

Impacts of dollarization on remittances of Cambodian migrant workers in Thailand

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Abstract

We study the impact of dollarization on migrant workers' remittances for the case of Cambodian migrant workers in Thailand using an original dataset of a questionnaire survey. In four provinces of Cambodia, Thai Baht is widely used as substitute for the domestic currency, which could facilitate families of migrant workers to receive remittances in Thai Baht, allowing them to partially save the remittance cost embedded in the exchange rate margin. By comparing the remittances to Baht zone provinces with those to non-Baht zone provinces, we evaluate the impact of dollarization, or to be specific "Bahtization". Empirical results indicate that remittances to Baht zone provinces are more likely to be denominated in Thai Baht, implying that "Bahtization" facilitates Cambodian migrant workers' remittances from Thailand.

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1. Introduction

Despite increasing recognition of workers' remittances as a potential instrument for development and alleviation of poverty in developing countries,¹ services for migrant workers' remittances are often perceived as not transparent in terms of fee structure. A total cost of sending remittances from a migrant host country to its home country includes an up-front fixed fee and exchange rate margin. The latter is the gap between a prevalent market exchange rate and the exchange rate that money transfer operators apply to remittance transactions. A considerable portion of remittance cost is sometimes hidden in the exchange rate margin.²

When the migrant workers' home country is dollarized and the currency of the migrant host country is widely used as substitute for the domestic currency, migrant workers can save the process of currency conversion and the associated costs in sending remittances. Dollarization is a phenomenon where foreign currencies are used as substitute of the domestic currency (Balino et al. 1999). Here, dollarization is not restricted to usage of U.S. dollar, but it includes usage of any foreign currencies.

Focusing on Cambodian migrant workers in Thailand, we aim to examine impacts, if any, of dollarization on the remittance behaviour of migrant workers. In the literature of dollarization, migrant workers' remittances are treated as a source of foreign exchange to advance dollarization (Watanabe 2007). It is a novel feature of this study to investigate the phenomenon from the opposite side, impacts of dollarization on remittances.

The Thailand-Cambodia remittance corridor is a suitable case for the analysis of the impact of dollarization on migrant workers' remittances. While Cambodia is

¹ Ratha (2003)

² In such a context, the World Bank launched the website of the *Remittance Prices Worldwide*, and has published data on the costs of remittances for major remittance corridors. (Website: <https://remittanceprices.worldbank.org/en/countrycorridors>) According to this website, for example, the total cost of sending MYR 610 (equivalent to USD 150) from Malaysia to Indonesia as percentage of remittance is 5.4 percent (as of the second quarter of 2015), of which the exchange rate margin accounts for more than a half, on average 3.15 percent point.

well-known for the usage of U.S. dollar, Odajim (2015) reveals that Thai Baht is also circulated in a considerable degree in certain regions of the country, based on a large scale nationwide survey on the usage of foreign currency in Cambodia. Thus, by comparing the remittances from Thailand to Thai Baht zone and non-Thai Baht zone of Cambodia, it would be possible to examine the impact of dollarization, or to be specific, “Bahtization,” on migrant workers’ remittances. Furthermore, this migration corridor is important for both countries: Thailand is the top destination country of emigration from Cambodia, and Cambodia is third largest source country of immigrant workers for Thailand.³

The remainder of this paper is structured as follows. Section 2 overviews the Cambodian workers’ remittances and their environment. Section 3 presents a hypothesis on how dollarization exerts influences on remittances, explains the outline of the survey data, and offers an empirical analysis. Section 4 presents concluding remarks.

2. Overview of Cambodian migrant workers’ remittances and their environment

2.1 “Bahtization” in Cambodia

Cambodia is one of the most highly dollarized countries in Asia. In this country, foreign-currency-denominated assets, especially U.S. dollar notes and deposits, are widely circulated not only for store of value but also as a means of payment and unit of account (de Zamaroczy and Sa 2002).

Along with U.S. dollar, Thai Baht is circulated in certain regions, especially in provinces sharing the border with Thailand. According to Odajima (2015) which summarises the results of a nationwide survey of households and firms on the usage of foreign currency throughout 25 provinces of the country, there are four provinces where Thai Baht is widely used as substitute for the domestic currency, Khmer Riel. In provinces of Banteay Meanchey, Battambang, and Pailin, more than 50 percent of business expenditures of sample firms were in Thai Baht, and in Koh Kong Province, more than 30 percent. These four provinces can be regarded as the Baht zone or “Bahtized” provinces. Table 1 lists all 25 provinces of the country with their population and population density as of the General Population Census in 2008. The four Baht zone provinces as a whole accounted for 14.3 percent of the total population of the country.

³ World Bank’s migration and remittances database.

Table 1

2.2 Remittance channels of Cambodian migrant workers

Earlier studies on the remittances of Cambodian migrant workers in Thailand point out that the majority of Cambodian migrant workers use informal remittance channels (Chan 2009; Deelen and Vasuprasat 2010). Typically, senders hand off funds to an agent of an informal money transfer operator in Thailand, and another agent of the operator releases funds to the recipients at its outlet or delivers funds to the premises of the recipients.

Deelen and Vasuprasat (2010) relate migrants' preference to informal money transfer operators with their convenience such as speed of money transfer. Chan (2009) documents that informal money transfer operators offer instant payments to the recipients; when senders entrust funds to an agent in Thailand, that agent instructs by telephone another agent in Cambodia to pay funds to the recipients immediately from the working capital. Agents in Thailand occasionally visit Cambodia to replenish funds at the agents of delivery point.

Furthermore, Deelen and Vasuprasat (2010) report that in such informal remittances from Thailand to Cambodia, 80 percent of funds reach to the recipients in Thai Baht. Thailand has been receiving a large flow of immigrant workers from three neighbouring countries, namely Cambodia, Lao PDR, and Myanmar. Deelen and Vasuprasat compare the remittance behaviour of migrant workers from these three countries. They find that while the remittances sent from Thailand to Myanmar are usually received in Myanmar kyat, the remittances from Thailand to Cambodia and Lao PDR are mostly received in Thai Baht.⁴ However, they do not analyse the relationship between the denomination of remittances and the characteristics of the destination of remittances.

Apart from denomination of remittances, there are at least two types of money transfer operators within informal remittance channels of the Thailand-Cambodia migration corridor. First, a conventional informal money transfer operators employ agents at both the money collection point in Thailand and the money delivery point in Cambodia. In Thailand, senders entrust funds to agents in person. In Cambodia, recipients collect funds from the premises of agents, or agents deliver funds to the houses of the recipients.

In contrast, there is another type of informal money transfer operators who use banks

⁴ Lao PDR is another dollarized economy where U.S. dollar and Thai Baht are widely circulated (Menon 2008)

and formal money transfer firms. For example, this type of informal money transfer operator instructs migrant workers to entrust funds at his bank account in Thailand. Similarly, in Cambodia, this type of operator delivers funds to recipients using the network of Cambodian banks or formal money transfer firms such like WING.⁵ This new type of informal money transfer operators might offer a competitive service fees as they do not have to maintain their own outlets or agents at money collection and delivery points.

Between these two types of informal money transfer operators, the conventional one is more compatible with remittances in Thai Baht, since formal domestic money transfer network usually handles only Khmer Riel and U.S. dollar, and not Thai Baht.⁶ However, the outlets of formal money transfer firms concentrate in towns. These factors might exert influences on migrant workers' choice of money transfer operators and so denomination of remittances.

3. Empirical analysis

3.1 “Hypothesis on “Bahtization” and remittances

We are interested in if “Bahtization” of the four provinces in Cambodia facilitates migrant workers' remittances from Thailand. The concentrated use of Thai Baht in the four provinces allows us to examine the impacts, if any, of “Bahtization” through comparison of the remittances to these four provinces with those to the rest of the country.

“Bahtization” might encourage remittances to be received in Thai baht, so that the costs concealed in the exchange rate margin can be avoided. In the Baht zone provinces, Thai Baht can be accepted as a means of payment, so that the recipients do not have to convert the remittances from Thai Baht to Khmer Riel.

A reduction in the remittance costs would raise the total amount of remittances a migrant worker sends. Gibson et al (2006) and Yang (2011) argue that the remittance costs are one of determinants of the total amount of remittances. If this argument applies to Cambodian migrant workers in Thailand, a reduction in the total remittance costs due

⁵ WING is a popular remittance firm in Cambodia with its extensive outlet network throughout the country (Dutta et al. 2015).

⁶ One of largest Cambodian banks handles in Thai Baht for branch-to-branch domestic money transfers at certain branches. This is rather exceptional.

to omission of currency conversion might lead to *ceteris paribus* a larger amount of remittances per migrant workers compared with those to the other regions.

3.2 Data

We conducted a questionnaire survey of a total of 450 Cambodian migrant workers in Thailand in 2014. Regarding the design of the survey, we selected as the sites of the survey two Thai provinces, namely Rayong and Samut Prakan Provinces. As noted by Chan (2009), there are two types of Cambodian migrant workers in Thailand. One is seasonal migrant workers who work in the border provinces of Thailand near Cambodia mostly during the agricultural off-season.⁷ The other is year-around migrant workers who move into Thailand more deeply away from Cambodia. We selected the above-mentioned two provinces to collect samples from the year-around migrant workers. Furthermore, in these provinces we could cover major occupation categories of Cambodian migrant workers such as construction, factories, and fisheries. While our samples of the survey are not the representative of the whole population of Cambodian migrant workers in Thailand, their places of origin are fairly diverse as summarised in Table 1, which is sufficient for our purpose of examining impacts of “Bahtization” on migrant workers’ remittances.

Table 2 summarises the result of the survey. Out of 450 respondents, 368 migrant workers have sent remittances during the past 12 months from the interview. For some variables such as demographic attributes of migrants, answers are collected from all respondents, whereas for the other variables concerning remittances, answers are collected only from those who have sent remittances during the past 12 months. Table 2 shows that 20.2 percent of respondents were from the four Baht zone provinces. As for educational attainment, the answers are in five discrete numbers, with 0 for no formal education, 1 for primary school, 2 for junior high school, 3 for high school, and 4 for university. The average educational attainment of the respondents is 1.50. Major occupation categories include construction (32.2 percent), factory (30.0 percent), coastal seafarer and fisheries related (20.2 percent), and deep water seafarer (17.6 percent). Only 6.9 percent of the respondents were irregular status.

Table 2

⁷ According to Chan (2009), these seasonal migrant workers often carry funds themselves to their family when they terminate their seasonal jobs in Thailand.

Among those who have sent remittances, 73.4 percent answered that their family in Cambodia received remittances in Thai Baht. Such prevalence of Thai Baht as the currency for delivery of remittances to the recipients is in a similar level with the previous study by Deelen and Vasuprasat (2010). In the survey questionnaire, the migrant workers were asked to choose one currency from three choices, Khmer Riel, Thai Baht and U.S. dollar, in which their family received remittances. No one chose U.S. dollar as the answer.

A drawback of this survey is that we could not obtain answers about the total cost of remittance per transactions. As argued before, the total cost of remittances consists of the up-front fixed fee and the exchange rate margins. For those migrant workers whose recipient received remittances in Khmer Riel, they were not always able to answer the exchange rate that their money transfer operators quoted. As a result, the remittance charge in Table 2 refers to the up-front fixed fee of remittance, and does not include the exchange rate margin. The average charge was 3.61 percent of the remittance amount.

Table 3 illustrates the correlation coefficients of variables. We can observe some notable patterns of remittances. First, when a migrant worker's family has a bank account in Cambodia, the migrant tends to use new type informal money transfer operators with whom the migrant entrusts funds at bank accounts of the operators. In addition, the family tends to receive money at such account. Second, when a migrant chooses to entrust funds at bank accounts of informal money transfer operators in Thailand, the operators tend to deliver funds at banks in Cambodia. Third, the frequency and the size of remittances are negatively correlated.

Table 3

3.3 Empirical analysis

Denomination of remittance

We empirically examine the determinants of the denomination of remittances, and evaluate if the remittances sent to Baht zone provinces are more likely to be received in Thai Baht. In particular, we examine the impact of “Bahtization” using the Probit analysis in which the dependent variable is the dummy variable that takes the value of one if a recipient received remittances in Thai Baht and zero otherwise, and an explanatory variable is the dummy variable for Baht zone provinces.

For the specification of regression models, we include several control variables. First, we include a dummy variable of home delivery of remittances by agents. Only

conventional informal money transfer operators offer home delivery, and such conventional operators are more compatible with remittances in Thai Baht.

Second, we include a dummy variable of the recipient being in town or not. New type informal money transfer operators using the formal network such as WING are available only in towns as their network concentrates in towns. At the same time, new type informal money transfer operators transact in Khmer Riel as the formal network do not handle Thai Baht. Considering these two factors, remittances to towns could be more often denominated in Khmer Riel compared with remittances to villages.

Third, existing empirical studies associate migrant workers' choice of remittance methods with their attributes such as educational attainment and legal status in host countries (Amuedo-Dorantes and Pozo 2005; Kosse and Vermeulen 2014). Their finding is that uneducated and illegal status migrant workers are less likely to use banks for remittances. Following these existing studies, we include as control variables educational attainment and legal status of migrant workers. In the context of the present study, uneducated and illegal status migrant workers might prefer the conventional informal money transfer operators, and they are more compatible with remittances denominated in Thai Baht. We also include the dummies for job categories of migrant workers.

Fourth, we include as control variables frequency and size of remittances. As for frequency, we cannot predict *a priori* its direction of impact on denomination of remittances. As for size of remittances, if migrant workers send remittances in Thai Baht, they are liable to only the up-front fixed fee, and they can avoid the proportional cost occurring in the exchange rate margin between a prevalent market rate and the exchange rate that money transfer operators apply to the transactions. Given such a fee structure, remittances in Thai Baht are more suitable when sending large size remittances. Since frequency and size of remittances are negatively correlated with each other, we include these two control variables separately.

Table 4 summarises the results of Probit model regressions. As expected, remittances sent to Baht zone provinces are by roughly 20 percent point more likely to be received in Thai Baht compared to those sent to other regions. We can argue that “Bahtization” is self-enforcing. In those areas where Thai Baht is widely circulated, the family of migrant workers receive remittances in Thai Baht, which advances the circulation of Thai Baht in such areas.

Table 4

In addition, a larger size remittance is more likely to be received in Thai Baht. Apart from that, remittances of male migrant workers are more likely to be received in Khmer Riel. The other control variables are mostly not statistically significant.

Remittance charge

We turn to examine the remittance charge to see if “Bahtization” reduces the total cost of remittances. However, our data of remittance charge does not include the exchange rate margin. The remittance charge as percentage of remittance amount here refers to only the up-front fee. Table 5 below shows the results of Ordinary Least Squares (OLS) regressions.

Table 5

The fit of the regression models is poor. In the baseline Model (1), the coefficient on the size of remittance is negative and significant. This implies that the up-front remittance fees are somehow fixed, so that the remittance charge as percentage of remittance amount declines as the transaction size increases. In Model (2), the coefficient on the dummy variable of remittances denominated in Thai Baht is negative but not statistically significant, while the coefficient on the dummy variable of Baht zone is positive and significant. The analysis here needs to be refined before we draw some economic implications.

Total remittance amount

Finally, we examine the impact of Bahtization on migrant workers’ annual remittance amount. When the total costs of remittances are lower for the remittances denominated in Thai Baht, it could stimulate a larger sum of remittances per migrant worker per annum. As for control variables, we include two groups of variables; one is related with the income of migrant workers, including gender, age, educational attainment, legal status in Thailand, Thai language fluency, and categories of work in Thailand. The other is related with the position of a migrant worker in his/her family, in particular whether dependent children are accompanied in Thailand or they are left in Cambodia.

Table 6 summarises the results of OLS regressions. As to the baseline Model (1), the coefficient on the gender dummy is significant at 10 percent significance level, indicating a gender gap in remittances. The coefficients on three industrial dummies are all significant and negative, indicating that the remittances of migrant workers in these job categories are lower compared with the control group of migrant workers in

factories (See Table 2). The coefficients on the dummy variables for children being accompanied in Thailand and for children left in Cambodia are not statistically significant and they have signs which are contrary to our expectations. It might be the case that these variables do not accurately capture the dependents left in Cambodia as the majority of the respondents of our survey were young:⁸ they may send remittances rather for their parents.

Table 6

With regard to the impact of Bahtization on the total amount of remittances, the results are mixed. As for Model (2) with the dummy variables for remittance denominated in Thai Baht and for remittances sent to Baht zone provinces, these dummy variables are statistically significant at 1 percent significance level. While the coefficient on Baht zone dummy is negative, summing it up with the coefficient on the dummy for remittance denominated in Thai Baht yields a positive value. However, once we specify the impact of “Bahtization” as an interaction term as in Model (3) which should be more precise specification to measure the impacts, it is no longer statistically significant. It is a remaining challenge to control the differences in attributes of provinces to extract the impact of “Bahtization”.

4. Conclusion

We study the impact of dollarization on migrant workers’ remittances for the case of Cambodian migrant workers in Thailand using an original dataset from a questionnaire survey. Dollarization might allow migrant workers to save the cost of remittances partially as such cost usually includes the exchange rate margin which is the gap between a prevalent market exchange rate and the exchange rate that money transfer operators apply to the remittance transactions. A reduction in remittance cost might stimulate a larger sum of remittances. In four provinces of Cambodia, Thai Baht is widely used as substitute for the domestic currency, which could facilitate remittances of Cambodian migrant workers in Thailand using Thai Baht.

By comparing the remittances to Baht zone provinces with those to non-Baht zone provinces, we evaluate the impact of dollarization, or to be specific “Bahtization” on

⁸ As shown in Table 1, an average age of the respondents was 27.5 years old.

migrant workers' remittances in the Thailand-Cambodia remittance corridor. It is confirmed that remittances to Baht zone provinces are more likely to be denominated in Thai Baht. Furthermore, empirical results imply migrant workers send a larger sum of remittances when their recipients receive money in Thai Baht. These can be regarded as preliminary evidence that "Bahtization" facilitates Cambodian migrant workers' remittances from Thailand.

A limitation of the present study is that our questionnaire survey does not capture the exchange rate margin. We need to supplement the survey of migrant workers with in-depth interviews of informal money transfer operators to obtain the precise data on exchange rate margin. Another subject of future research is to identify what deters migrant workers from formal remittance channels.

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References

- Amuedo-Dorantes, Catalina, and Susan Pozo (2005). On the use of differing money transmission methods by Mexican immigrants. *International Migration Review* 39(3), 554–676.
- Balino, Tomas, Adam Bennett, and Eduardo Borensztein (1999). Monetary policy in dollarized Economies. IMF Occasional Paper No. 171. International Monetary Fund: Washington DC.
- Chan, Sophal (2009). Costs and benefits of cross-country labour migration in the GMS: Cambodia country study. Working Paper Series No. 44. Cambodia Development Research Institute: Phnom Penh.
- Datta, Saugato, Piyush Tantia, and Tyler Comings (2015). WING mobile payments: a product design case study. Product design case study (ideas42). International Finance Corporation: Washington, DC. (available at <http://documents.worldbank.org/curated/en/2015/03/24158206/wing-mobile-payments-product-design-case-study>)
- Deelen, Linda and Pracha Vasuprasat (2010) Migrant workers' remittances from Thailand to Cambodia, Lao PDR and Myanmar: Synthesis report on survey findings in three countries and good practices. ILO/Japan Project on Managing Cross-border Movement of Labour in Southeast Asia. ILO Regional Office for Asian and the Pacific: Bangkok.
- de Zamaroczy, Mario and Sopanha Sa (2002). Macroeconomic adjustment in a highly dollarized economy: the case of Cambodia. IMF Working Paper WP/02/92. International Monetary Fund: Washington, DC.

- Odajima, Ken (2015). Dollarization in Cambodia: policy to promote the usage of Riel. Unpublished manuscript. JICA Research Institute: Tokyo.
- Gibson, John, David J. McKenzie, and Halahingano T.S. Rohorua (2006). How cost-elastic are remittances? Estimates from Tongan migrants in New Zealand. *Pacific Economic Bulletin* 21(1), 112–128.
- Kosse, Anneke and Robert Vermeulen (2014). Migrants' choice of remittance channel: do general payment habits play a role? *World Development* 62(1), 213–227.
- Menon, Jayant (2008). Dealing with multiple currencies: what options for the transitional economies of Southeast Asia? *Journal of the Asia Pacific Economy* 13(2), 131-146.
- Ratha, Dilip (2003) Workers' remittances: an important and stable source of external development finance. In World Bank (ed.), *Global Development Finance 2003: Striving for Stability in Development Finance*. World Bank: Washington, DC.
- Watanabe, Shin'ichi (2007). De facto dollarization and its effect on financial development and economic growth of Cambodia, Lao PDR and Vietnam. Paper presented at the Conference "Policy options and challenges for developing Asia—Perspectives from the IMF and Asia.
- Yang, Dean (2011) Migrant remittances. *Journal of Economic Perspectives* 25(3), 129-151.

Table 1.
Baht zone provinces in Cambodia, and distribution of survey respondents by province

Province	2008 Census		Survey respondents whose recipient received remittances in	
	Population ('000 persons)	Population density (Persons/Km2)	Khmer Riel	Thai Baht
Baht zone provinces				
Banteay Meanchey	678	102	1	20
Battambang	1,025	88	8	48
Koh Kong	140	13	1	0
Pailin	70	88	0	1
Other provinces				
Kampong Cham	1,681	172	12	25
Kampong Chhnang	472	85	13	5
Kampong Speu	717	102	8	5
Kampong Thom	631	46	9	14
Kampot	585	120	2	3
Kandal	1,265	355	2	6
Kep	36	106	0	0
Kratie	319	29	3	6
Mondulkiri	61	4	0	0
Oddar Meanchey	185	30	1	4
Phnom Penh	1,326	4571	1	2
Preah Vihear	171	12	0	1
Prey Veng	947	194	19	53
Pursat	397	31	3	11
Ratanakiri	150	14	0	1
Siem Reap	896	87	3	22
Sihanoukville	200	230	0	2
Stung Treng	112	10	1	2
Svay Rieng	483	163	1	16
Takeo	844	237	10	22
Tbong Khumum (Kampong Cham)	n.a.	n.a.	0	1
	Total	National average	Total	Total
	13,389	75	98	270

Sources: *General Population Census of Cambodia 2008*; own survey.

Note: Tbong Khumum Province was separated from Kampong Cham Province in December 2013.

Table 2.
Descriptive statistics

Variable name	Description	Mean	Standard Deviation
Dependent variable:			
THB	Dummy for remittance received in Thai Baht	0.7337	0.4426
Charge	Remittance charge as percentage of remitted amount	0.0361	0.0285
Remit_amount	Log of annual remittance amount	10.4761	0.9208
Independent variable:			
Male	Gender dummy	0.6089	0.4885
Age	Age of respondent	27.5778	8.1697
Education	Educational attainment	1.5000	0.8810
Thai_language	Dummy for migrant fluent in Thai	0.0533	0.2249
Child_in_Thai	Dummy for migrant accompanying child(ren) to Thailand	0.4422	0.4972
Child_in_Cambodia	Dummy for migrant who leave child(ren) in Cambodia	0.1422	0.3497
Fish_boat	Industry dummy: Deep water seafarer	0.1756	0.3809
Fishery	Industry dummy: Coastal seafarer and fisheries related	0.2022	0.4021
Factory	Industry dummy: Factory worker	0.3000	0.4588
Construction	Industry dummy: Construction worker	0.3222	0.4678
Undocumented_worker	Dummy for undocumented worker	0.0689	0.2535
Thai_bank_account	Dummy that sender has bank account in Thailand	0.1267	0.3330
Cambodia_bank_account	Dummy that recipient has bank account in Cambodia	0.3178	0.4661
Sent_to_town	Dummy for remittance sent to town in Cambodia	0.1471	0.3547
Baht_zone	Dummy for remittance sent to Bahtization province	0.2022	0.4021
Frequency	Frequency of remittance	6.7578	4.8114
Remit_size	Log of remittance size per transaction	8.5884	1.0031
Origin_bank	Dummy for remittance sent from bank windows/ATM in Thailand	0.4360	0.4966
Payment_bank	Dummy for remittance received at bank windows in Cambodia	0.4278	0.4954
Payment_agent	Dummy for remittance received at agent facility in Cambodia	0.4714	0.4999
Payment_delivery	Dummy for remittance delivered to premise of recipient	0.0954	0.2941

Source: Own survey

Table 3.
Correlation matrix

Variable	education	undocumented	thai_account	camb_account	town	baht_zone	thb	charge	origin_bank	payment_bank	frequency	size
education	1.0000											
undocumented	-0.0050 (0.9160)	1.0000										
thai_account	0.0645 (0.1718)	-0.0772 (0.1019)	1.0000									
camb_account	0.0190 (0.6880)	-0.0914 (0.0526)	0.1706 (0.0003)	1.0000								
town	0.0840 (0.1080)	0.0513 (0.3273)	-0.0666 (0.2027)	0.1401 (0.0072)	1.0000							
baht_zone	-0.0031 (0.9470)	0.1907 (0.0000)	0.0079 (0.8677)	-0.1060 (0.0246)	0.1006 (0.0541)	1.0000						
thb	-0.1092 (0.0362)	0.0540 (0.3018)	0.0112 (0.8312)	0.0371 (0.4786)	-0.0999 (0.0559)	0.1653 (0.0015)	1.0000					
charge	0.0471 (0.3746)	-0.0170 (0.7480)	0.1136 (0.0317)	-0.0351 (0.5083)	0.0387 (0.4655)	0.1251 (0.0179)	-0.0919 (0.0825)	1.0000				
origin_bank	-0.1134 (0.0298)	-0.0233 (0.6565)	0.0773 (0.1394)	0.6066 (0.0000)	0.1312 (0.0119)	-0.0193 (0.7129)	0.1407 (0.0070)	-0.1039 (0.0495)	1.0000			
payment_bank	-0.0537 (0.3052)	-0.0191 (0.7158)	0.1307 (0.0122)	0.7467 (0.0000)	0.2316 (0.0000)	-0.1447 (0.0055)	0.0187 (0.7213)	-0.0488 (0.3570)	0.7058 (0.0000)	1.0000		
frequency	0.0560 (0.2362)	-0.0365 (0.4399)	0.0859 (0.0686)	0.0106 (0.8232)	0.0877 (0.0935)	0.1526 (0.0012)	0.0198 (0.7044)	-0.0172 (0.7460)	-0.0429 (0.4125)	-0.1438 (0.0058)	1.0000	
size	-0.0065 (0.9018)	0.0474 (0.3650)	0.1144 (0.0285)	0.2328 (0.0000)	-0.1052 (0.0439)	-0.1682 (0.0012)	0.2059 (0.0001)	-0.1447 (0.0061)	0.2313 (0.0000)	0.2256 (0.0000)	-0.4655 (0.0000)	1.0000

Source: Own survey.

Note: Numbers in parentheses are significance level. When significant at 1 percent significance level, correlation coefficients are written in bold letters.

Table 4.
 Probit regression results explaining denomination of remittances in Thai Baht

Dependent Variables: Remittance in Thai Baht		(1)		(2)		(3)		(4)	
Explanatory Variables	Marginal Effect	z-stat.	Marginal Effect	z-stat.	Marginal Effect	z-stat.	Marginal Effect	z-stat.	
Baht_zone			0.2080	2.83 ***	0.2076	2.81 ***	0.2350	3.44 ***	
Sent_to_town	-0.1125	-1.73 *	-0.1245	-1.94 *	-0.1301	-2.02 **	-0.0923	-1.45	
Payment_delivery	0.0807	0.90	0.0806	0.91	0.0741	0.84	0.1658	1.88 *	
Male	-0.1258	-2.47 **	-0.1100	-2.17 **	-0.1055	-2.07 **	-0.1540	-3.02 ***	
Age	0.0004	0.13	0.0011	0.38	0.0012	0.41	0.0019	0.69	
Education	-0.0399	-1.45	-0.0409	-1.49	-0.0415	-1.51	-0.0364	-1.40	
Undocumented	0.0880	0.81	0.0242	0.22	0.0294	0.27	-0.0274	-0.26	
Thai_bank_account	0.0278	0.39	0.0324	0.45	0.0329	0.46	0.0047	0.07	
Cambodia_bank_account	0.0500	0.93	0.0784	1.34	0.0908	1.52	0.0069	0.11	
Fish_boat	0.1921	2.02 **	0.2195	2.24 **	0.2530	2.60 ***	0.1064	1.06	
Fishery	-0.0753	-1.06	-0.0326	-0.44	-0.0244	-0.33	0.0179	0.24	
Construction	0.0421	0.67	0.0243	0.38	0.0199	0.31	0.0594	0.93	
Frequency					0.0071	1.11			
Size							0.1463	4.10 ***	
Observations	367		367		367		367		

Source: Own survey.

Notes: *** indicates statistically significant at 1 percent, ** at 5 percent, and * at 10 percent.

Table 5.
OLS regression results of remittance charges

Dependent Variables:				
Remittance charge in percentage				
Explanatory Variables	(1)		(2)	
	Coef.	t-value	Coef.	t-value
THB			-0.0046	-1.28
Baht_zone			0.0118	2.94 ***
Male	0.0041	1.24	0.0041	1.22
Age	0.0003	1.60	0.0003	1.79
Education	0.0015	0.88	0.0013	0.75
Undocumented	0.0012	0.20	-0.0019	-0.31
Thai_language	0.0012	0.18	-0.0002	-0.03
Fish_boat	-0.0021	-0.36	-0.0015	-0.26
Fishery	0.0030	0.67	0.0049	1.10
Construction	-0.0050	-1.32	-0.0061	-1.60
Sent_to_town	0.0025	0.59	0.0014	0.33
Remit_size	-0.0044	-2.50 **	-0.0030	-1.69 *
Constant	0.0614	3.71 ***	0.0508	3.03 ***
Adjusted R-squared	0.0167		0.0367	
Observations	358		358	

Source: Own survey.

Notes: *** indicates statistically significant at 1 percent, ** at 5 percent, and * at 10 percent.

Table 6.
OLS regression results of annual remittance amount

Dependent Variables: Log of annual remittance	(1)		(2)		(3)	
Explanatory Variables	Coef.	t-value	Coef.	t-value	Coef.	t-value
THB			0.5675	5.48 ***		
Baht_zone			-0.3082	-2.65 ***		
THB x Baht_zone					-0.0974	-0.77
Male	0.1895	1.86 *	0.2462	2.49 **	0.1831	1.79 *
Age	-0.0065	-0.78	-0.0101	-1.26	-0.0068	-0.82
Education	-0.0430	-0.82	-0.0170	-0.33	-0.0430	-0.82
Undocumented	0.1901	0.99	0.2477	1.33	0.2137	1.10
Thai_language	0.2579	1.24	0.1811	0.90	0.2786	1.33
Child_in_Thailand	0.1478	1.19	0.2021	1.69 *	0.1449	1.17
Child_in_Cambodia	-0.2474	-1.50	-0.2274	-1.43	-0.2323	-1.40
Fish_boat	-0.4360	-2.61 **	-0.5759	-3.55 ***	-0.4429	-2.64 ***
Fishery	-0.7941	-6.06 ***	-0.7866	-6.20 ***	-0.8053	-6.11 ***
Construction	-0.3225	-2.84 ***	-0.2958	-2.68 ***	-0.3047	-2.63 ***
Constant	10.8668	48.04 ***	10.5207	45.07 ***	10.8911	47.65 ***
Adjusted R-squared	0.1064		0.1797		0.1054	
Observations	367		367		367	

Source: Own survey.

Notes: *** indicates statistically significant at 1 percent, ** at 5 percent, and * at 10 percent.