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Dollarization in Cambodia: Behavior of Households and Enterprises in a Highly Dollarized Environment

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1 Introduction

Although the Cambodian government never officially adopted dollarization, Cambodia has become one of the most dollarized economies around the world. The US dollar (USD) is the most common foreign currency (FC) not just for commercial transactions, but for everyday transactions in general. In spite of the stabilized macroeconomic conditions and solid economic development for the past decade, dollarization never abated. According to the National Bank of Cambodia, the ratio of foreign currency deposits (FCDs) to broad money reached around 83% in 2015 from 56% in 1995, and FCD accounted for 95% of total deposits by the end of 2015. Normally, dollarization may cease or decline in pace during times of economic and political stability. Given the stable

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macroeconomic conditions as well as the political situation in recent years, the persistence or even progress of dollarization is a puzzling phenomenon.

In the literature, the persistence of dollarization is associated with network externalities (Valev 2010). Network externalities refer to conditions where it is convenient for all households or firms to have foreign currency when a large number of people use and accept foreign currency for payments. However, to our knowledge, there are not many empirical studies that illustrate how network externalities work in the context of dollarization. For instance, do “networks” mean geographical boundaries, or do they mean supply chain linkage to international trade?

To shed light on network externalities of dollarization in Cambodia, a large-scale survey on dollarization of households and enterprises was conducted by Japan International Cooperation Agency Research Institute (JICA-RI) in collaboration with the National Bank of Cambodia (NBC), the central bank, in late 2014. Using data collected during a survey conducted from October 2014 to January 2015, we aim to draw a detailed picture of dollarization to infer the underlying mechanisms.

For the Cambodian government or the NBC, such unintended dollarization poses many challenges to the management of monetary policies. With the heavy use of foreign exchange, the NBC has only limited control over the effective level of the money supply. In addition, dollarization undermines the development of financial markets including the stock market and the interbank market. Underdevelopment of the interbank market and low demand for governmental bonds quoted in the local currency, the Khmer riel (KHR), also impairs the scope of monetary and exchange rate policies of the NBC.

The unique circumstances surrounding the introduction of the dollar to the Cambodian economy, combined with a very high level of dollarization, suggests that the process of de-dollarization is likely to be more protracted than it would otherwise be (Menon 2008). Based on the analysis made using the survey data, the present study attempts to draw implications to manage this dollarization.

This chapter is organized as follows. Section 2 overviews the relationship between economic/financial development and dollarization

since 1995. Section 3 explains the trend of dollarization. Sections 4 and 5 explain household/enterprise behaviors using survey micro-data. Section 6 concludes the chapter.

2 Review on Studies Used Micro-Surveyed Data

The studies on dollarization began by investigating the determinants using macro-level aggregated data. For example, in the case of foreign currency borrowing, factors in concern have been changes in inflation rates, changes in exchange rates, and its volatility, the volume of foreign currency deposits in the banking sector, and differences in interest rates between domestic- and foreign-currency-denominated loans (interest rate differentials). Ize and Yeyati (2003) and Ize (2005) have developed important theoretical foundation framing financial dollarization, which is called the “minimum variance portfolio (MVP) hypothesis.” There have been a number of studies which applied the MVP hypothesis (Luca and Petrova 2008; Basso et al. 2011; Steiner 2011; Csajbok et al. 2010; Rosenberg and Tirpak 2008). These studies attempted to find evidence of the influence of interest rate differentials on foreign currency borrowing both theoretically and empirically though their findings are still ambiguous.

As regard for network externality, Samreth (2011), using macro- and financial sector data published by the National Bank of Cambodia, showed that there is evidence supporting the existence of network externality. Due to data limitation, he approximated the accumulated experience of foreign currency usage which reflects the network externality by the past peak value of currency substitution calculated using nominal exchange rate, foreign currency deposit, and money stock (M1). As he mentioned, his study had its limitation that further detailed study was needed in order to design appropriate policies and mechanisms for de-dollarization under the existence of network externality since he could not examine its detail background. Most of the previous studies have investigated the factors relating to dollarization using macro-level aggregated data. Even when investigating dollarization in relation to

behavior of economic agents, the macro-aggregated data has been used due to lack of survey-based micro-data.

In contrast to the aggregated data, micro-data is suitable for researchers to use when analyzing the behavior of economic agents in detail, particularly when looking at the motive behind their currency choice. As clearly stated by Fidrmuc et al. (2013), the analysis of macroeconomic data cannot fully investigate all factors raised in theoretical models of foreign currency borrowing for two main reasons. First, with aggregate data, it is difficult to empirically separate demand from supply effects. This problem can to some extent overcome with the usage of micro-data. Second, many theoretical assumptions are based on expectations for which ex-post values of exchange rate data have been used as a proxy in current literature. By employing the expectation data by household, it is possible to overcome this issue. Micro-data would tell researchers the real picture of how economic agents are involved in dollarization process and which supply or demand factor is an important driver of dollarization.

Under such understanding, in recent years there has been an increase in literature using micro-data, particularly on foreign currency borrowing within households and firms, though most of their concerned countries were in Europe (Pellényi and Bilek 2009; Beer et al. 2010; Brown et al. 2011; Fidrmuc et al. 2013; Beckman and Stix 2015). Pellinyi and Bilek (2009) exploited survey-based data of Hungarian households to investigate determinants of foreign currency borrowing. They found that foreign currency borrowing appeared to be a universal phenomenon in the case of Hungary, and driven by persistently large interest rate spreads and massive underestimation of currency risk. Beer et al. (2010) investigated characteristics of foreign currency (Swiss franc) borrowers in Austria. They found that less financially literate and less risk-averse households were more likely to take out a housing loan in foreign currency. From those findings, the authors concluded that Swiss franc borrowing might be driven by households which involved in the carry trade.

Using survey-based data of households from nine Central and Eastern European countries (CEECs), Fidrmuc et al. (2013) have studied the determinants of foreign currency borrowing by households. Exploiting rich data, they have used both macroeconomic and household-specific variables to test the hypotheses. Beckmann and Stix (2015) have further

investigated households' foreign currency borrowing behaviors, in particular, the relationship between the exchange rate risk and foreign currency borrowing, using the same data from Central and Eastern European countries as Fidrmuc et al. (2013). They showed that knowledge about the exchange rate risk enhances the impact of a household's expectations of depreciation on their choice of loan currency.

By and large, previous empirical studies on household borrowing have showed mixed results relating to the relationship between foreign currency borrowing and household characteristics. For example, Pellényi and Bilek (2009) found that households with a high income are less likely to borrow in a foreign currency. In contrast, Beer et al. (2010) and Fidrmuc et al. (2013) found that households with a higher income are more likely to take out foreign currency loans, especially in non-EU and heavily "euroized" countries. Brown et al. (2011) examined the firm- and country-level determinants of foreign currency borrowing by small firms, using detail information on loan extended to firms. They found that foreign currency borrowing is significantly related to firm-level foreign currency revenues. Their findings suggested that borrowers of foreign currency loans were in better position to manage currency risks than is commonly thought.

In terms of network externalities, as far as the author's best knowledge, only Valev (2010) used surveyed data to examine factors for persistent use of foreign currency. Using survey data in Bulgaria he showed that foreign currencies were preferred in transaction if they were widely used already and if local currency was expected to depreciate, confirming the hysteresis of dollarization.

In this manner, until recent, to best of the author's knowledge, usage of micro-evidence has been limited to cases in European countries and scarce in the other regions. However, there were only two cases done by Khou (2012) and Siregar and Chan (2014). They tried to identify driving factors behind the holding of foreign currency by households in Cambodia. Using their unique dataset, they identified key features and characteristics of household's holding patterns of foreign currencies. Their results suggested that factors such as income level, economic sector, or access to finance determine the level of foreign currency holding.

Siregar and Chan (2014) mentioned some shortcomings of their study. It is ideal to extend the survey at the firm level to gain better

understanding of firms by industry and area. Moreover, as for household survey, it would be better to cover remaining seven provinces, not covered in their survey. Those provinces are mainly located in either Thai bordered or Vietnamese bordered areas where residents are expected to hold not only USD but also Thai Baht or Vietnamese Dong as foreign currencies. It would have enriched the results. It should also be extended to currency holding not only “at home” but also at bank/MFI accounts or other formal/informal mode to get better pictures of currency choice of people. If their resource constraint allows it, questionnaire would have covered not only just cash holding but also income currency, expenditure currency, or borrowing currency so as to get more comprehensive pictures of household behavior. Though they had done the first step in the context of Cambodia, there are several rooms for improvement.

The questionnaire of the survey conducted by JICA and NBC covers incomes by currencies, expenditures by items and by currencies, saving by modes of holding and by currencies, borrowing details including currencies, and perceptions for usage of foreign currencies. The data allows us to control a broad set of explanatory variables, including their expectation, observed at individual household level. For instance, it contains detailed information about loans taken out by households, which allows us to examine risk-hedging behaviors of households in currency choice when borrowing. The dataset allows us to investigate the households’ characteristics in more detail, especially in currency composition of income stream, financial assets, and loans. Such detailed dataset may develop a deeper understanding of households’ behaviors in foreign currency borrowing.

3 Development of Dollarization and the Financial Sector

After independence from France in 1953, Cambodia experienced a relatively short period of peace, political stability, and stable but fragile economic conditions. From 1970, increasing strife in the region led to internal turmoil. The following two decades could be illustrated as

continuous process for eroding confidence, trust, and credibility on the riel given the political instability. The period 1970–1975 was characterized by a civil war, when Cambodia had its first experience with limited dollarization during the LunNol regime (1970–1975), as increases in US military personnel and assistance brought dollars into the country (De Zamaroczy and Sa 2002).

When the civil war ended with the Khmer Rouge taking office in April 1975, the Khmer Rouge regime introduced an extreme revolutionary program. It included bans on banking and even on money, and therefore the riel. The central bank was closed and the financial infrastructure was completely destroyed. Once the Khmer Rouge regime was ended in 1979, the central bank was reestablished, and in March 1980, the riel was reintroduced.

Since the reestablishment of the NBC, the banking system had been a mono-banking system, that is, a state-owned mono-bank with central, commercial, and development banking roles. The Foreign Trade Bank was established simultaneously inside the NBC to provide commercial banking services. Dollars started to flow into the country in the mid-1980, as the United Nations (UN) dispatched humanitarian and emergency aid, international non-governmental organizations (NGOs) were allowed to operate, and remittances from abroad resumed. During the 1980s, the country achieved only limited monetization and most domestic transactions were based on barter, with gold being the universal commodity for transacting and hoarding (De Zamaroczy and Sa 2002).

From 1989, the country started to seek the two-tier banking system, which was a gradual reform to separate the commercial banking function from the NBC. Nonetheless, lack of confidence in local currency, hyperinflation, and massive exchange devaluation of the riel against the dollar during 1988–1991 pushed the public to sell their riel-denominated assets in exchange for gold and dollars (Pum and Vanak 2010).

The use of the dollar was further facilitated by large inflows during the operation of the United Nations Transitional Authority in Cambodia (UNTAC). During 1991–1992, UNTAC brought US \$1.7 billion, equivalent to about 75% of GDP at that time, mostly spent for rent and local services for its peacekeeping operation (De Zamaroczy and Sa 2002). FCDs became an important component of the bank deposit base

(Rumbaugh et al. 2000). Under the two-tier banking system, the first privately owned commercial bank, Cambodian Commercial Bank, was established as a joint venture between Siam Commercial Bank and the NBC in July 1991 to attract investors and serve the activities of UNTAC (Pum and Vanak 2010).

From 1993, the political regime was officially transformed into a democratic framework, and the economy was transformed from the centralized and planned system to a market-oriented economy, and property rights were gradually strengthened. However, the legal foundation for two-tier banking system was established only after promulgation of the Law on the Organization and Operations of the NBC (January 26, 1996), the Law on the Foreign Exchange (August 22, 1997), and the Law on Banking and Financial Institutions (November 18, 1999).

Based on this foundation, the NBC started a series of important reforms from 1998 to 2001. It abolished of the requirement of 15% NBC stake in all private banks, introduced a new classification of financial institutions into commercial banks, specialized banks and microfinance institutions (MFIs), and increased minimum capital requirement of commercial banks (Praka¹ on Commercial Bank's Minimum Capital, February 9, 2000).

By the Law on Banking and Financial Institutions, re-licensing process was implemented to restructure the banking system. At that time several commercial banks had unstable financial positions, while others had insufficient solvency ratios. The re-licensing process resulted in a significant reduction in the number of banks in the system to ensure that those that remained were strong enough to make a meaningful contribution to the development of the economy (NBC 2005). In other words, the re-licensing was designed to establish viable banks, foster public confidence in the banking system, and promote savings.

The spread between official and market exchange rates in Cambodia averaged 20% during 1989–1992. From November 1992, the NBC began maintaining the official rate within a 5-% margin of the average parallel market rate over the previous 2-week period. The spread between the two rates was subsequently narrowed further, so that from March 1994 the official exchange rate was generally maintained in the vicinity of

1% of the market rate on a daily basis (Dodsworth et al. 1996). Until now, we can observe that the divergence between official and market rates has been kept marginal regardless of their fluctuation.

There are two recent initiatives to developing the financial market of Cambodia: establishing a stock exchange market and introducing Negotiable Certificates of Deposit (NCDs). As for security exchange, the market began trading with one listing in April 2012. Listing is only allowed in KHR, but transactions can be made in either KHR or USD. To make any settlements in USD, the buyer and seller must have an agreement as to the exchange rate to be used; otherwise, the settlement must be done in riel. As of the end of 2015, only three companies² are listed, and traded volume is quite low. NCDs were introduced in September 2015 to promote the development of a money market and interbank lending on a secured basis (securities can be used as collateral for repo-transactions). NCDs are currency neutral and can be issued in either riel or USD.

The Cambodian economy enjoyed steady growth, resulting in per capita GDP at the level of over US \$1000 (Fig. 1). At the same time, it attained low inflation, averaging 4.1% from 2009 to 2013, and the

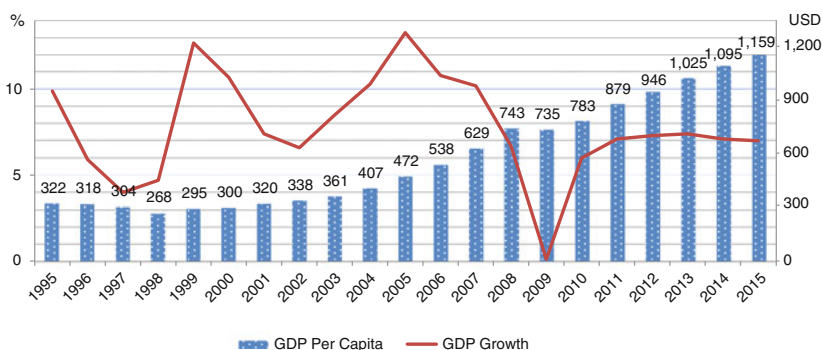


Fig. 1 Trend of GDP growth and GDP per capita, Cambodia, 1995–2015. Sources: International Financial Statistics, International Monetary Fund (IMF); National Bank of Cambodia

exchange rate was kept stable (Fig. 2(A), Chap. 1). However, the Cambodian economy exhibits structural vulnerability. According to Duma (2014), Cambodia economy has two parallel worlds: One is a dollar-based urban economy comprising a flourishing garment sector, tourism, construction, foreign direct investment, and aid. The other is a generally riel-based rural economy that is dependent on agriculture. Although the garment and services sectors, including tourism, are driving the economic growth, the exports base remains narrow and backward linkages of the manufacturing and service sectors to the rural economy are very limited. Moreover, the banking system is heavily concentrated in urban areas but is lacking an efficient network between the urban and rural branches. This concentration and fragmentation of the system imposes risks to economic stability (Duma 2014).

4 Degree of Dollarization

4.1 Measuring Dollarization

Cambodia became *ade facto* dollarized economy during 1991–1995 (De Zamaroczy and Sa 2002), and it is still as dollarized, if not more so, than it was 10 years ago. Measured as the ratio of FCDs to broad money, dollarization in Cambodia has risen continuously from about 60% in the late 1990s to about 85% in 2013 (Fig. 1(A), Chap. 1). Dollarization in Cambodia is in sharp contrast to that in other Asian countries, where dollarization exhibits a declining or stable trend.

From 1997 to 1998 there was a decline in the ratios of dollarization due to political instability. However, this may not be interpreted as de-dollarization. During this period, the composition of dollar-denominated assets held by agents still changed (De Zamaroczy and Sa 2002) through withdrawal of dollar deposits. Though the ratio of FCDs to domestic currency deposits shows several fluctuations over decades, other ratios show a constant increasing trend (Fig. 1(A), Chap. 1).

4.2 Motives for Holding Foreign Currencies

As noted in the introductory chapter of this volume, there are three motives for holding foreign-currency-denominated assets: precautionary demand under foreign exchange restrictions, currency substitution, and asset substitution. Because foreign exchange is freely available through the parallel market, in Cambodia precautionary demand is rather limited. There are demands for foreign currency in terms of the latter two motives, however.

4.2.1 Financial Dollarization, Asset Substitution, and Currency Substitution

Several studies suggest that financial dollarization may occur in periods of macroeconomic turbulence, in particular under high inflation, as the confidence in the local currency deteriorates. If the usage of foreign currency spreads out further, then dollarization may develop into payment dollarization. The environment that brought about dollarization to Cambodia is somewhat different from other dollarized economies. As Okuda (2013) noted, in case of Cambodia, payment dollarization started before financial dollarization, or at least developed simultaneously. The Khmer Rouge regime Cambodia was without a monetary system, or indeed, money. Even after the regime, in the 1980s, the country achieved only limited monetization and most domestic transactions were based on barter, with gold being the universal means of transacting and hoarding (De Zamaroczy and Sa 2002). Therefore, when there was a surge in dollar inflow during UNTAC operations, in fact there was virtually nothing that could perform the function of money, payment, widely accepted by the public. In other words, payment dollarization (means of payment) and real dollarization (unit of account) developed before financial dollarization (store of value). As Duma (2014) and Menon (2008) noted, the rise in dollarization, particularly from 2000, has not necessarily come about through substitution of local currency for foreign currency, but rather replacement of FCDs with foreign currency cash outside the banking sector.

In terms of financial dollarization, through strong and continuous inflow, the dollar became a major depositary base in the banking system. Financial deepening was advanced using dollar deposits. Riel deposits have grown eightfold from 2005 to 2013. During the same period, FCDs have grown at about the same rate. The riel deposit remains only around 2% of GDP in 2013, while the FCDs have expanded beyond 40% of GDP. Although financial intermediation using the riel has increased, mainly in rural areas, dollar intermediation was by far larger, advancing financial dollarization.

4.2.2 Persistence of Dollarization: Hysteresis and Network Externalities

Samreth (2011) showed that dollarization in Cambodia has reached the state of hysteresis. Currency substitution develops further when there is evidence supporting the existence of network externalities, implying the hysteresis of the currency substitution in Cambodia. The concept of hysteresis extends all the way from simple inertia to path-dependence to rigid irreversibility. Basically, it suggests that Cambodian-specific history matters, and that there can be nonlinearity, or stickiness, in the system, that must be taken into account to understand the process of dollarization, or its unraveling (Menon 2008).

Reconstruction of the economy after the destruction of the economic and financial system in the late 1970s and economic mismanagement in the 1980s took place using the dollar, which had high confidence from the public. As the reconstruction process started to move, a monetization process and reestablished of banking system began. In this manner, the number of people using the dollar for transaction increased along with recovery and development progress of the financial system. During this process, externalities for usage of the dollar emerged, developed, and enhanced. If transactions in the dollar had been prohibited at that time, the development of externalities would have faced strong restrictions. However, an environment with no exchange control including purchases and sales of foreign exchange on the foreign exchange market, transfer,

international settlements, and capital flows in foreign currency enabled the expansion of network externalities in the country (Okuda 2013).

5 Household Survey

The survey on dollarization of households in Cambodia was conducted in late 2014. The survey collected information on attributes of households, investigated currency usage in all 25 provinces, covering 2273 households, with stratified sampling in accordance with the General Census 2008 (covering 2,841,897 households). From each of the 25 provinces, district/communes were selected based on the location (district/communes) and representativeness. Also, we purposely selected district/communes close to the border for those provinces bordering Thailand or Vietnam to see the usage of foreign currency other than USD. The classification and selection of urban and rural communes/villages are based on the Reclassification of Urban areas of the National Institute of Statistics. Questionnaire covers relevant aspects of activities including income (revenue), expenditure, saving (assets), and borrowing.

5.1 Income

5.1.1 General View of Income Dollarization

The dataset contained not only the ratio of foreign-currency-denominated income, but also the total income of an individual household. Therefore, it is possible to calculate the general aggregated level of foreign-currency-denominated income of the household sector. Using all 25 province samples, the dollarization ratio inclusive of income denominated in any foreign currency (not only in US dollars but also in Thai baht and Vietnamese dong), was around 38%, while around 62% of total household income was denominated in local currency, KHR. For households, on an aggregate basis, KHR was the dominant currency for income.

First, we classify income sources of households into salary/wage income, income from business ownership, and income from agriculture.

When looking into the foreign-currency-denominated income by source of income, we can observe that salary/wage income had highest ratio of foreign currency, at around 50%, while those from business ownership and from agriculture were around 25 and 10%, respectively. Thus, at the aggregate level, salary/wage payment was a key driver for income dollarization. Specifically, the data suggested that among wage earners, those engaged in the garment/shoe sector, which was the major export sector of the country, had the highest foreign currency ratio of income.

It is possible to observe a somewhat positive relationship between income level and dollarization. The lowest group of income (less than US \$300 equivalent) had a relatively low level of income dollarization, around 25%. From the second-lowest group (US \$300–500) to the fourth-lowest group (US \$1000–5000) income dollarization ratios stay around 30–35%. The highest-income group showed the highest dollarization ratio, which was double the level of the lowest group.

The level of income dollarization differed by source (agriculture, business ownership, and wage/salary) and by level of income. Income from agriculture had the lowest ratio in all categories of income levels. Income from wage/salary showed the highest ratio in all level of income except for the highest category of more than US \$5000. Dollarization of income from business ownership had a clear increasing trend with the level of income, and was highest in the highest-income category. Dollarization of income from wage/salary was highest in all categories of income level, except for in the highest group of more than US \$5000.

5.1.2 Micro-Level of Income Dollarization

While aggregated figures suggest a general picture of income dollarization, micro-level data tells us that there was a significant difference between those who are in Phnom Penh and those who are not (Table 1).

Mean of income dollarization ratios of the total 2164 effective samples was 21.6%. If we divide the samples into Phnom Penh and the rest of the country, the mean values become 44.4 and 20.0%, respectively. It is clear that income dollarization was prevalent in the capital city. When we further divide each area category by income level, the highest-income

Table 1 Income dollarization

Area	Phnom Penh		Other regions	
	N	% of FC income to total income	N	% of FC income to total income
Below USD 300	11	33.5	586	17.0
Between USD 300 and 500	19	56.4	350	21.4
Between USD 500 and 1000	33	50.8	467	22.1
Between USD 1000 and 5000	73	37.5	557	19.5
Above USD 5000	8	67.7	60	29.0
Total	144	44.4	2020	20.0

Note Out of total 2273 samples, 2164 gave effective reply on the relevant questions. *N* in the table stands for sample number in the category

groups had the highest level of foreign currency ratios, while the lowest groups had the lowest ratios, commonly in both Phnom Penh and in other regions. However, for the middle range of income groups, there was no clear positive relationship between the level of income and ratio. In all income level categories, the dollarization ratio in Phnom Penh was higher, almost double the corresponding levels in other regions. In all, we may well say that, when viewed that the individual household level, income dollarization was a phenomenon of the rich residing in Phnom Penh.

5.2 Expenditure

5.2.1 General View of Expenditure Dollarization

In our questionnaire, we asked not just the ratio of foreign-currency-denominated expenditure, but also the amount spent by individual households. It is possible to calculate the aggregated level of foreign-currency-denominated expenditure of the household sector as a whole. It is noted that some respondents replied that they did not purchase some of the items on the questionnaires during the designated period. Thus, the number of headcounts may differ by item.

Overall, the use of foreign currencies for expenditure was around 11%. This figure was far lower than the dollarization ratio measured using macro-data such as FCDs over M2. Depending on expenditure item, people used different currencies for purchase. For food and beverage, alcohol and tobacco, water and electricity, and health items including toiletries, KHR was used. Conversely, for housing (rent), communication, and furniture and appliances, foreign currency was frequently used. Depending on what was purchased, currency was differentiated. In general, durables like furniture and appliances, real estate, and related services were transacted in dollars, but others were in KHR. In other words, items that preserve their economic value for a certain period was regarded as savings in kind, and services derived from such goods were payable in dollars because they might be regarded as interest or dividend from the savings. KHR was used frequently for daily and repeated transactions. However, it should be noted that this choice of currency might not be decided at the sole discretion of buyers (household), and the result of interaction between sellers and buyers. Business practices or bargaining power between the seller and buyer, or competitiveness of the market might affect the choice of currency for transactions.

Generally, the level of income matters for expenditure dollarization. In all items, we could observe an increasing trend of foreign currency used for payment. The higher was the level of income, the higher was the ratios, that is, rich people used foreign currency frequently while the poor used it less. The ratio for food/beverage increased from 0.0 (lowest quintile of income group: q1) to 0.7% (highest quintile of income group: q5). For alcohol/tobacco, although the ratio remained relative low, it increased from 1.2 (q1) to 5.9% (q5). Expenditures for housing (rental), communications, or household items (furniture and appliances) had relatively high ratios in all categories of income level. For recreation/culture, clothing/footwear ratios were moderate, ranging from around 6–20%. Payments for restaurants, education, health including toiletries, and transportation had a low level of dollarization in all income groups. Expenditure dollarization was a clear phenomenon for the rich and for particular items.

5.2.2 Micro-Level Expenditure Dollarization

When we see the micro-level of expenditure dollarization of samples, again, there was a significant difference between those who are in Phnom Penh and in the rest of the country (Table 2).

In all items, except food, the ratios were higher in Phnom Penh than in other regions. Food expenditure showed the same level of foreign currency ratios in Phnom Penh and in other regions: both were quite low at around 2%. For expenditure of housing as well as furniture and appliance, ratios were similar, though in Phnom Penh it was slightly higher than in other regions. For such items, the richest group does not necessarily have the highest ratio. Rather, households in lower income groups also showed a rather high ratio of expenditure dollarization. For expenditures at restaurants, tobacco and alcoholic beverage, and clothing and footwear, there was a significant difference in the level of expenditure dollarization between Phnom Penh and other regions. For these items, the lowest income group in Phnom Penh nevertheless had rather high ratios. The remaining items had ratios that were twice as high in Phnom as those observed in other regions.

In all, we may well say that at the individual household level, expenditure dollarization was a phenomenon for the rich residing in Phnom Penh. There might well be a strong externality in the usage of foreign currency in Phnom Penh. However, it is noted that as for specific items, like food, housing, and furniture and appliances, the market practice or structure of the distribution channel might affect the choice of currency used, resulting in a similar level of expenditure dollarization ratios in both Phnom Penh and elsewhere.

5.3 Savings

5.3.1 Saving Dollarization

To investigate households' preference on the currency choice for assets, we study which currency they had in savings in the form of broad

Table 2 Expenditure dollarization

Phnom Penh												
Monthly Income Level	N	Food	Headcount	Tobacco and alcoholic beverage	Housing	Recreation and culture	Clothing and Footwear	N	Restaurant and eating out	N		
		% of FC expenditure to total item expenditure		% of FC expenditure to total item expenditure	% of FC expenditure to total item expenditure	% of FC expenditure to total item expenditure	% of FC expenditure to total item expenditure		% of FC expenditure to total item expenditure			% of FC expenditure to total item expenditure
Below USD 300	17	0.6	2	40.0	0	na	2	50	8	55.6	7	51.4
Between USD 300 and 500	19	1.6	7	7.1	2	0.00	4	0.00	17	35.8	6	20.0
Between USD 500 and 1000	33	0	8	12.5	4	87.5	13	43.1	24	53.3	12	24.2
Between USD 1000 and 5000	72	2.4	21	14.3	8	81.3	19	45.8	50	59.2	23	31.7
Above USD 5000	8	8.8	3	66.7	3	100.0	3	60.0	8	75.0	5	56.0
Total	149	2.4	41	17.8	17	76.5	41	41.7	108	55.1	53	33.6
Phnom Penh												
Monthly Income	N	Communication	Education	Health incl. Toiletry	Transportation	Furniture & appliance						
		% of FC expenditure to total item expenditure	% of FC expenditure to total item expenditure	% of FC expenditure to total item expenditure	% of FC expenditure to total item expenditure	% of FC expenditure to total item expenditure						
Below USD 300	12	75.0	12	25.1	16	12.5	12	8.3	1	100.0		
Between USD 300 and 500	19	65.7	13	12.0	18	16.1	19	0.0	3	53.3		
	29	76.2	25	23.2	30	10.3	28	6.8	5	100.0		

(continued)

Table 2 (continued)

Phnom Penh												
Monthly Income	N	Communication % of FC expenditure to total item expenditure	N	Education % of FC expenditure to total item expenditure	N	Health inclu. Toiletry % of FC expenditure to total item expenditure	N	Transportation % of FC expenditure to total item expenditure	N	Furniture & appliance % of FC expenditure to total item expenditure		
Between USD 500 and 1000												
Between USD 1000 and 5000	64	90.9	52	19.5	62	11.9	62	7.4	14	78.6		
Above USD 5000	7	97.1	4	41.0	8	37.5	8	30.3	3	66.7		
Total	131	82.9	106	20.9	134	13.7	129	7.7	26	79.2		
Other regions												
Monthly Income	N	Food	N	Tobacco and alcoholic beverage	N	Housing	N	Recreation and culture	N	Clothing and Footwear	N	Restaurant and eating out
		% of FC expenditure to total item expenditure		% of FC expenditure to total item expenditure		% of FC expenditure to total item expenditure		% of FC expenditure to total item expenditure		% of FC expenditure to total item expenditure		% of FC expenditure to total item expenditure
Below USD 300	686	1.1	229	1.7	5	35.7	99	10.1	469	8.7	135	4.7
Between USD 300 and 500	349	3.2	112	4.6	3	35.0	60	17.9	256	13.4	75	6.7
Between USD 500 and 1000	465	2.9	168	5.4	7	50.0	105	18.3	342	21.0	114	11.2
Between USD 1000 and 5000	555	2.8	221	5.5	10	35.5	154	19.4	405	20.2	163	8.7

(continued)

Table 2 (continued)

Other regions										
Monthly Income	N	Food	N	Tobacco and alcoholic beverage	N	Housing	N	Recreation and culture	N	Clothing and Footwear
		% of FC expenditure to total item		% of FC expenditure to total item		% of FC expenditure to total item		% of FC expenditure to total item		% of FC expenditure to total item
Above USD 5000	60	4.0	24	12.5	4	80.0	19	17.4	48	35.8
Total	2115	2.4	754	4.4	29	41.5	427	16.7	1520	16.2
Other regions										
Monthly Income	N	Communication	N	Education	N	Health inclu.	N	Toiletry	N	Transportaion
		% of FC expenditure to total item		% of FC expenditure to total item		% of FC expenditure to total item		% of FC expenditure to total item		% of FC expenditure to total item
Below USD 300	594	22.3	403	3.9	635	3.4	567	2.2	59	39.8
Between USD 300 and 500	302	29.3	224	7.8	329	3.8	310	3.4	41	56.5
Between USD 500 and 1000	423	38.5	319	10.3	432	5.5	444	3.7	60	67.5
Between USD 1000 and 5000	511	52.1	379	11.8	511	6.1	522	4.6	100	55.9
Above USD 5000	54	51.8	44	18.0	54	17.7	57	5.1	13	61.5
Total	1884	36.0	1369	8.6	1961	5.0	1900	3.5	273	55.3

Notes: The table shows the average level of foreign currency expenditure by item and by income level. *N* in the table stands for sample number in the category

financial assets, in terms of cash held at home, bank deposits, and another form of saving schemes.

We find that about 60% of households in Cambodia had savings (in any form of financial assets), more specifically, out of 2237 households, 1351 households saved money. To assess currency preference in savings, we calculated the frequencies of households with KHR savings and USD savings. Surprisingly, those households with USD savings were likely to simultaneously have KHR savings, while there were also households who had savings in KHR only. Out of 2237 households with savings, 1157 households saved their money in KHR, of which 726 had only KHR savings, and 431 had both KHR and USD savings. Furthermore, out of 584 households with savings in USD, 153 had USD savings only, with the aforementioned 431 households having both KHR and USD savings. We find that Cambodian households were generally likely to save in KHR rather than USD, although USD savings were also widespread among Cambodian households.

We examine the amounts of savings by currencies. The results presented us a different picture of household's saving behaviors from what the views of households as discussed in the previous section. The sample size for the amounts of savings was reduced, since some households did not provide their amounts of savings. The mean value of amounts of saving in USD was larger than that in KHR, and about four times larger than that in KHR. Essentially, households were likely to save in KHR, and these amounts were generally small. However, it is necessary to interpret these results with caution. The amount of savings is generally related to the income level of the households. Normally, the higher is the income, the higher is the savings. There was the possibility that households with USD income tend to have a higher income than households with KHR income, and that the results then just represent the difference in income level between households with USD income or KHR income.

5.3.2 Deposits Dollarization

In terms of fund mobilization in Cambodia, formal bank deposits may play an important role and can be a key to de-dollarization as a monetary

policy pathway³. To understand how many households have a deposit and in which currency they keep deposits, we analyze household behavior. Out of 2273 households, 459 households answered that they had more than one deposit account, which amounted to about 34% of households with savings, or 21% of the total households interviewed in the survey. The number of households having deposits seems still low despite the growing number of new entries of formal financial institutions in various forms, such as commercial banks and MFIs, suggesting that households were still intended to keep their money away from formal financial institutions.

We investigate the frequency of currency types of deposit accounts held by households. Among 459 households with deposits, 180 households answered that they had only KHR deposits, and 179 households answered that they had only USD deposits. Interestingly, more households than expected held KHR deposit accounts, and the frequency was as high as that for USD accounts. However, some of the households held two currency types of accounts at the same time. A total of 98 households answered that they had both KHR and USD deposit accounts, and two households answered that they had USD and another foreign currency accounts.

The data suggests that commercial banks were the most common option for Cambodian households for savings in formal financial institutions. In the survey, households were further asked about the type of institutions in which they had deposited. Out of 459 effective answers, we find that 324 households had an account only in commercial banks, and in total, there were 365 households and accounts in commercial banks. A total of 88 had an account only in MFI. A total of 35 households had more than one deposit and had accounts in both commercial banks and MFI simultaneous. Furthermore, we find that 12 households had an account in other informal institutions.⁴ To investigate which currency was common in each institution, we calculate the frequencies of the currency type of deposits by institutions. There seems to be no clear difference in currency types between institutions, although the ratios of KHR deposits were slightly higher in commercial banks than in either MFI or other informal institutions.

5.3.3 Regional Difference in Currency Choice

We investigate whether there is any difference in foreign currency-saving behavior between regions, dividing the sample into Phnom Penh and the rest of the country. First, Table 3 shows the number of KHR/USD savings by regions. We find that households in Phnom Penh were more likely to have USD savings than households in the rest of the country. However, there is no clear difference in the popularity of KHR savings between Phnom Penh and the rest of the country. The percentages of having KHR savings both in Phnom Penh and the rest of the country were considerably high, 82 and 86%, respectively. This suggests that it was common for Cambodian households to save in KHR, and dollarization in Cambodia was not necessarily a consequence of household's reluctance to save in KHR.

Table 4 shows the number and percentages of households having KHR/USD deposits by regions. We find that there was no explicit difference in the deposit dollarization between regions, although the percentage of households with USD deposits to the total number of households with deposits in Phnom Penh was slightly higher than that in the rest of the country. The ratio of households having deposits as a percentage of total samples in Phnom Penh ($0.27 = 41/150$) was higher than that in the rest of the country ($0.20 = 418/2123$), reflecting the limited access to the financial system outside Phnom Penh.

Table 3 Households having KHR/USD savings

Area	KHR saving	USD saving	Having savings in any currencies	N
Phnom Penh	70 (82.4%)	59 (69.4%)	85 (100.0%)	150
Other regions	1087 (85.9%)	525 (41.5%)	1266 (100.0%)	2123
Total	1157 (85.6%)	584 (43.2%)	1351 (100.0%)	2273

Notes The table shows numbers of households having KHR savings, USD savings, and savings in any currency. Percentages of households having KHR/USD savings to the number of households having savings in any currency are shown in the parenthesis. Savings may include cash at home, deposits in financial institutions or other systems. Some households had both KHR and USD savings when interviewed. *N* in the table stands for sample number in the category

Table 4 Households having KHR/USD deposits

Area	KHR deposit	USD deposit	Having deposits in any currencies	N
Phnom Penh	26 (63.4%)	27 (65.9%)	41 (100.0%)	150
Other regions	252 (60.3%)	249 (59.6%)	418 (100.0%)	2123
Total	278 (60.6%)	276 (60.1%)	459 (100.0%)	2273

Notes The table shows numbers of households having KHR deposits, USD deposits, and deposits in any currency in financial institutions. Percentages of households having KHR/USD deposits to the number of households having deposits in any currency are shown in the parenthesis. Some households had both KHR and USD deposits when interviewed. *N* in the table stands for sample number in the category

5.4 Borrowings

In this section, we investigate the choice of currency in households' borrowing. Because Cambodia is generally categorized as low-income countries, it is more likely for households to borrow from a financial system rather than make deposits. As well as the commercial banking sector, the microfinance sector has been growing remarkably in recent years. Due to the development of MFIs, more households, even poor ones, have become more able to access funds when they need money or start a business. As of 2014, there are 39 registered MFIs and the networks of MFIs that provide loans are widely spread over the country (NBC 2015). In fact, we find that 545 households had loans from formal financial institutions such as commercial banks and MFIs at the time they were interviewed, which exceeded the number of households with deposits in formal financial institutions. This suggests that borrowing from formal financial institutions was more common than having deposits in them, although both numbers are low compared to other neighboring countries. With regard to de-dollarization policies, implementing measures on bank lending may be more effective to control dollarization than regulating deposits.

In the survey, the households were asked about their outstanding loans at the time they were interviewed and were asked about information such as lenders, currencies, and amounts of all loans they had. We found that 634 households, out of 2273 households, answered that they had loans at the time. Most of them (599 households) had just one loan, while 32 households had two loans from different lenders, and 3 households had 3 loans.

5.4.1 Breakdown of Loan Characteristics by Currencies and Lenders

We analyze characteristics of loans by currency and by lenders. For this analysis, when a household takes two loans, we regard them as two individual loans. Therefore, we count 674 loans borrowed by households at the time of the survey. It is noted that some households had more than one loan. We also found that about two-thirds of all loans (436 loans) were borrowed in USD, while about one-third of all loans (210 loans) were borrowed in KHR. Moreover, we found that 27 loans were in Thai baht, and one loan was borrowed in gold. According to the NBC, about 95% of loans provided by commercial banks are denominated in US dollars. Taking this fact into consideration, our data suggests that households might be less dependent on foreign currency loans than enterprises. As for lenders, 162 loans (24%) were granted by commercial banks, and 383 loans (57%) were provided by MFIs, while the rest of loans (19%) were from personal networks (relatives/friends), NGOs, or other informal lenders. We found that more than 80% of households relied on formal financial institutions when borrowing money.

We overviewed differences in loan characteristics (interest rates, amounts, and maturity) by currency. We found that both amounts granted and outstanding in KHR were smaller than those in other currencies on average. Interest rates in KHR loans were relatively higher than others, while interest rates on USD loans were the lowest (Table 5).

Loan characteristics might be partly a consequence of a lender's behavior. We found that there was, although small, a difference in currency denomination of loans between lenders. It may seem that formal lenders, especially commercial banks, had a tendency to provide loans in

Table 5 Loan characteristics by currency

Currency		Initial amount (USD)	Outstanding at the time of interview (USD)	Interest rate (%)	Maturity (month)
KHR	Mean	709.7	425.8	2.5	15.9
	Std. Errors	(723.84)	(505.47)	(0.56)	(7.19)
	N	207	163	82	166
USD	Mean	4795.4	2874.9	1.8	26.9
	Std. Errors	(7245.27)	(6280.01)	(0.46)	(13.85)
	N	431	310	276	375
Baht	Mean	13550.6	13336.5	2.3	18.0
	Std. Errors	(59248.67)	(60550.80)	(0.42)	(9.20)
	N	26	25	14	20
All Currencies	Mean	3864.5	2598.5	2.0	23.3
	Std. Errors	(13188.13)	(14458.52)	(0.56)	(13.13)
	N	664	498	372	561

Notes The table shows amount, interest rate, and maturity of loan by currency. *N* in the table stands for sample number in the category. Mean stands for mean value, and Std. Errors for standard error

foreign currencies, and this was consistent with commercial banks' balance sheet data from the NBC (Table 6).

5.4.2 Difference in Foreign Currency Borrowing Among Regions

We break down the sample and investigate the regional difference in tendencies of foreign currency and KHR borrowing behaviors. We find that the percentages of foreign currency loans were considerably high at 65% in the other regions, but that the percentage was 100% in Phnom Penh. In rural areas, not only were foreign currency loans prevalent when taken out by or when provided for Cambodian households, but KHR loans were also prevalent (Table 7).

Table 6 Loan characteristics by lender

Type of lender	Ratio of KHR loans to all loans		Ratio of USD loans to all loans	Initial amount (USD)	Outstanding at the time of interview (USD)	Interest rate (%)	Maturity (month)
Commercial Bank	Mean	0.2	0.8	5907.7	3441.3	1.8	28.7
	Std. Errors	(0.4)	(0.4)	(8551.5)	(7385.4)	(0.5)	(17.5)
Microfinance	N	162	162	159	111	106	154
	Mean	0.3	0.7	2765.3	1403.3	2.1	21.9
	Std.	(0.5)	(0.5)	(3976.8)	(1696.4)	(0.6)	(10.1)
	Errors						
Family, relatives, or friend	N	383	383	379	263	253	376
	Mean	0.4	0.5	5185.3	5189.5	2.2	13.8
NGO	Std.	(0.5)	(0.5)	(30960.0)	(31275.4)	(0.6)	(8.5)
	Errors						
	N	102	102	101	99	6	19
	Mean	0.4	0.6	3771.9	1362.5	1.7	16.8
	Std.	(0.5)	(0.5)	(6840.9)	(1746.3)	(0.6)	(10.7)
	Errors						
Informal lender	N	8	8	8	8	4	5
	Mean	0.5	0.3	603.6	603.6	2.2	6.0
	Std.	(0.5)	(0.5)	(832.9)	(832.9)	(0.8)	(4.0)
	Errors						
	N	13	13	12	12	3	3

(continued)

Table 6 (continued)

Type of lender		Ratio of KHR loans to all loans	Ratio of USD loans to all loans	Initial amount (USD)	Outstanding at the time of interview (USD)	Interest rate (%)	Maturity (month)
Others	Mean	1.0	0.0	634.4	271.9	.	12.0
	Std.	(0.0)	(0.0)	(915.9)	(333.3)	.	(0.0)
	Errors						
All lenders	N	4	4	4	4	0	3
	Mean	0.3	0.6	3847.7	2583.6	2.0	23.3
	Std.	(0.5)	(0.5)	(13191.0)	(14469.3)	(0.6)	(13.1)
	Errors						
N		672	672	663	497	372	560

Notes The table shows amount, interest rate, and maturity of loan by lender. *N* in the table stands for sample number in the category. Mean stands for mean value, and Std. Errors for standard error. Compared to Table 5, one sample did not reveal the lender

Table 7 Choice of loan currency

Area	USD loans holders	Households having loans in any currency	% of USD loan holders to households having loans in any currency
Phnom Penh	30	30	100.0
Other regions	395	604	65.4
Total	425	634	67.03

Notes The table shows numbers of households with USD loans and those with loans in any currency

6 Enterprise Survey

This section describes the widespread dollarization phenomenon from the perspective of enterprises in terms of several aspects, including revenue, expenditure, and financial activities. For the enterprise survey, we collected 856 samples from 25 provinces with reference to the Economic Census 2011 (covering 375,095 establishments).

6.1 Basic Structure of Survey

The survey on dollarization of enterprises in Cambodia was conducted in late 2014. The survey collected several pieces of financial data along with attributes of enterprises in all 25 provinces in Cambodia and investigated their currency usage. A total of 856 enterprises were surveyed and investigated regarding their financial and economic activities and currency. Enterprises were sampled at random from each stratum, classified according to asset sizes. Criteria for enterprise size were based on the definition of enterprises size from Ministry of Industry and Handicraft. The number of large enterprises was 204 out of the total 856 samples, and the number of medium-sized, small, and micro-enterprises was 183, 251, and 218, receptively. Compared with the size distribution from the Economic Census 2014, which is official survey data by the Cambodian government, our survey was slightly biased to the side of large enterprises,

and to rural areas. Therefore, when we interpret the results of analyses, it is worth noting that the whole sample was subject to these biases.

Approximately 95% of the whole samples were owned fully or mainly by Cambodian citizens. Regarding industrial classification, in terms of the sample, the top three industries dominated more than 80% of the entire sample. The top industry in the sample was the wholesale and retail trade sector and its share in the whole sample was 42%. The second largest industry was the manufacturing sector (21%), and the third largest one was the information and communication sector (20%).

6.2 Sales

6.2.1 General View of Sales Dollarization

The dataset contained not only the ratio of foreign-currency-denominated sales, but also the total amount of sales of individual firms. It is possible to calculate the aggregated level of foreign-currency-denominated sales of the firms as a whole. Data from 25 provinces shows that around 78.3% of sales (business revenue) were received in foreign currencies. Among foreign currencies, USD was in highest usage, while Thai baht was also used to a comparable extent as that of KHR. Vietnamese dong was also used but in a more limited manner in the border area.

On an aggregate basis, in general, large firm's ratios were high while those of micro- and small firms were lower. Large firms might have direct access to international markets, allowing them to generate revenue in foreign currency, while small or micro-firms might export their products through a middleman and be paid in riels. Another possible explanation is that large firms were able to take initiative in determining the currency to receive for its sales or services. Frequently, we observe that a firm offers products both in USD and KHR. However, if a firm actually prefers to receive payments in USD, it might apply an exchange rate that disadvantages payment in KHR. For example, if the prevailing market rate is $3900\text{KHR} = 1 \text{ USD}$, the firm will instead use $4000\text{KHR} = 1 \text{ USD}$ to

calculate the price to be paid in KHR, pushing the buyer to voluntarily choose to pay in USD, the currency that the seller actually prefers.

It may be noted that employee number had a stronger positive correlation with sales dollarization ratio than simple asset-size-based firm classification, particularly for firms in the manufacturing sector. Such firms with more than 500 employees had almost 100% USD revenue. However, when the employee number decreases, the dollarization ratio of revenue also goes down. Firms with one to ten employees showed quite low dollarization ratio. We can see that large manufacturers might be directly involved in exports, allowing them to generate foreign currency revenue. In some cases, they might be involved in a network of an international value chain. However, for micro-, small-, or medium-sized manufacturers, direct access to the international market was limited. Thus, these firms were less dollarized in terms of revenue.

It should be noted that Vietnamese dong had some share in the sales of small firms. These firms had direct transactions with Vietnam, as they were located near the Vietnamese border. Small firms were actively engaged in cross-border trade with neighboring countries. Thai baht was also used, however, by large firms located near the Thai border.

6.2.2 Micro-Level Sales Dollarization

When we look into the individual level of sales dollarization, the story mentioned above changes slightly. If we divide the sample into Phnom Penh and the rest of the provinces, then, further classify firms by business types and size, we can observe that ratios of sales dollarization for micro/small firms in Phnom Penh have higher ratios than their peers in other regions in all categories of business types.

In the case of medium/large enterprises, though they have high ratios in general, the ratios in Phnom Penh are not always higher than those in other regions. Interestingly, manufacturing firms in other regions have rather low ratio of sales dollarization (Table 8).

Table 8 Sales dollarization

Area	Phnom Penh				Other regions			
Size	Micro and small		Medium and large		Micro and small		Medium and large	
	N	% of sales in FC to total sales	N	% of sales in FC to total sales	N	% of sales in FC to total sales	N	% of sales in FC to total sales
<i>Type of Business</i>								
Agriculture, forestry, and fishery related	0	na	0	na	2	15.0	3	57.3
Manufacturing	1	80.0	2	45.0	40	21.1	75	46.6
Wholesale/retail	21	60.2	4	75.0	175	39.8	53	58.0
Services	20	77.6	24	68.6	82	46.7	64	70.3
Total	42	69.0	30	67.9	299	39.0	195	57.7

Notes The table shows average level of sales in FC to total sales by type of business and by size of enterprise. N in the table stands for sample number in the category

6.3 Expenditure

Enterprises in Phnom Penh had a high ratio of expenditure dollarization. More than 90% of expenditure was spent in dollars, and more than 80% of firms in Phnom Penh had revenue in dollars. Thus, it is quite natural that firms conducted business-to-business transactions almost entirely in dollars, while business-to-consumer transactions were instead partly in KHR and in USD (Table 9).

In terms of dollarization of production input expenditure, if we divide the sample into Phnom Penh and other regions and then split by business type, we can observe that in Phnom Penh the ratios were higher than those in other regions in all respective groups of categories. Moreover, the ratios in Phnom Penh remained around 60–80% (except in one agriculture-related sample, micro/small), the ratios in other regions differed significantly ranging from 13–67%. Depending on the business type, the ratio differed significantly in other regions, but in Phnom Penh, the ratios stayed in a narrower range. We can infer that there were externalities even for the transactions of firms in Phnom Penh.

Table 9 Dollarization of expenditure (Production input/wage)

(A) Production Input									
Area	Phnom Penh			Other regions					
	Micro and small		Medium and large	Micro and small		Medium and large			
Size	N	% of expenditure in FC to total expenditure	N % of expenditure in FC to total expenditure	N	% of expenditure in FC to total expenditure	N % of expenditure in FC to total expenditure	N	% of expenditure in FC to total expenditure	N % of expenditure in FC to total expenditure
Type of Business									
Agriculture, forestry, and fishery related	0	na	0	na	2	5.0	3	56.7	
Manufacturing	1	99.0	5	82.0	42	31.1	97	53.1	
Wholesale/retail	22	74.1	3	86.6	188	72.0	56	78.3	
Other	30	70.5	21	64.7	89	47.8	71	58.9	
Total	53	72.6	29	70.0	321	59.5	227	61.2	
(B) Wage									
Area	Phnom Penh			Other regions					
	Micro and small		Medium and large	Micro and small		Medium and large			
Size	N	% of expenditure in FC to total expenditure	N % of expenditure in FC to total expenditure	N	% of expenditure in FC to total expenditure	N % of expenditure in FC to total expenditure	N	% of expenditure in FC to total expenditure	N % of expenditure in FC to total expenditure
Type of Business									
Agriculture, forestry, and fishery related	0	na	0	na	3	33.3	4	20.0	

(continued)

Table 9 (continued)

(B) Wage		Phnom Penh						Other regions					
Area		Micro and small			Medium and large			Micro and small			Medium and large		
Size		N	% of expenditure in FC to total	expenditure	N	% of expenditure in FC to total	expenditure	N	% of expenditure in FC to total	expenditure	N	% of expenditure in FC to total	expenditure
Manufacturing		1	0.0		12	79.1		38	13.1		114	15.9	
Wholesale/retail		19	76.3		10	88.0		127	16.7		71	34.8	
Other		36	85.9		33	84.1		82	51.8		83	67.3	
Total		56	81.1		55	83.7		250	27.8		272	36.5	

Notes The table shows average level of production input/wage expenditure in FC to total production input/wage expenditure by type of business and by size of enterprise. *N* in the table stands for sample number in the category

Dollarization ratios of personnel expenditure were around 60 to 70% in all firm size categories on an aggregate basis. The data from the firm survey showed consistent result with household survey. Wages and salaries were mainly paid in dollars. However, if we again divide the sample into Phnom Penh and other regions, and then split by business type, it is very clear that in Phnom Penh the ratios ranged from 76.3 to 88.0% in all type of businesses while in other provinces the ratios were comparatively low except for firms engaged in the service sector.

The dollarization of personnel expenses had a positive correlation with dollarization of revenue. It is necessary to examine the direction of causalities, but it is quite natural to interpret that those firms who were generating revenue in foreign currency tend to spend their personnel costs in foreign currency to alleviate risk associated with exchange rate fluctuation, particularly for those labor-intensive manufacturing enterprises hiring many workers, like the garment industries. However, such currency denomination of salary/wage might also be affected by worker preferences, including practices in the local labor market. It is necessary to examine the employee's demands as well as the labor market practices in a given industry to see what key is to determine the currency of payment.

The data suggests that sales and their expenditures were mixed with local and foreign currencies. A clear trend was not found in the relation between the ratio of expenditure in foreign currency and ratio of sales in foreign currency. Operations of some enterprises were completely dollarized, but those of others were completely in KHR. However, in some enterprises, sales were completely in foreign currencies, but expenditures were completely in KHR, and vice versa. The results suggest there is a huge dispersion of the extent and direction of currency mismatch among Cambodian enterprises, and that they are exposed to exchange rate risk.

In the survey, perception of exchange rate risk is examined. In the question asking about assessment of exchange rate risk, 411 of the 856 respondents answered that they perceived risk to some extent, while 434 said no risk. The results revealed that more than half of Cambodian enterprises did not think that their businesses were exposed to foreign exchange rate risk. Moreover, only 225 out of 856 responded to questions asking their views on the future exchange rate. This might imply

that more than half of Cambodian enterprises were not conscious of exchange rate changes.

6.4 Dollarization of Financial Activities

We investigated the role of foreign currency and KHR in the financing behavior of enterprises. In the survey, managers of enterprises were interviewed about their outstanding loans. Specifically, they were asked about interest rates, maturity, and principal amounts, by currency and by lender.

We found that out of the 856 enterprises interviewed in the survey, 223 had a loan when interviewed. Because some enterprises had more than one loan, in total there are 237 loans in the dataset. To assess what kind of firms were dependent on external financing, we focused on questions asking firms about whether they had loans or not. We find that the manufacturing sector was more likely to take loans. However, the agricultural sector and wholesale/trade sector also tended to borrow money for financing. The data did not show any differences between large and small enterprises. Finally, we found that enterprises in Phnom Penh were less dependent on loans than those in other regions.

Surprisingly, almost all loans were denominated in USD. In particular, loans from formal financial institutions, such as commercial banks and MFIs, were all denominated in USD. We also assessed which currency that Cambodian enterprise taking foreign currency loans was using in its operation, and found that 60 enterprises (about 40% of enterprises with loans) were operating in KHR⁵. This reveals that Cambodian enterprises tended to borrow in foreign currency, although some of them were operating in KHR. Our findings indicate that when Cambodian enterprises financed their projects and operations, they almost always borrowed in USD, regardless of whether they mainly used KHR in operation. This suggests that there was the possibility that some Cambodian enterprises, particularly those that used KHR as the main currency in operation, could be exposed to the risk of currency mismatch between the currency in operation and loans (Table 10).

Table 10 Loan access and currency choice

(A) Access to loans				(B) Loan currency choice by lender			
	Having loans	N	% of enterprise having loans in category		KHR loan	USD loan	N
<i>Type of Business</i>				Commercial Bank	0	172	172
Agriculture, forestry, and fishery related	2	7	28.6	Microfinance	0	19	19
Manufacturing	69	178	38.8	Family, Relatives, or Friend	4	38	42
Wholesale/retail	113	359	31.5	Informal Lender	2	1	3
Other	39	312	12.5	Other	0	1	1
				Total	6	231	237
<i>Size</i>							
Micro and small	122	469	26.0				
Medium and large	101	387	26.1				
<i>Area</i>							
Phnom Penh	22	182	12.1				
Other regions	201	674	29.8				

Notes Panel (A) shows numbers of enterprise with loans by type of business, size, or area. Panel (B) shows currency choice of loans by lender. *N* in the table stands for sample number in the category

7 Conclusion

In this study, a survey on dollarization of households and firms in Cambodia was conducted by JICA-RI in collaboration with the NBC in late 2014. Micro-data gives us a different picture of dollarization from what we inferred from the extremely high ratio of dollarization measured using macro-data.

The results confirm that foreign currencies are widely used in every aspect of the transaction, by households as well as by enterprises. We can say that payment dollarization (means of payment) and real dollarization (unit of account) have developed alongside financial dollarization in

Cambodia, given its unique environment. However, the degree of dollarization may differ significantly by region, depending on the magnitude of network externalities, according to characteristics of households/enterprises, or by the type of transactions, depending on the specific business practice concerned.

Notes

1. Prakas is a regulation issued by a Minister, or by the Governor of the National Bank of Cambodia, concerning banking or financial issues. It must conform to the Constitution and to the law or sub-decree to which it refers (<http://asianbondsonline.adb.org/regional/guides/definition.php?term=Prakas> Accessed on 7 July, 2015).
2. According to the Cambodia Security Exchange, Phnom Penh Water Supply Authority (listed in April 2012), Grand Twins International Plc (listed in June 2014), and Phnom Penh Autonomous Port (listed in December 2015) are listed. (<http://csx.com.kh/data/lstcom/listPosts.do?MNCD=5010>; accessed on January 13, 2016).
3. The Cambodian security market is still immature, and there are only three firms listed. Thus, there are no alternative formal funding sources for the banking system.
4. This informal institution is called “WING” in Cambodia, and serves money transfer services all over the country.
5. We used the question “Which currency is your company usually using in operation?”

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