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## Factors behind Foreign Currency Holding by Household in Cambodia

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### Abstract

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## **Keywords**

Foreign Currency in Circulation, Dollarization, Household, Cambodia

## **JEL Classification**

E50, G21 and G28

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# Factors behind Foreign Currency Holding by Household in Cambodia

Reza Y. Siregar and Narith Chan\*

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## 1. Introduction

Cambodia has never officially adopted the U.S. dollar or other foreign currency as means for transaction, unit account or store of value. Yet, over the past decade, the country has become one of the most “dollarized” economies in the world.<sup>i</sup> Official statistics indicate that the ratio of foreign currency deposits to broad money has risen to around 83 percent in 2012 from about 70 percent in 2005 (Figure 1). Furthermore, the total foreign currency deposits climbed to more than 95 percent of total deposits in the banking sector by end of 2012.

As frequently highlighted in past studies of dollarized economies across the globe, two of the common and primary rationalities behind the initial adoption and continued pursue of dollarization strategy are price stabilization and economic growth recovery (Reinhart, Rogoff and Savastano (2003); Galindo and Leiderman (2005)). This seems to be the case of Cambodia as well, particularly in its early stage of macroeconomic stabilization period of 1990s. Interestingly, the escalated circulation of foreign currency in the country in recent years has occurred against the backdrop of greater macroeconomic and political stability. During the past decade, Cambodia has successfully anchored its headline inflation to stabilize within a single-digit range and its economy has been in a stable growth path. Despite volatile global financial markets from 2007 to 2013, Cambodia sustained an average growth rate of more than 8 percent per annum, except in 2009, and an annual inflation rate in the range of 0.5 and 13.5 percent.

Accordingly, dollarization incidence in Cambodia must be understood beyond the perspectives of macroeconomic conditions of the country. Yet, to our knowledge, early studies on the foreign currency use in Cambodia have focused a lot more on the macroeconomic fronts.<sup>ii</sup> This study hopes to contribute to the early set of literatures in two fronts. Firstly, the primary objective of this study is to gain a deeper understanding into motives behind the usage of foreign currencies at household level in Cambodia.<sup>iii</sup> Secondly, while early studies have been constrained by their reliance on official data, especially from

the banking sector, our analyses will largely be based on a unique database generated from a survey conducted from May to August 2013 on 1500 households across rural and urban areas of 17 provinces (out of total 24 provinces) in the country (Table 1).

To our knowledge, this study is among the first in focusing on foreign currency usage at micro-level for the case of Cambodia. The survey data set presents us with rare opportunities to gain greater understanding on the determinants of foreign currency holdings across rural and urban households, and across agriculture and non-agriculture based households. Note, foreign currency holding in our study implies a situation whereby one or multiple foreign currencies serves one or more functions of domestic currency. However, it does not explicitly distinguish situations of currency substitution and asset substitution.<sup>iv</sup>

Key questions to be addressed in this study are as follows. Has the dollarization predominantly been an urban phenomenon in Cambodia? This is a basic but fundamental question to appreciate the spread of dollarization in the country. Next, has income been a factor in explaining dollarization in Cambodia? More specifically, does household with higher income contribute to a higher usage of foreign currency?

Does agriculture-based household tend to hold less foreign currency than their counterparts in the non-agriculture sector? As will be elaborated, the agriculture sector of Cambodia has largely been a domestic oriented to cater local demand and has contributed to less than 10 percent of total exports of the country. Hence, can we conclude that incidences of currency substitution are partly attributed to the exposure level of the sector to external trade activities?

Lastly, is there any contributing role of financial market development or access to financial institution to the holding of foreign currency by the local households? Financial sector, particularly banking system in Cambodia, has expanded rapidly in recent years. The number of banks has expanded from around 17 in 2003 to 41 in 2013. Furthermore, we have

seen a rise in the number of microfinance institutions in recent years. Has this growing financial market encouraged a more usage of local currency or vice-versa?

The paper is organized as follows. Next section will summarize key findings of the household survey, and the discussion will centre on the above set of primary questions. In section three, we introduce the working empirical models. To validate further those survey results, cross-section testing will be carried out in section four of the paper. Based on the survey and empirical results, a number of policy issues are tabled in section five of the paper. A brief concluding remark will end the study.

## **2. A brief Overview of Household Survey in Cambodia**

### **2.1 Basic Structures of the Survey**

The lack of quality data, especially on the amount of foreign currency holding or foreign currency in circulation, has long been the main factor for the relatively limited number of empirical studies attempted to assess positive (not normative) issues concerning the causes and consequences of currency and asset substitution in the dollarized, particularly in the unofficial dollarized economies (Feige (2003) and Calvo and Vegh (1992)). Recent studies, such as Zoryan (2005), Beer, Ongena and Peter (2010) and Firdmuc, Hake and Stix (2013), rely on household surveys to circumvent some of the data shortcoming. The micro-panel or cross-section testing allows these studies to evaluate both economic and non-economic factors affecting foreign currency loan or holding by different types of households.

As briefly mentioned early, our own household survey was conducted from May to August 2013 across Cambodia. In this survey, we targeted around 1500 households across rural and urban areas in 17 out of 24 provinces in the country. The remaining provinces were not included due to their small population size. Based on the General Population Census in 2008, the population of the 17 selected provinces represented 94.2 percent of the total population of Cambodia. This survey covers around 920 urban households and 600 households in rural areas (Table 1).<sup>v</sup>

Moreover, around 40 percent of respondents earn income primarily from agricultural activities while the income sources of the remaining households are in the form of salaries/wages in the non-agriculture sectors, including from their own business activities. Among the households surveyed, the average monthly income varies from less than USD100 dollars to more than USD5000 dollars. Overall, 6 categories of income levels were identified: less than USD100 dollars, between USD100-300 dollars, between USD300-500 dollars, between USD500-1000 dollars, between USD1000-5000 dollars and more than USD5000 dollars (Table 2 and Figure 3).

To obtain data on foreign currency holding, respondents were asked about the currency breakdowns of their cash holding. It allowed us to estimate the average portion of foreign currency holding by household in each province. While the official banking data shows that share of foreign currency deposits in banks have grown substantially, reaching more than 95 percent of the total deposits at end-2012, the survey revealed that the household's foreign currency holding across 17 provinces was in average around 20 percent per province (Figure 4). Nevertheless, it was higher in some major provinces, such as the Phnom Penh Capital and Preah Sihanouk Province, suggesting the diverse degrees of foreign currency holdings across the geographical locations.

## **2.2 Urban and Non-Agriculture Phenomenon**

Household survey confirms that dollarization in Cambodia is predominantly urban phenomenon (Figure 5 and Table 4). Furthermore, the closer the province to the capital city, Phnom Penh, the higher foreign currency holding is in general. With the exception of Kampong Speu Province and Kampot Province, data from the survey showed that the foreign currency holding in the urban area is higher compared to the rural area. On average, foreign currency holding among the urban households surveyed stood at 26 percent of their total cash holding compared to only 10 percent among the rural household surveyed.

The survey also presents conclusive evidence of a stark difference between foreign currency holding patterns of households across agriculture and non-agriculture sectors

(Figure 6). The level of foreign currency holding is found to be significantly higher among households whose incomes are generated mostly from non-agriculture activities. The different sector sources of income explain the exceptional cases of Kampong Speu Province and Kampot Province discussed earlier. Kampong Speu is an agriculture-based province closest to Phnom Penh and Kampot is a coastal province where economic activities are dominated by seafood fishing and fruit growing mostly to serve local tourists from Phnom Penh.

Moreover, the low level of foreign currency holding among agriculture-based population could be explained by the fact that most of agriculture activities in Cambodia remained family-based rice farming at a subsistence level. Their activities are largely a non-commercial one, although production surplus would be sold to cover the family's day-to-day spending. Farmers usually sell their extra crops in small quantity to middlemen who collect paddy rice from areas far from rice millers, markets or towns. This mainly explains its local currency-based nature. As for the exceptional cases of Koh Kong and Battambang, the popular use of Thai baht among the population is primarily due to its close vicinity to Thai border.

### **2.3 Income Factor**

Different foreign currency holding pattern seems to be attributed also to income levels of the population (Figure 3). The households surveyed with average monthly income more than USD1000 for the last 12 months are seen to hold more foreign currency compared to other group of population. In contrast, the lowest level of foreign currency holding is among the household surveyed with income less than USD100 dollars per month. Interestingly, the significant gap in foreign currency holding is between households with average monthly income above and below USD300 dollars. Households with average monthly income of more than USD300 dollars accounted for 40 percent of the total household surveyed. The share of foreign currency holding to total cash holding among this group of household surveyed stood at 32 percent. It is also interesting to note that the share



of the income paid in the local currency seems to influence the portion of foreign currency holding. Those households surveyed with average monthly income less than USD300 dollars for instance received 58 percent of their income fully in the local currency, and they keep, on average, only around 26 percent of their total cash in foreign currency.

### 3. Empirical Model

#### 3.1 Full Sample Model

Only few empirical studies have been carried out to understand dollarization from the perspective of the household sector. In general, they find, apart from the “hysteresis” effect, a number of factors significantly contribute to the usage of foreign currency in the local economy.<sup>vi</sup> These factors include, among others,<sup>vi</sup> the development stage of the banking sector, sources or types of income (such as remittance) and exposure to external trade activities. Zoryan (2005) for instance underscores the relatively early stage of financial intermediation in Armenia as a major cause for large volumes of cash savings denominated in foreign currencies. Based on household survey, Fidrmuc, Hake and Stix (2013) identify remittances as one of the determinant factors of foreign currency loans in nine of the Central and Eastern European countries (CEECs). Beer, Ongena and Peter (2010) perform an analysis of the borrowing behaviour of the Austrian households. Among the key findings, the authors discover that better educated and wealthier households tend to borrow more in foreign currency.

Based on our survey results and findings from early studies, our general working model will be as follows:

$$FCH_i = \alpha_i + \beta_1 income_i + \beta_2 sector_i + \beta_3 location_i + \beta_4 finance_i + e_i \quad (1)$$

Note:  $(i)$  is for an individual household for all  $(i) = 1, 2, \dots, n$ .

$(FCH_i)$  is the percentage share of foreign currency holding on the overall cash holding of household  $(i)$ . Variable  $(income_i)$  captures the level of income for each individual  $(i)$ .

$(sector_i)$  represents the economic sector that household  $(i)$  earns his or her income from. The two sectors are agriculture and non-agriculture. Next variable is  $(location_i)$ . This variable provides information on the living residency of the household, either in rural or urban area. Variable  $(finance_i)$  represents the accessibility and trust of individual  $(i)$  to financial institution, namely bank and micro-financial institutions. Lastly,  $\alpha_i$  and  $e_i$  represent the constant and error term parameters. The error term is assumed to be normally distributed.

As for the coefficient parameters  $((\beta_1), (\beta_2), (\beta_3)$  and  $(\beta_4))$ , we expect the following signs. On the income variable, the wealthier household is expected to hold more foreign currency, or a higher degree of currency substitution (Beer, Ongena and Peter (2010)). An early work by Chang (1994) also claims that deposit in foreign currency is more accessible to high-income households. The income levels of surveyed households are grouped into six levels from the highest income bracket (above USD5000 per month assigned value 1) to the lowest of USD 100 per month (assigned value of 6) (Table 2). Accordingly, the coefficient parameter for income factor  $(\beta_1)$  is expected to be negative.

Next, the coefficient parameter for variable sector  $(\beta_2)$  is expected to be positive. The surveyed households are pooled from two broad sectors of the economy: - agriculture sector (which will be assigned value of 1) and – non-agriculture sector (with assigned value of 2). As discussed earlier, household in the non-agriculture sector is in average holding more foreign currency than the agriculture-based households. The non-agriculture sectors of Cambodia, particularly the garment and manufacturing sectors, are predominantly export-oriented sector. Estimate around 80 percent of export of the country in recent years came from the garment industry (Table 3). So naturally, the non-agriculture industries are much more exposed to the transactions in the foreign currencies. Hence,  $(\beta_2 > 0)$ .

Surveyed households reside either in urban (assigned value of 1) or rural area (assigned value of 2). As demonstrated in the previous section, “dollarization” in Cambodia

is more of urban phenomenon. The level of foreign currency holding is higher among the urban households than that of the rural household. Therefore, the parameter coefficient ( $\beta_3$ ) for location variable is expected to be negative.

Lastly is the parameter coefficient ( $\beta_4$ ) for access and trust to financial market. The survey question is: “where do you prefer to place your saving?” Two possible answers were given: a) on the bank and micro-finance institutions (MFIs) or b) outside of the bank and micro-finance institutions. As indicated in Table 2, if the answer is option (a), value of 1 is given. On the other hand, we assign value 0 for option (b). Therefore, the coefficient parameter ( $\beta_4$ ), which could be negative or positive, could reveal the link between the level of trust and thus preference of individual household to place saving in the financial system to his or her level of foreign currency holding.

### 3.2 Sub-sample Model

To gain further insights into the “locational” influences, we split the observation series into rural and urban household groups. For each group, we would test the following working model:

- For the rural group:  $FCH_{ir} = \alpha_{ir} + \delta_{1r}income_{ir} + \delta_{2r}finance_{ir} + e_{ir}$  (2)

- For the urban group:  $FCH_{iu} = \alpha_{iu} + \delta_{1u}income_{iu} + \delta_{2u}finance_{iu} + e_{iu}$  (3)

Note: ( $u$ ) and ( $r$ ) denote urban and rural group, respectively. As discussed above, we would expect ( $\delta_{1r}$ ) and ( $\delta_{1u}$ ) to be negative, while ( $\delta_{2r}$ ) and ( $\delta_{2u}$ ) can either be negative or positive.

The comparison between the two sets of coefficient estimates across the rural group and urban household group should further deepen our analyses on factors explaining “locational diversities” of foreign currency usage in Cambodia.

## 4. Test Results

#### 4.1 Full-Sample Test Results

Based on ordinary least squares testing with robust standard error of Equation 1, a number of key findings are worth highlighting from the cross-section testing. From the F-test, we can conclude that the empirical model fits the data well. Furthermore, the R-squared statistic also confirms that around 20 percent of foreign exchange holdings are indeed explained by the listed determinant factors. Moreover, the t-statistics confirm that all explanatory variables, except for the finance factor, are significant at 1 percent level.

As for the individual explanatory variable, location is indeed a significant factor, and that dollarization in Cambodia is more of an urban phenomenon (Table 7). The coefficient parameter ( $\beta_3$ ) is significant and negative, as expected, and thus supports the preliminary finding of the survey discussed in Section 2.

Furthermore, there is a conclusive evidence of income effect on the usage of foreign currency in the country, as captured by negative and significant ( $\beta_1$ ). The test result confirms survey results reported in Figure 3 that richer households hold higher shares of foreign currencies in their overall cash holdings. Based on the survey, we also find that higher income households in Cambodia tend to save more in foreign currencies. Likewise, this same group of households is responsible for a higher share of expensive and durable good purchases, often carried out in the US dollar or other foreign currencies.

Based on the raw survey data, the non-agriculture sector based households, on average, hold more foreign currency across 17 provinces, except for Koh Kong, Battambang and Kratie. This is confirmed by the positive and significant coefficient parameter ( $\beta_2$ ). Lastly, the parameter coefficient ( $\beta_4$ ) for access and trust to financial market is found to be positive, but insignificant, with  $[\text{Prob} > |t|]$  around (0.369). This suggests that access to financial market does not have much role in explaining incidences of currency substitution in the local economy. We will test the robustness of this test result in the next sub-sample testing.

## 4.2 Sub-sample Test Results

When we control for the “locational effect” by breaking the samples into two groups: rural and urban household samples, the test results confirm the robustness of coefficient parameters for income (i.e.  $(\delta_{1r})$  and  $(\delta_{1u})$ ). Indeed, the higher income households in both rural and urban areas contribute to the higher usage of foreign currency in the country (Tables 8 and 9).

However, the test results reveal contrasting outcomes for the case of access and trust to financial institutions from the perspectives of rural and urban household samples. Consistent with the full sample result, the coefficient parameter for finance variable for the case of rural sample  $(\delta_{2r})$  is found to be insignificant. On the other hand, we find access to financial institution to be a significant factor at 10 percent level of confidence in explaining holdings of foreign currency in urban areas. Furthermore, the positive sign  $(\delta_{2u})$  suggests that access and trust toward banks and micro-finance institutions facilitate urban households to hold more foreign currencies. This finding helps explaining the high portion (more than 90 percent) of the total lending and deposit in the banking sector denominated in foreign currency, particularly in the US dollar.

## 5. Policy Issues

The test results highlight and underscore the roles of income and access to financial institutions in explaining the degree of currency substitution in Cambodia. The next subsections explore policy issues arising from these two drivers of foreign currency holding.

### 5.1 Currency Denomination of Salary

In addition to the amount or size of the income, another aspect of income which could potentially contribute to the degree of currency substitution is the currency nomination of the salary/wage. It has been a wide spread and common practice in Cambodia that basic salary is quoted and paid in foreign currency, particularly in the US dollar. While salaries of

civil service staffs of the government ministries and state owned enterprises are paid in the local currency, private institutions often opt to pay wages of their employees in the foreign currencies. In fact, there is no law or regulation which requires salaries of workers of non-government institutions in the country to be paid in the local currency. The official minimum salary of the garment sector, the largest domestic export sector, for instance is quoted in the US dollar at around 80 dollar per month in 2013. The garment industry is estimated to employ up to 400,000 workers and earned around 30% of GDP in 2012.

Based on the household survey, we can see a clear evidence of positive relationship between foreign currency share of income and foreign currency holding. Figure 7 clearly demonstrates that those households receiving higher portions of their salaries paid in foreign currency are holding more foreign currency. This pattern is also supported by statistics reported in Table 11. Well over 90 percent of those households receiving their incomes in local currency have indicated that they would keep those portions of their income fully (or 100%) in the Cambodian riel (KHR).

As part of the coherent and comprehensive government measures to promote the use of the local currency, quoting wage and salary in local currency by the private firms should therefore be committedly encouraged by the central government with the support of the local/provincial governments. Incentives, including tax and/or non-fiscal benefits, could be adopted to persuade private firms to gradually settle their worker salary in the local currency. Eventually, making local currency as the only currency for salary and remuneration must be mandated as a law applicable to all types of sectors and institutions. Based on close consultation with key market players, the relevant authorities, particularly the Ministry of Economic and Finance and the National Bank of Cambodia, should work together to introduce and enforce a well-defined time table on the full adoption of local currency for all salary settlements to provide a firm guideline for all domestic employers during the transition period.

## **5.2 Financial Market Expansion and Foreign Currency Liabilities**

Financial services in Cambodia are dominated by banks and microfinance institutions (Table 10). The banking sector grew dramatically in the past decade. Between 2003 and 2012, the number of licensed banks rose from 17 to 39. During same period, licensed microfinance institutions (MFIs), including 7 deposit-taking MFIs, increased from 13 to 35. Since early 2007, banks have introduced ATM services and by the end of 2012, there were 681 ATMs across Cambodia. Recently, major MFIs have also begun to provide ATM services to their customers. By end-2012, there were 455 branches of banks and 2,176 branches of MFIs in 24 cities and provinces throughout the country. It is also important to note the dominance of foreign players in the banking system, as 19 out of 39 banks are either branch or subsidiaries of foreign banks. Despite impressive growth, the financial sector still has a low penetration rate. It is estimated that only around 10 percent of the total population has access to formal financial services provided by banks and MFIs. As the economy continues to develop, financial market services will likely to expand further.

While the greater access to funding will definitely be beneficial to the domestic economy, the increasing foreign exchange liabilities, such as foreign currency deposits, of the banking system pose a real risk to the management of financial stability in the country. With well over 95 percent of the third party liabilities in the banking system are in the foreign currencies (mostly the US dollar), the lender of last-resort capacity of the National Bank of Cambodia, the country's central bank, is severely weakened. Moreover, there is no established deposit insurance agency and the interbank market only started to operate in 2013. Under this present circumstance, banks have to rely on their own funding capacities to manage their liquidities and to protect their depositors. Between May and August 2013, the period of last general election in the country, an estimate of 10 percent of total foreign currency deposit was withdrawn from the domestic banking system in Cambodia.

High foreign currency liabilities in an underdeveloped financial market of an open economy such as Cambodia imply domestic financial stability is highly exposed to global financial market with limited domestic supporting capacity. Based on the experiences of 100

countries over the period of 1990-2001<sup>vii</sup>, De Nicolo, et.al (2005) demonstrates that dollarized financial systems, often known as financial dollarization, are highly exposed to both solvency and liquidity risks. The sudden withdrawal of the deposit in the banking system during the last election should be a clear warning for the Cambodian authorities of the liquidity risk exposure with the significantly high portion of foreign currency deposit share of the total deposit in the domestic banking system.

Early literatures have argued that financial dollarization is all about differences in perceived risks between foreign and national currencies, and not about differences in returns.<sup>viii</sup> In Cambodia, return on the 12-month local currency deposit for instance would be around 160 basis points higher than the return of the 12-month US dollar deposit in December 2013. Going forward, bolstering liquidity of the local currency market is needed to mitigate the exposure of domestic economy from the volatile foreign exchange market. Strictly regulating salary/wage and price of products in domestic markets to be denominated in the local currency would be a vital step to increase liquidity in the local market. Deepening financial intermediation should also boost liquidities and encourage usage of national currency (Eichengreen, et.al. (2003)). Strengthening prudential regulation and its enforcement, such as contract and bankruptcy law, would lower the liquidation cost in the national currency (de la Torre and Schmukler (2004)). Equally important for managing risk is the pursuance of credible and consistent price and financial stability, through credible and coherent fiscal and monetary policies, and competent financial market supervisory enforcement domestically.

## **6. Brief Concluding Remarks**

Managing dollarization is a highly complex task, which warrants comprehensive understanding of all the relevant issues. Identifying driving factors behind the holding of foreign currency is one of those issues and should form the primary basis and step for the formulation of any future policy agenda to promote the usage of local currency in Cambodia.



In many other dollarized economies, macroeconomic environment is frequently recognized as the primary determinant of foreign currency holding in the local economy. But as argued in this study, this may not be the case of Cambodia during the past decade in particular. The primary objective of our study is therefore to have a deeper understanding of the drivers behind the high holdings of the foreign currencies by households in Cambodia.

Extending early studies on this subject, our paper is among the first empirical work on dollarization in Cambodia to rely on a survey data set of 1500 households across 17 provinces in the country. This unique dataset enables us to conclusively identify a number of key features and characteristics of household's holding patterns of foreign currencies. Furthermore, empirical test results confirm main determinant factors of the foreign currency holdings, including income level, economic sector and access to finance. Going forward, a more comprehensive and regular conduct of this type of survey should be carried out by the Cambodian government to monitor the dynamics of foreign currency holding in the country.<sup>ix</sup> One natural extension is to carry out a similar survey at the firm level to gain further understanding of the drivers behind the usage of foreign currency across different types of firms in different industries throughout major provinces of the country.

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**Table 1: Surveyed Provinces and Breakdowns of Urban and Rural Surveys**

Province	Households		
	Urban	Rural	Total
Banteay Meanchey	40	40	80
Battambang	60	40	100
Kampong Cham	60	80	140
Kampong Chhnang	20	20	40
Kampong Speu	40	60	100
Kampong Thom	20	40	60
Kampot	20	20	40
Kandal	80	60	140
Koh Kong	20	0	20
Kratie	20	20	40
Phnom Penh	420	0	420
Prey Veng	20	60	80
Pursat	20	20	40
Siemreap	40	40	80
Sihanoukville	20	0	20
Svay Rieng	0	40	40
Takeo	0	60	60
<b>Total</b>	<b>900</b>	<b>600</b>	<b>1500</b>

**Table 2: Variable Description (to add FCH)**

Variable	Min/Max	Description
Foreign Currency Holding (FCH)	(0%-100%)	Variable which is coded based on respondent's answer to the question "What are the proportions of Khmer riel and foreign currency in your overall cash holding at home?"
Location	1/2	Variable which is coded as 1 if a respondent lives in urban area and 2 if he/she lives in rural area.
Sector	1/2	Variable which is coded as 1 if a respondent answers agricultural activity to the question "What is the source of your income?" and 2 otherwise.
Income	1/6	Variable which is coded as 1 if a respondent answers more than USD5000 per month to the question "What is your average monthly total income over the last 12 months measured in USD?", 2 if he/she answers between USD1000-5000 per month, 3 if the answer is between USD500-1000 per month, 4 if the answer is between USD300-500 per month, 5 if the answer is between USD100-300 per month and 6 if it is less than USD100 per month.
Finance	0/1	Variable which is coded as 0 if a respondent answers outside of banks or MFIs to the question "Where would you prefer to place your saving?" and 1 otherwise.

**Table 3: Shares of Garment and Agriculture Exports in Total Exports**

Year	Garment exports	Major agriculture exports*	Other exports
2005	95.8	2.1	2.1
2006	96.4	1.9	1.7
2007	96.3	1.7	2.0
2008	96.4	1.3	2.3
2009	88.6	2.3	9.1
2010	86.4	4.2	9.4
2011	86.3	7.2	6.5
2012	82.1	5.9	12.0
2013**	78.4	6.4	15.2

\*/ Major agriculture exports include exports of timber, wood articles, rubber and rice.

\*\*/ The first nine months of 2013.

**Table 4: Descriptive Statistics for Full Samples**

(# of obs =1500)	Mean	Std. Error	[95% Conf. Interval]	
<b>FCH</b>	19.591	0.687	18.244	20.939
<b>Income</b>	4.518	0.027	4.464	4.571
<b>Sector</b>	1.617	0.012	1.593	1.642
<b>Location</b>	1.395	0.013	1.370	1.419
<b>Finance</b>	0.628	0.012	0.603	0.652

**Table 5: Descriptive Statistics for Rural Samples**

(# of obs =900)	Mean	Std. Error	[95% Conf. Interval]	
<b>FCH</b>	25.802	0.918	24.001	27.603
<b>Income</b>	4.241	0.035	4.172	4.310
<b>Sector</b>	1.812	0.013	1.787	1.837
<b>Finance</b>	0.679	0.015	0.649	0.709

**Table 6: Descriptive Statistics for Urban Samples**

(# of obs =600)	Mean	Std. Error	[95% Conf. Interval]	
<b>FCH</b>	10.068	0.895	8.311	11.826
<b>Income</b>	4.942	0.037	4.868	5.015
<b>Sector</b>	1.355	0.019	1.317	1.393
<b>Finance</b>	0.548	0.020	0.508	0.588

**Table 7: Full Sample Test Result**

Variable	Coefficient	Robust Std. Error	t-statistics	Prob > [t]
<b>Income (<math>\beta_1</math>)</b>	-7.963	0.644	-12.36	0.000
<b>Sector (<math>\beta_2</math>)</b>	6.999	1.370	5.11	0.000
<b>Location (<math>\beta_3</math>)</b>	-6.809	1.475	-4.62	0.000
<b>Finance (<math>\beta_4</math>)</b>	1.139	1.268	0.90	0.369
<b>Constant (<math>\alpha</math>)</b>	52.928	4.541	11.66	0.000

Number of observation: 1520; F(4, 1515) = 109.29; Prob > F = 0.000  
R-squared = 0.195

**Table 8: Rural Sample Test Result**

Variable	Coefficient	Robust Std. Error	t-statistics	Prob > [t]
<b>Income (<math>\delta_{1r}</math>)</b>	-7.422	1.046	-7.09	0.000
<b>Finance (<math>\delta_{2r}</math>)</b>	-1.923	1.781	-1.08	0.281
<b>Constant (<math>\alpha</math>)</b>	47.798	6.010	7.95	0.000

Number of observation: 600; F(2, 597) = 25.67; Prob > F = 0.000  
R-squared = 0.095

**Table 9: Urban Sample Test Result**

Variable	Coefficient	Robust Std. Error	t-statistics	Prob > [t]
Income ( $\delta_{1u}$ )	-8.773	0.807	-10.88	0.000
Finance ( $\delta_{2u}$ )	3.657	1.797	2.04	0.042
Constant ( $\alpha$ )	60.527	3.916	15.46	0.000
Number of observation: 920; F(2, 917) = 65.98; Prob > F = 0.000 R-squared = 0.129				

**Table 10: Outreach of Top-5 Banks and MFIs in Cambodia**

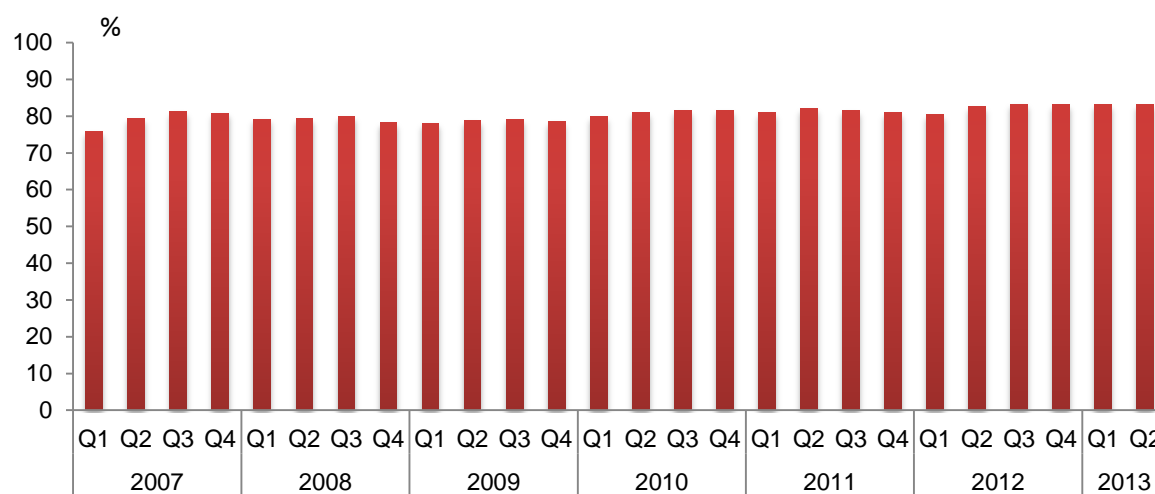
	Number of Branches of Commercial Banks					Microfinance Institutions				
	ACLEDA	Canadia	Cam. Public	ANZ Royal	SBC	Prasac	Amret	Sathapana	HKL	AMK
Phnom Penh	15	15	15	11	10	24	9	9	7	7
Banteay Meanchey	2	2	1		1	9	3	4	3	5
Battambang	5	3	1	1	1	9	4	5	2	4
Kampong Cham	9	4	1	1	1	19	13	15	4	15
Kampong Chhnang	2	1				5	3	3	1	4
Kampong Speu	4	1				10	6	3	1	7
Kampong Thom	3	1				8	4	6	3	6
Kampot	2	1	1			7	5	3	1	5
Kandal	6	1	1	1		11	10	13	3	8
Koh Kong	1	1	1			3	2	1	1	2
Kratie	1	1				5		3	1	4
Prey Veng	3	1				14	10	3	2	9
Pursat	2	1				10		4	2	5
Siem Reap	5	2	1	2	2	7	5	7	4	6
Preah Sihanouk	1	1	1	1	1	3	2	2	1	2
Svay Rieng	2	1	1			11	6	3	1	4
Takeo	5	1				10	6	5	2	5
<b>Total</b>	<b>68</b>	<b>38</b>	<b>24</b>	<b>17</b>	<b>16</b>	<b>165</b>	<b>88</b>	<b>89</b>	<b>39</b>	<b>98</b>

Note: Information based on the 2012 Bank Annual Reports. For MFIs: branches, sub-branches and posts of services are included.

**Table 11: Earning in Domestic Currency**

When earning in KHR:	All		Urban		Rural	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Keep in KHR 100%	1,297	92.44	746	90.31	551	95.49
Keep in KHR between 75% - 100%	29	2.07	24	2.91	5	0.87
Keep in KHR between 50% - 75%	36	2.57	30	3.63	6	1.04
Keep in KHR between 25% - 50%	25	1.78	16	1.94	9	1.56
Keep in KHR less than 25%	12	0.86	7	0.85	5	0.87
Convert to FC 100%	4	0.29	3	0.36	1	0.17
Total	1,403	100	826	100	577	100

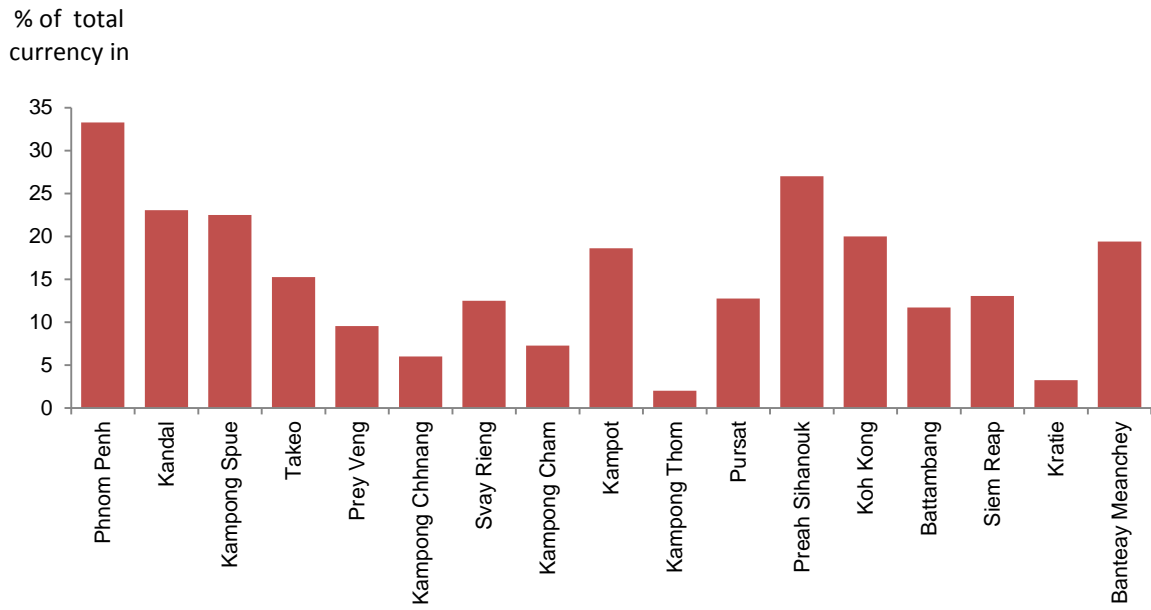
**Figure 1: Share of Foreign Currency Deposit in Broad Money**





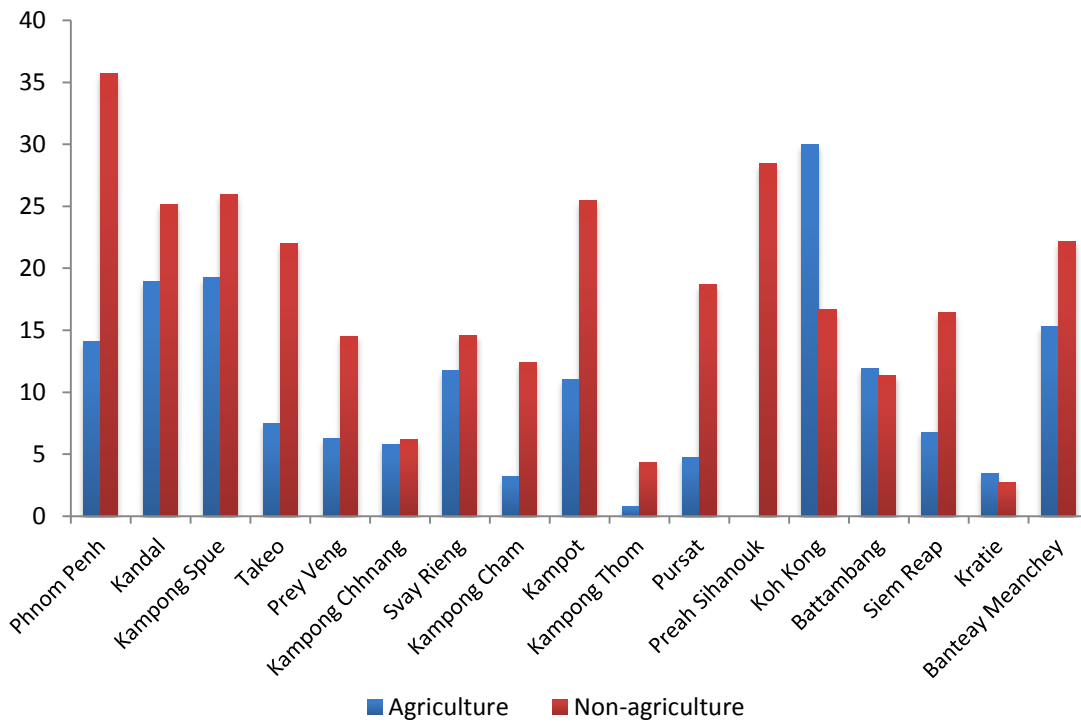


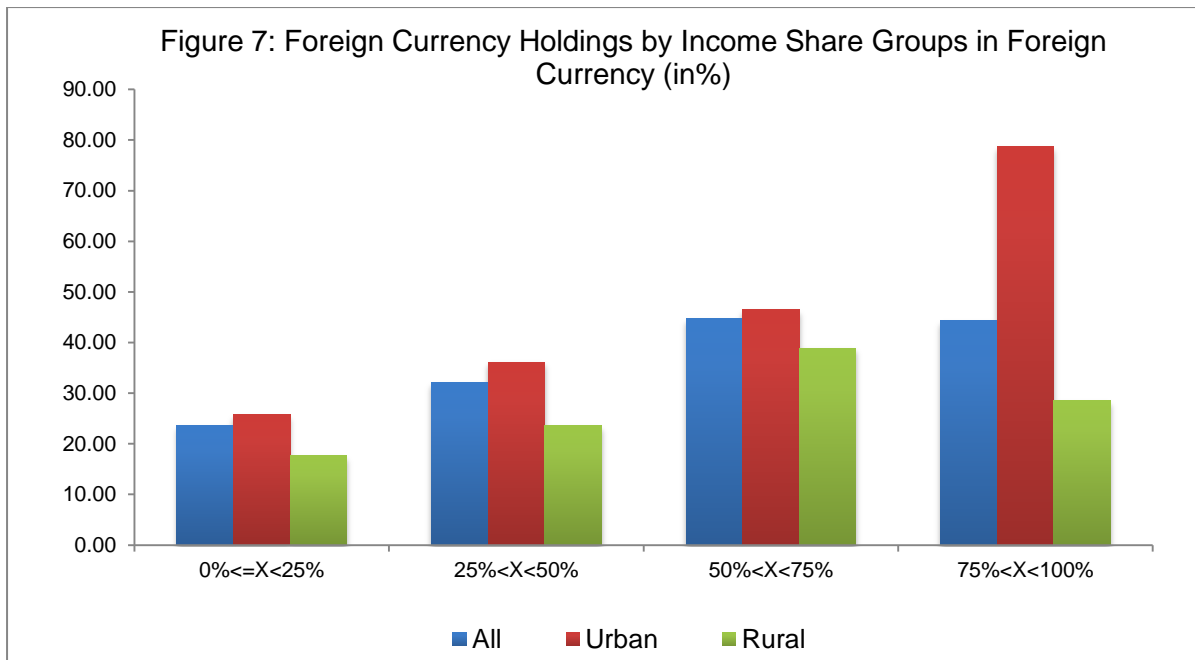
**Figure 4: Foreign Currency Holding**



Note: XX (see the ppt)

**Figure 6: FCC by Agriculture vs Non-agriculture Activities (in %)**





Note: The figure demonstrates that the higher the portion of salary is paid in foreign currency the higher is the holding of the foreign currency.

## Endnotes:

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<sup>i</sup> The term dollarization is adopted here to generally convey the use of foreign currencies for various roles in the local economy.

<sup>ii</sup> Refer to following studies, such as de Zamaroczy and Sa (2002), Menon (1998 and 2008), and Duma (2011).

<sup>iii</sup> As will be elaborated further, although the US dollar has been the primary foreign currency used in the country, other regional currencies are the Thai baht and Vietnamese dong.

<sup>iv</sup> Currency substitution is the situation where foreign currency is used only as means of payment. Asset substitution is situation where foreign currencies served as stores of value.

<sup>v</sup> The survey was conducted only in the urban area for Phnom Penh, Preah Sihanouk and Koh Kong due to their small sizes of rural population. On the other hand, the survey was done only in the rural area in Takeo and Svay Rieng due to their small sizes of urban population.

<sup>vi</sup> “Hysteresis” effect refers to the fact that dollarization remains high even in the face of declining inflation. This occurs due to costs associated with currency substitution make dollarization expensive to reverse (Zoryan (2005) and Oomes (2003)).

<sup>vii</sup> These economies include developing countries, emerging markets and transition economies from a centrally planned to a market economy.

<sup>viii</sup> See for instance Ize and Levy Yeyati (2005).

<sup>ix</sup> The Euro Survey Project of the Austrian Central Bank has carried out surveys among private individuals to collect information on the role of the Euro in Central and Eastern European economies from 2007 to 2010, on a semi-annual basis.