).

Table 1 in the appendix examines the determinants of attrition in the Sri Lankan sample and whether these determinants differ according to treatment status. Column 1 shows that attrition is higher for older individuals and for those with lower education levels; conditional on these variables, there is no significant effect of baseline financial literacy. Columns 2 and 3 show that there is no significant interaction between any of these determinants and treatment status. However, this finding may reflect low power in a relatively small sample with large point estimates for the interactions with age and education. For the Sri Lankan sample, we control for age, education level, gender, and the number of remittance methods an individual knew about at baseline in addition to our stratifying variables to mitigate any influence of selective attrition.

Despite the use of door prizes and gifts to their community groups as incentives, the six-month attrition level was high in the East Asian and Sri Lankan groups because these surveys were conducted at community events, which had very low attendance for these groups.¹¹ Therefore, we do not use the six-month survey data for these two samples. Given these attrition rates, we view the general results as most reliable for the Pacific Island group and the short-term outcomes as also reliable for the East Asians.

RESULTS

To estimate the impact of financial literacy training on the various outcomes of interest, we first estimate the following equation:

$$Outcome_{i,t} = a + b * TreatAssign_{i+c} * Outcome_{i,0} + \sum_{s=1}^S \delta_s d_{i,s} + \varepsilon_{i,t}, \quad (1)$$

where $TreatAssign_i$ is a dummy variable indicating assignment to treatment, the lagged outcome variable is controlled for where possible (McKenzie 2012), and dummy variable $d_{i,s}$ represents randomization strata (Bruhn and McKenzie 2009) to maximize power.¹² Robust (White-corrected) standard errors are reported in parentheses under the coefficients in the tables. Coefficient b gives the intention-to-treat effect, which is the effect of being offered financial literacy training regardless of whether individuals attend. This policy parameter is relevant for assessing the impact of offering financial literacy training to the average person in our sample.

We also estimate the impact of actually receiving training by replacing $TreatAssign_i$ with $TreatReceive_i$ in (1), where $TreatReceive_i$ is an indicator of whether individual i actually received treatment, and estimating the resulting equation by two-stage least squares, with treatment assignment used as the instrument in the first stage. This method provides a local average treatment effect for the impact of the financial literacy training for the types of people who attend when assigned to training and who would not have attended if assigned to the control group.

Several of our key outcomes are measured multiple times as a result of the repeated follow-up surveys. The use of repeated measurements at relatively short time intervals can be used to increase statistical power (McKenzie 2012). We combine multiple measures to examine either averages or totals from our

11. The average value of gifts given to individuals (or the groups they represented) for participating and as incentives, such as door prizes, was US\$40 per participant. This incentive design, along with all other aspects of the study, received prior ethical approval from the human ethics committee of the Waikato Management School.

12. For the Sri Lankan sample, we included controls for age, education, gender, and number of remittance methods known at baseline to mitigate the concerns related to the high attrition rate. In the text, we discuss the one case in which this method led to results that differed significantly from controlling for randomization strata.

survey rounds as an outcome, which provides an estimate of the average effect over the period of our follow-up surveys. Finally, we can boost power by pooling the three separate samples and examining the results for this pooled sample.

One caveat is that our results come exclusively from surveys and not from administrative data. A possible concern, as with many experiments that rely on self-reports, is that treated individuals may provide the responses that they think the surveyors want and that were emphasized by the training, even if these responses do not reflect their actual behavior. We address this possibility in several ways. First, we measure knowledge (which is less easily misreported) as well as behaviors, hoping to see consistency among them. Second, we consider the linkage to outcomes; the fact that we do not find any effect on people saying that they are performing some of the main actions encouraged by the course suggests that our results are not merely the result of reporting effects.

A second caveat is that our estimate of the treatment effect comes from comparing the treatment and control groups. To the extent that there are information spillovers between these groups, this comparison will understate the treatment effect, and our estimates should therefore be considered a lower bound on the impact of this type of training. Nevertheless, the fact that we observe relatively large differences in financial knowledge and in information-seeking behavior between the treatment and control groups suggests that these spillovers are, at most, second order to the main treatment effects.

Impact on Financial Knowledge

Table 3 examines whether financial literacy training succeeds in increasing migrants' knowledge about the costs of remitting and using credit. We observe large short-term impacts on financial knowledge for the Pacific Island sample. The local average treatment effect (LATE) shows that those who received training were 19 percent more likely to know that it costs less to bundle remittances into a larger transaction and were 62 percent more likely to know that the ATM/prepaid debit card is the least expensive method of remitting among the given options. Both of these results are significant at the 1 percent level. There was a slight downward trend in the knowledge that it is less costly to bundle remittances by the six-month follow-up survey, but even at six months, the migrants who were assigned to training were more likely to understand the exchange rate commission. Consistent with other studies on financial literacy (Carpena et al. 2011), we find no impact on computational measures of financial literacy, such as the ability to correctly calculate the APR on a payday loan or to understand compound interest (which was not taught in the course).

We also find some increases in financial knowledge about remittances for the other two groups. East Asian migrants who received training were 25 percent more likely to know that it costs less to bundle remittances into a larger transaction and were 19 percent more likely to know the least expensive method for remitting. The Sri Lankan migrants who received training saw a 28

TABLE 3. Impact on Financial Knowledge

Time after intervention:	Knows it is cheaper to bundle remittances		Knows cheapest method 1 month	Knows about exc. rate commission 6 months	Calculates APR correctly 6 months	Understands compound Interest 6 months
	1 month	6 months				
Panel A: Pacific Island Migrants in New Zealand						
<i>ITT results</i>						
Assigned to treatment	0.160*** (0.0487)	0.0682 (0.0484)	0.532*** (0.0440)	0.214*** (0.0546)	0.0114 (0.0277)	-0.0241 (0.0332)
<i>LATE results</i>						
Received training	0.185*** (0.0550)	0.0799 (0.0548)	0.616*** (0.0479)	0.252*** (0.0629)	0.0128 (0.0315)	-0.0287 (0.0377)
Observations	328	302	323	296	299	301
Control group mean	0.53	0.54	0.13	0.25	0.06	0.11
Panel B: Asian Migrants in New Zealand						
<i>ITT results</i>						
Assigned to treatment	0.125*** (0.0477)		0.0988** (0.0401)			
<i>LATE results</i>						
Received training	0.248*** (0.0946)		0.191** (0.0751)			
Observations	321		308			
Control group mean	0.68		0.10			

Panel C: Sri Lankan Migrants in Australia

ITT results

Assigned to treatment	0.0131 (0.0514)	0.217*** (0.0652)
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LATE results

Received training	0.0169 (0.0627)	0.280*** (0.0754)
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Observations	127	127
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Control group mean	0.86	0.67
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Panel D: All Groups Pooled

ITT results

Assigned to treatment	0.118*** (0.0299)	0.296*** (0.0287)
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LATE results

Received training	0.169*** (0.0418)	0.420*** (0.0387)
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Observations	780	762
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Control group mean	0.65	0.22
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Note: Robust standard errors in parentheses; *, **, and *** indicate significance at the 10, 5, and 1% levels, respectively.

All regressions include controls for strata dummies and for baseline outcome where available.

Six month follow up results only shown for the Pacific Island sample due to extreme attrition in other samples.

Sri Lankan results also control for baseline age, education, gender, and number of remittance methods known.

percent increase in knowledge of the least expensive method but no increase (from a high baseline) in knowledge about remittance bundling. Finally, we find a large and statistically significant increase in knowledge in the pooled sample, reflecting the increases found in the individual groups.

Impact on Information Seeking and Budgeting

Our monthly follow-up surveys asked whether respondents had used any source of information to compare remittance costs across methods or products and, if so, which information source they had used. Because our intervention focused on the use of several internet comparison sites, we were particularly interested in learning whether participants used the internet more often to compare remitting costs as a result of the intervention. Our one- and six-month surveys also asked whether individuals always kept track of how much they spent each month (although this question was not asked of the Sri Lankan sample). The financial literacy course made no mention of doing this; thus, we would not expect to see any effect. This item serves as a check on reporting bias to ensure that individuals who attended training did not simply report that they perform every perceived desirable financial behavior.

Table 4 examines whether the increase in knowledge about the costs of remitting leads to changes in information-seeking behavior. We find that, in the short-term, assignment to training caused the Pacific Island and East Asian migrants to be more likely to use information to compare remitting costs and to use the internet to compare costs, with no impact on keeping track of monthly expenses. One month after training, the migrants who received training were 20–24 percent more likely to have compared costs and 8–22 percent more likely to have used the internet to do so. However, the strongest impacts were found in the first month after the training, with no impact on the use of the internet three or six months later. The average effect over the various follow-up surveys was positive and significant.

The impacts on overall use of information to compare costs were positive but not statistically significant for the Sri Lankan sample, which may reflect imprecision due to the smaller sample size. Alternately, the effects may be weaker for this group because the majority already used one of the least expensive methods prior to the intervention.

One rationale for a drop-off in the use of information to compare costs over time is that the relative ranking of remittance providers, in terms of transaction costs, does not change significantly from month to month. Figure 1 in the online appendix shows that for the Pacific Island group, bank transfers and Mana are always the most expensive, Klick-Ex is always the least expensive, and the only company to significantly change costs over the sample period is Melie Mei Langi, which lowered its fixed fee component from NZ\$8 to NZ\$5 for several months before raising it again. Thus, once migrants had compared costs in the first month after training, they would not need to recheck frequently to know which methods were less costly. As previously noted, the gains

TABLE 4. Impact on Financial Behavior

	Used information to compare remitting costs					Used internet to compare remitting costs					Keeps track of monthly spending	
	1 month	2 months	3 months	6 months	Average	1 month	2 months	3 months	6 months	Average	1 month	6 months
Panel A: Pacific Island Migrants in New Zealand												
<i>ITT results</i>												
Assigned to treatment	0.206*** (0.0428)	0.0289 (0.0490)	-0.0576 (0.0460)	0.0975* (0.0513)	0.0720** (0.0357)	0.188*** (0.0430)	0.155*** (0.0501)	-0.00212 (0.0536)	-0.0350 (0.0484)	0.0822** (0.0365)	-0.0466 (0.0414)	0.000522 (0.0478)
<i>LATE results</i>												
Received training	0.240*** (0.0496)	0.0290 (0.0565)	-0.0649 (0.0528)	0.116** (0.0584)	0.0847** (0.0412)	0.219*** (0.0494)	0.178*** (0.0584)	-0.00556 (0.0617)	-0.0414 (0.0548)	0.0937** (0.0421)	-0.0545 (0.0477)	0.00143 (0.0547)
Observations	329	318	316	302	332	330	321	317	302	332	308	283
Control group mean	0.60	0.68	0.80	0.58	0.66	0.20	0.31	0.40	0.31	0.30	0.61	0.56
Panel B: Asian Migrants in New Zealand												
<i>ITT results</i>												
Assigned to treatment	0.0977** (0.0480)	0.0372 (0.0474)	0.0827* (0.0467)		0.104*** (0.0350)	0.0396 (0.0442)	0.0515 (0.0325)	0.0269 (0.0330)		0.0582** (0.0255)	-0.0915 (0.0564)	
<i>LATE results</i>												
Received training	0.195** (0.0982)	0.0711 (0.0888)	0.147* (0.0821)		0.209*** (0.0721)	0.0786 (0.0875)	0.0980 (0.0608)	0.0476 (0.0580)		0.116** (0.0520)	-0.1670 (0.1035)	
Observations	318	291	272		320	321	293	274		323	282	
Control group mean	0.23	0.20	0.14		0.18	0.18	0.06	0.06		0.10	0.63	

(Continued)

TABLE 4. Continued

	Used information to compare remitting costs					Used internet to compare remitting costs					Keeps track of monthly spending	
	1 month	2 months	3 months	6 months	Average	1 month	2 months	3 months	6 months	Average	1 month	6 months
Panel C: Sri Lankan Migrants in Australia												
<i>ITT results</i>												
Assigned to treatment	0.0729 (0.0829)	0.0377 (0.0772)	0.0239 (0.0699)		0.0469 (0.0651)	-0.000182 (0.0547)	-0.0310 (0.0415)	-0.000696 (0.0362)			-0.0198 (0.0382)	
<i>LATE results</i>												
Received training	0.0923 (0.0979)	0.0479 (0.0918)	0.00799 (0.0815)		0.0403 (0.0756)	-0.000236 (0.0668)	-0.0403 (0.0509)	-0.000800 (0.0445)			-0.0240 (0.0467)	
Observations	125	124	124		126	127	126	126			128	
Control group mean	0.24	0.20	0.16		0.21	0.10	0.07	0.04			0.08	
Panel D: All Groups Pooled												
<i>ITT results</i>												
Assigned to treatment	0.132*** (0.0305)	0.0320 (0.0312)	0.00678 (0.0297)		0.0767*** (0.0236)	0.0910*** (0.0282)	0.0774*** (0.0270)	0.00423 (0.0280)			0.0515** (0.0205)	
<i>LATE results</i>												
Received training	0.190*** (0.0436)	0.0426 (0.0432)	0.00697 (0.0401)		0.107*** (0.0336)	0.131*** (0.0403)	0.108*** (0.0376)	0.00419 (0.0378)			0.0732** (0.0292)	
Observations	776	737	715		782	782	744	720			787	
Control group mean	0.38	0.40	0.42		0.38	0.17	0.17	0.20			0.18	

Note: Robust standard errors in parentheses; *, **, and *** indicate significance at the 10, 5, and 1% levels, respectively.

All regressions include controls for strata dummies and for baseline outcome where available.

Note averages are over one to three months for Asians and Sri Lankans and six month impacts not shown due to extreme attrition in this round.

Sri Lankan results also control for baseline age, education, gender, and number of remittance methods known.

Sri Lankan surveys did not collect data on keeping track of monthly spending.

from frequent checking were also unlikely to be large for the other two groups given that the East Asians remitted infrequently and most of the Sri Lankans were already using the two least expensive methods.

Impact on Remitting Frequency and Amount

Next, we examine whether the financial literacy training had an impact on the likelihood of sending remittances or on the total remitted amount. *Ex ante*, the expected direction of the effect of financial literacy training is unclear. The content on bundling transactions into less frequent, larger transactions would be expected to reduce the frequency of remitting but to have no impact on the total amount, whereas the content stressing less costly methods of remitting may lead individuals to be more willing to make smaller transactions and therefore to increase the frequency and number of remittances. [Gibson et al. \(2006\)](#) use hypothetical questions with a sample of Tongan migrants in New Zealand who express a negative cost elasticity and claim that they would send more remittances if costs were to decrease. Supporting experimental evidence comes from [Aycinena et al. \(2011\)](#), who gave randomized discounts to Salvadorean migrants in the United States and found that price discounts led to significant increases in remitted amounts, which they attributed to an increase in the frequency of remitting rather than the amount sent per transaction.

Table 5 shows that the financial literacy training does not appear to have significant impacts on either the likelihood of remitting or the total remitted amounts for any of the groups. The impact on the average remittance frequency is very close to zero for all three samples and has a 95 percent confidence interval for the intention-to-treat effect of -0.043 to $+0.025$ in the pooled sample. We consider this a relatively precise zero effect, allowing us to rule out large positive or negative effects of training on remitting frequency. Panel D shows that the pooled effect is significantly negative for the three-month follow-up, but not when averaged over all follow-up rounds.

When we consider remittance amounts, we do not observe a significant impact on the total remitted amount in any of the samples. Remittance amounts exhibit more variation, so we have less precision in estimating this effect. Our precision is greatest for the Pacific Island sample, for which we have a point estimate of an increase of NZ\$4, with a 95 percent confidence interval of $-NZ\$63$ to $+NZ\$71$ for total remittances over six months. This confidence interval encompasses a range of large percentage increases or decreases relative to the control group mean of NZ\$115 but is small in absolute terms, especially when compared to the median annual income of NZ\$20,000–30,000 for the Pacific Islanders in our sample.

There is a positive and significant effect on the remitted amount in the two-month follow-up survey for the Sri Lankan sample. However, this is the only estimate that is sensitive to whether we control for age, education, gender, and baseline literacy, with the point estimate dropping from A\$134 to $-A\$43$ when these controls are not included. This result is in contrast to the other

TABLE 5. Impacts on Remittance Outcomes

	Made a remittance in pastmMonth					Total amount remitted (unconditional)				
	1 month	2 months	3 months	6 months	Average	1 month	2 months	3 months	6 months	Total
Panel A: Pacific Island Migrants in New Zealand										
<i>ITT results</i>										
Assigned to treatment	-0.0110 (0.0383)	-0.0585 (0.0377)	-0.0550 (0.0350)	0.0435 (0.0443)	-0.0210 (0.0288)	12.33 (9.534)	-2.839 (6.038)	-0.903 (5.549)	-6.185 (16.89)	3.946 (34.09)
<i>LATE results</i>										
Received training	-0.0128 (0.0439)	-0.0702 (0.0432)	-0.0662 (0.0404)	0.0472 (0.0502)	-0.0264 (0.0331)	14.37 (10.93)	-3.593 (6.976)	-1.334 (6.407)	-7.983 (19.11)	4.560 (38.67)
Observations	328	316	317	299	332	321	310	308	292	278
Control group mean	0.16	0.17	0.14	0.18	0.16	20	22	16	53	115
Panel B: Asian Migrants in New Zealand										
<i>ITT results</i>										
Assigned to treatment	0.00224 (0.0309)	0.0104 (0.0230)	-0.0143 (0.0185)		0.00127 (0.0182)	-172.7 (160.9)	292.2 (224.6)	-172.1 (143.5)		81.21 (314.4)
<i>LATE results</i>										
Received training	0.00443 (0.0603)	0.0197 (0.0431)	-0.0253 (0.0319)		0.00254 (0.0357)	-345.7 (320.1)	556.9 (427.6)	-305.1 (249.7)		142.9 (544.5)
Observations	321	293	274		323	316	290	271		269
Control group mean	0.088	0.041	0.029		0.054	352	62	193		523
Panel C: Sri Lankan Migrants in Australia										
<i>ITT results</i>										
Assigned to treatment	-0.0449 (0.0812)	0.0952 (0.0795)	-0.0791 (0.0805)		-0.00470 (0.0621)	-644.9 (490.1)	134.4** (66.46)	-72.21 (62.96)		-616.9 (525.7)
<i>LATE results</i>										
Received training	-0.0580 (0.0999)	0.123 (0.0958)	-0.114 (0.100)		-0.0166 (0.0759)	-738.5 (521.4)	154.1** (69.56)	-87.91 (67.32)		-704.9 (557.4)
Observations	127	126	126		128	98	97	97		95
Control group mean	0.361	0.282	0.319		0.326	630	361	144		868

Panel D: All Groups Pooled

ITT results

Assigned to treatment	-0.00950 (0.0241)	-0.00486 (0.0231)	-0.0433** (0.0218)	-0.00911 (0.0174)	-148.1 (90.11)	115.3 (98.83)	-79.35 (58.83)	-46.08 (150.0)
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LATE results

Received training	-0.0136 (0.0341)	-0.00795 (0.0320)	-0.0627** (0.0295)	-0.0161 (0.0246)	-209.7* (125.8)	160.2 (135.3)	-108.5 (78.03)	-62.03 (197.6)
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Observations	780	739	720	787	736	698	676	642
Control group mean	0.165	0.142	0.132	0.146	265	102	108	424

Note: Robust standard errors in parentheses; *, **, and *** indicate significance at the 10, 5, and 1% levels, respectively.

All regressions include controls for strata dummies, and remittance amount regressions also include baseline amount remitted.

Six month follow-up results only shown for the Pacific Island sample due to extreme attrition in other samples.

Sri Lankan results also control for baseline age, education, gender, and number of remittance methods known.

Sri Lankan estimates, which are not as sensitive to the inclusion of these controls. Moreover, the estimated impact on the total remitted amount over the three monthly follow-up surveys is negative and insignificant. Similarly, there is no significant impact on the East Asian or pooled samples.

Migrants may be reluctant to bundle transactions and to change remitting frequency if they have a regular pattern of sending a set monthly amount because they have budgeted a fixed amount of each monthly pay check or they send a fixed amount to meet the monthly needs of the family at home, who find it difficult to budget larger amounts over longer periods as a result of savings constraints, the risk of theft, or self-control problems. This type of remitting behavior appears to be typical of the Pacific Island sample, with 84 percent of those who made multiple transactions sending the same amount each time. However, 40 percent of those who remitted did so only once in the three-month survey period. This behavior is less typical of the other two groups, with the East Asians sending large transactions infrequently and only 41 percent of the Sri Lankans who made multiple transactions sending the same amount each time.

One possible reason for the lack of impact on remitting levels could be that migrants saved more so that they could bundle remittances in the future. Given the reluctance of these groups to provide data on savings, we were not able to collect savings levels in the surveys. Therefore, we cannot completely exclude this possibility. However, the fact that we see no change in the Pacific Island sample's remittances over even a six-month period suggests that migrants are not shifting from remitting monthly to remitting larger amounts every two or three months.

Impact on Remitting Channel

Even if immigrants do not change their remittance frequency or the remitted amount, they may benefit from the training if it causes them to change the methods they use to remit. In table 6, we examine whether the migrants in our samples stated that they used a different method of remitting in any of the follow-up surveys than the method they had used in the 12 months prior to the baseline survey. We find that in the Pacific Island sample, 16 percent of the control group use a different method at least once during the four follow-up surveys. Financial literacy training led to a significant reduction in this behavior, halving the rate of switching to new products. Although the training introduced these migrants to a new product, the Westpac prepaid express card, we find no increase in the usage of this product among those who were trained. Instead, the main effect appears to be that fewer individuals switched from using Western Union or Melie Mei Langi to Mana. Mana is a church-based money transfer method with a low fixed fee (NZ\$5–8) but an unfavorable exchange rate, making it the most expensive of the money transfer operators for the median remittance amount (online appendix figure 1). Moreover, Mana is

TABLE 6. Impact on the Likelihood of Switching Remittance Methods

	1 month	2 months	3 months	6 months	Ever switch	Ever use Mana	Ever use Westpac card	Mean percentage cost paid if remit
Panel A: Pacific Island Migrants in New Zealand								
<i>ITT results</i>								
Assigned to treatment	-0.0380 (0.0264)	-0.0645** (0.0280)	-0.0675** (0.0271)	-0.0118 (0.0200)	-0.0865** (0.0340)	-0.0369** (0.0184)	0.00598 (0.0161)	-0.2848 (0.6620)
<i>LATE results</i>								
Received training	-0.0442 (0.0304)	-0.0769** (0.0325)	-0.0804** (0.0315)	-0.0149 (0.0227)	-0.103*** (0.0395)	-0.0426** (0.0214)	0.00681 (0.0185)	-0.3475 (0.7631)
Observations	329	318	316	299	332	332	332	84
Control group mean	0.08	0.10	0.10	0.04	0.16	0.079	0.018	13.02
Panel B: Asian Migrants in New Zealand								
<i>ITT results</i>								
Assigned to treatment	-0.0123 (0.0154)	-0.00563 (0.0110)	0.000445 (0.0114)		-0.0240 (0.0195)			
<i>LATE results</i>								
Received training	-0.0243 (0.0302)	-0.0107 (0.0206)	0.000786 (0.0198)		-0.0480 (0.0389)			
Observations	321	293	274		323			
Control group mean	0.03	0.01	0.01		0.04			
Panel C: Sri Lankan Migrants in Australia								
<i>ITT results</i>								
Assigned to treatment	-0.0129 (0.0498)	0.0756 (0.0586)	0.00214 (0.0511)		0.0970 (0.0710)			-1.1256 (0.8155)
<i>LATE results</i>								
Received training	-0.0167 (0.0612)	0.0979 (0.0706)	-0.0133 (0.0610)		0.113 (0.0848)			-1.1521 (0.7088)

(Continued)

TABLE 6. Continued

	1 month	2 months	3 months	6 months	Ever switch	Ever use Mana	Ever use Westpac card	Mean percentage cost paid if remit
Observations	131	130	129		132			41
Control group mean	0.10	0.07	0.09		0.15			8.69
Panel D: All groups pooled								
<i>ITT results</i>								
Assigned to treatment	-0.0200 (0.0151)	-0.0157 (0.0164)	-0.0310** (0.0155)		-0.0304 (0.0203)			-0.541 (0.508)
<i>LATE results</i>								
Received training	-0.0287 (0.0215)	-0.0228 (0.0229)	-0.0465** (0.0209)		-0.0473 (0.0288)			-0.634 (0.542)
Observations	781	741	719		787			126
Control group mean	0.06	0.06	0.06		0.11			11.71

Note: Robust standard errors in parentheses; *, **, and *** indicate significance at the 10, 5, and 1% levels, respectively.

All regressions include controls for strata dummies.

Six month follow-up results only shown for the Pacific Island sample due to extreme attrition in other samples.

Sri Lankan results also control for baseline age, education, gender, and number of remittance methods known.

not included on the sendmoneypacific website, making its cost structure even less transparent.

In the final column of table 6, we consider only the subsample of individuals who remitted and calculate the percentage cost they would pay on these remittances, standardizing the cost at NZ\$200 to allow comparability across individuals. We find that training results in a 0.34 percent reduction in costs, but this reduction is not significant. This finding is in line with the 4 percent reduction in using Mana multiplied by the 7 to 8 percent average savings from using Melie Mei Langi or Western Union instead. This point estimate indicates that migrants would have to send NZ\$8,823 in remittances to recoup the NZ\$30 cost of providing the training, which is likely more than one order of magnitude higher than annual remittances for this group.¹³

We find no significant impact on switching methods among the other two groups. For the East Asians, this situation partly reflects the overall low frequency of remittances; there is a small number of transactions for which switching can be considered. For the Sri Lankans, most immigrants were using a relatively cheap method at baseline, so they had relatively little to be gained by switching (as well as the caveat of high attrition).

The Main Benefits According to Participants

In the one-month follow-up survey, individuals who attended training were asked whether it had been useful, whether they would recommend it to friends and family, what the most useful topic was, and whether it had caused them to change their behavior. Among the Pacific Island group, all participants stated that the training was very useful and that they would recommend it to others. The most useful topic was related to the different costs and methods of sending money. Sixty percent of the respondents stated that the training had caused them to change their behavior, including using the website to compare costs and asking around for better rates. Eighty percent of the East Asians who attended the training stated that it was useful, and 75 percent would recommend it to others, with the most useful knowledge related to remittance fees. Only 21 percent stated that they had changed their behavior, mostly in terms of examining the costs of sending money. Among the Sri Lankan sample, 91 percent of those who answered the follow-up survey stated that the training had been useful, but only two people who had attended the training stated that they had changed their behavior as a result. These direct reports are consistent with the empirical results, suggesting an increase in knowledge that resulted in some changes in information-seeking behavior for the Pacific Island group but no major changes in remitting behavior.

13. Total unconditional remittances (including zeros for those who do not remit) are NZ\$151 for the control group over a five-month period that does not include Christmas.

DISCUSSION

The training succeeded in increasing financial knowledge about the components of remittance costs and encouraging people to search for information about the costs of sending money. The training was fairly inexpensive to deliver; courses were typically taught in churches or other community spaces, and once the content was developed, the main costs were the time of the trainer and snacks and refreshments for training attendees, which cost approximately NZ\$20–30 per attendee. However, the measured benefits in terms of realized cost savings were very low, such that a cost-benefit calculation that only includes the realized savings in remittance fees as benefits would not view this program as valuable for the money. Because our analysis only focuses on the short term, we cannot measure benefits that take longer to manifest, and there may be potential spillover benefits in other dimensions of financial behavior from encouraging migrants to think critically about the financial matters covered in the training.

Nonetheless, despite the emphasis placed on the Westpac prepaid debit card as having the lowest remitting cost and on credit cards as a low cost of way obtaining credit for the Pacific Island sample, we do not see an impact of training on these outcomes. The final survey asked participants why they were not using the least expensive method of remitting; 41 percent replied that another method was more convenient for them, and 55 percent stated that another method was more convenient for the receiver. The latter finding is consistent with Gibson et al. (2007), who show that the geographic spread of ATM facilities in Tonga covers a lower share of the population than that of Western Union offices. Further evidence of the lack of low-cost technology adoption in the Pacific Islands comes from other methods. The internet-based, peer-to-peer currency exchange operator KlickEx had the lowest costs overall but was unused by participants in our study. In October 2011, KlickEx joined forces with a major mobile phone provider, Digicel, to offer remittance transfers into mobile wallets in Tonga, Samoa, or Fiji, which could be withdrawn as cash at very low transaction costs. To date, this new method seems to have very low adoption rates.

One reason that convenience may have the highest priority is that the amounts saved through better financial literacy may be too trivial to warrant action. This is especially the case for the East Asians (who tend to remit large amounts relatively infrequently) and the Sri Lankans (who were already using inexpensive methods). Even for the Pacific Island sample, however, the savings from switching to one of the more inexpensive methods may amount to NZ\$6–12 per NZ\$200 transaction, which would justify the costs of learning about and trying new methods only for those who remit very frequently. Many Pacific Island migrants earn little more than the minimum wage in New Zealand, which is NZ\$13 per hour. Therefore, taking an hour to learn about a new remittance method and additional time to use it could quickly make the

opportunity cost of this time equal to the amount of money saved. Given that the baseline survey revealed an average remitting frequency of five times per year for the Pacific Island sample, the annual savings from switching to the least expensive methods is just NZ\$30–60. The scope for changes in ultimate outcomes may therefore be greater for financial literacy initiatives that focus on savings and budgeting behavior or those that allow people at risk of obtaining high-cost credit to avoid excessively expensive loans (e.g., [Bertrand and Morse 2011](#)).

CONCLUSIONS

Our results show that simple financial education training for migrants can change their knowledge about remitting costs and lead them to investigate price alternatives. Nevertheless, we find no major changes in ultimate outcomes. Instead, we observe a modest effect whereby migrants avoid switching to more expensive or less transparent remittance channels but do not change their remittance amounts or frequencies. The impact on the frequency of remitting is a relatively precise zero, whereas a confidence interval for the impact on the remitted amount incorporates both large positive and large negative percentage changes, although the absolute magnitudes of the effects remain small relative to the incomes of the migrants.

There are several caveats to this work that should be emphasized when interpreting these conclusions. Our analysis is relatively short term in nature and does not include the Christmas period, which is one of the most important remittance periods, reducing our power to detect effects. The study includes a range of different types of migrants, which is important for determining the general applicability of the training. However, this sample selection came at the cost of including migrants with infrequent remitting behavior. Finally, attrition was an issue, particularly for the Sri Lankan sample. Despite these limitations, the results provide the first experimental evidence on the impact of financial literacy training for migrants, generating insights for policy and providing a basis for future studies.

Our results suggest that, although informing remitters about remittance costs is a relatively inexpensive and uncontroversial intervention, it will not necessarily lower average remittance costs by causing remitters to switch to less expensive methods. Instead, governments that wish to reduce average money transfer costs may need to address other barriers, such as excessive regulation and exclusive arrangements made by state-owned entities that deter new entry into remittance corridors and barriers to access to financial services in receiving countries. It is also possible that the process of providing transparent information on remitting costs through different methods will lower costs through competition without forcing migrants to switch providers. For example, transfer fees from New Zealand to the Pacific Islands have fallen since the launch of *sendmoneypacific*, although the extent of this decrease may be attributable to

the website rather than other market events, and there is still a large amount of variation in costs across providers and relatively little adoption of the most inexpensive methods.

In terms of financial education itself, another implication of this study is that the case for providing financial literacy training to migrants may rest on criteria other than the financial savings generated through less expensive remittance methods, such as improvements in migrants' ability to be informed customers and potential savings from financial management activities such as a choice of debt levels and instruments. Moreover, because the majority of the respondents list the convenience of the recipient as the reason for not using the most inexpensive method, training that is targeted at remittance recipients may also be productive. Further experimentation with additional training content on budgeting, saving, and debt management and expansion of the definition of remittance decision makers to include recipients are fruitful areas for policy refinement. The early results of a financial literacy experiment in Indonesia, which offered training on budgeting and savings to both migrants and their family members, appear to be promising in this regard, showing that training both migrants and their remittance receivers prior to the migrants' departures resulted in increased savings by home families (Doi et al. 2012).

REFERENCES

- Aycinena, D., C. Martinez, and D. Yang. 2011. "The Impact of Remittance Fees on Remittance Flows: Evidence from a Field Experiment among Salvadorean Migrants." University of Michigan. Ann Arbor, Michigan. Processed.
- Beck, T., and M. Soledad Martinez-Pería. 2011. "What Explains the Price of Remittances? An Examination across 119 Country Corridors." *World Bank Economic Review* 25(1): 105–31.
- Bernheim, B. D., and D. M. Garrett. 2003. "The Effects of Financial Education in the Workplace: Evidence from a Survey of Households." *Journal of Public Economics* 87 (7–8): 1487–519.
- Bertrand, M., and A. Morse. 2011. "Information Disclosure, Cognitive Biases, and Payday Borrowing." *Journal of Finance* 66(6): 1865–93.
- Bruhn, M., and D. McKenzie. 2009. "In Pursuit of Balance: Randomization in Practice in Development Field Experiments." *American Economic Journal: Applied Economics* 1(4): 200–23.
- Carpena, F., S. Cole, J. Shapiro, and B. Zia. 2011. "Unpacking the Causal Chain of Financial Literacy." Policy Research Working Paper 5798. World Bank, Policy Research Department, Washington, DC.
- Clemens, M. A., C. E. Montenegro, and L. Pritchett. 2009. "The Place Premium: Wage Differences for Identical Workers Across the U.S. Border." Working Paper 148. Center for Global Development, Washington, DC.
- Cole, S. A., and G. K. Shastry. 2009. "Smart Money: The Effect of Education, Cognitive Ability, and Financial Literacy on Financial Market Participation." Working Paper 09-071. Harvard University, Harvard Business School, Cambridge, MA.
- Cole, S., T. Sampson, and B. Zia. 2010. "Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets?" *Journal of Finance* 66(6): 1933–67.
- Doi, Y., D. McKenzie, and B. Zia. 2012. "Who You Train Matters: Identifying Complementary Effects of Financial Education on Migrant Households." Policy Research Working Paper 6157. World Bank, Policy Research Department, Washington, DC.

- Duflo, E., and E. Saez. 2003. "The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence From a Randomized Experiment." *Quarterly Journal of Economics* 118(3): 815–42.
- Gibson, J., G. Boe-Gibson, D. J. McKenzie, and H. Rohorua. 2007. "Efficient Remittance Services for Development in the Pacific." *Asia-Pacific Development Journal* 14(2):55–74.
- Gibson, J., D. J. McKenzie, and H. Rohorua. 2006. "How Cost Elastic are Remittances? Evidence from Tongan Migrants in New Zealand." *Pacific Economic Bulletin* 21(1): 112–28.
- Gibson, J., D. McKenzie, and S. Stillman. Forthcoming. "Accounting for Selectivity and Duration-Dependent Heterogeneity When Estimating the Impact of Emigration on Incomes and Poverty in Sending Areas." *Economic Development and Cultural Change*.
- Hernández-Coss, R. 2005. "The U.S.-Mexico Remittance Corridor: Lessons on Shifting from Informal to Formal Transfer Systems." Working Paper 47. World Bank, Washington, DC.
- Jaramillo, M. 2008. "Challenges and Opportunities for Banking Remittances." *Insight 25, Acción Internacional*. http://resources.centerforfinancialinclusion.org/publications/InSight_25_238.asp.
- Lee, H. 2003. *Tongans Overseas: Between two Shores*. Honolulu, HI: University of Hawaii Press.
- Lusardi, A., and P. Tufano. 2009. "Debt Literacy, Financial Experiences, and Overindebtedness." NBER Working Paper 14808. NBER, Cambridge, MA.
- LIRS - Lutheran Immigration and Refugee Service. undated. *Financial Literacy for Newcomers: Weaving Immigrant Needs into Financial Education*. http://www.refugeeworks.org/downloads/rw_financial_literacy.pdf.
- McKenzie, D. 2007. "Remittances in the Pacific." In Susan Pozo, ed., *Immigrants and their International Money Flows*, 99–121. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.
- . 2012. "Beyond Baseline and Follow-Up: The Case for More T in Experiments." *Journal of Development Economics* 99(2): 210–21.
- McKenzie, D., J. Gibson, and S. Stillman. 2010. "How Important is Selection? Experimental vs Non-experimental Measures of the Income Gains from Migration." *Journal of the European Economic Association* 8(4): 913–45.
- McKenzie, D., and J. Mistiaen. 2009. "Surveying Migrant Households: A Comparison of Census-Based, Snowball, and Intercept Surveys." *Journal of the Royal Statistical Society Series A* 172(2): 339–60.
- Meier, S., and C. Sprenger. Forthcoming. "Discounting Financial Literacy: Time Preferences and Participation in Financial Education Programs." *Journal of Economic Behavior and Organization*.
- Pacific Islands Forum Secretariat. 2011. "Regional Remittance Issues." Paper 4 presented at the Forum Economic Minister's Meeting, Apia, Samoa, July 20–21. http://www.forumsec.org/resources/uploads/attachments/documents/2011FEMM_FEMS.06.pdf.
- Stock, R. 2009. "Remittance Card Shows Bank's Other Face." *Sunday Star Times*, August 9, A6.
- Suki, L. 2007. "Competition and Remittances in Latin America: Lower Prices and More Efficient Markets." OECD and IADB joint report. <http://www.oecd.org/dataoecd/31/52/38821426.pdf> (accessed June 15, 2012).
- World Bank. 2006. *Global Economic Prospects 2006: Economic Implications of Remittances and Migration*. World Bank: Washington, DC.
- Yang, D. 2008. "International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks." *The Economic Journal* 118: 591–630.
- Yang, D., and C. A. Martinez. 2005. "Remittances and Poverty in Migrants' Home Areas: Evidence from the Philippines." In Caglar Ozden and Maurice Schiff, eds., *International Migration, Remittances, and the Brain Drain*, 81–121. Washington, DC: World Bank.