Dollarization in Cambodia:

Evidence from a Survey conducted in 2014-2015

October 20, 2016

Forward

Although the Cambodian government has never officially adopted dollarization, Cambodia has become one of the most dollarized economies in the world. Yet, in spite of stabilized macroeconomic condition and solid economic development, dollarization has never abated. The persistence or even expansion of dollarization is a puzzling phenomenon and reflects the hysteresis of dollarization in Cambodia.

This paper is intended to provide some hints to contribute for promotion of usage or Riel, giving real picture of the economy using survey data collected in 2014-15 conducted by the National Bank of Cambodia and JICA Research Institute. JICA employed BDLINK (Cambodia) Co., Ltd to conduct survey and collect the data. We highly appreciate work done by its staff to fulfill the survey.

The views expressed in this paper are those of the author and do not necessarily represent the views of the NBC or JICA Research Institute.

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Chapter I: Introduction

Ken Odajima

Vouthy Khou

Although the Cambodian government has never officially adopted dollarization, Cambodia has become one of the most dollarized economies in the world. The US dollar is used not just for commercial transactions, but also for daily transactions. Given this situation, it is worth mentioning that during the last two decades, the Cambodian economy has enjoyed steady growth, around 7.7% per annum, resulting in an increase in per capita GDP, and a reduction in poverty. At the same time, it has enjoyed low inflation, averaging 4 percent, and the exchange rate has been kept stable. Yet, in spite of stabilized macroeconomic condition and solid economic development, dollarization has never abated. Rather, the ratio of foreign currency deposits (FCDs) to broad money reached around 83 percent in 2013, up from 70 percent in 2005, and FCD was about 96 percent of total deposits by the end of 2013. Normally, dollarization should cease or decline in pace during times of economic and political stability as these influences are not generally considered to be among the root causes of dollarization. The persistence or even expansion of dollarization is a puzzling phenomenon and reflects the hysteresis of dollarization in Cambodia (Khou 2012).

In the literature, this persistence is associated with network externalities. The latter refer to those conditions where it is convenient for all households, firms, financial institutions and economic agents in a particular economy to use and operate in a foreign currency, such as when a large number of people use and accept a foreign currency as being essential for the promotion of the traditional functions of money (unit of account, medium of payment and store of value). However, 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 linkages to international trade? To shed light on the network externalities of dollarization in Cambodia, a large-scale survey on the dollarization of households, enterprises, banks, microfinance institutions and money changers, was conducted in late 2014 by the Japan International Cooperation Agency Research Institute (JICA-RI), in collaboration with the National Bank of Cambodia (NBC), the Cambodian central bank. To assist understanding of the underlying mechanisms, this chapter aims to develop a detailed picture of dollarization based on the micro data collected during the surveys conducted from October 2014 to January 2015.

For the Cambodian government or the NBC, such unintended dollarization poses many challenges for their management of monetary policy. Given the heavy use of foreign exchange in this process, 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. The consequent underdevelopment of the interbank market, and the absence of government bonds quoted in the local currency, the Khmer Riel (KHR), also affects the scope of the monetary and exchange-rate policies of the NBC.

The unique circumstances surrounding the introduction of the dollar to the Cambodian economy, combined with the very high level of dollarization, suggest that the process of de-dollarization is likely to be more protracted than it would otherwise be (Menon 1998). At the same time, the de-dollarization process has to be made gradual, take into account the geographical, functional, and social roles of foreign currency, and account for its impacts on the economic and financial system as a whole (Khou 2012). In this regard, in addition to promoting an understanding of the behavior of local economic agents in using foreign currencies, and the mechanisms of this use, the series of studies in this book attempt to draw policy implications for more effective promotion of the local currency based on deep analysis of survey data. For a better understanding of the purposes and results of this research, it is beneficial to concisely review our current understanding of Cambodian dollarization. Before

investigating the results of our surveys, though, we overview the history of dollarization in Cambodia, and review previous research in Chapter II.

In Chapter III and IV we investigate the actual situation of dollarization in real economy: households and enterprises. Currently, the level and reasons for dollarization in the real economy remain unclear, while most previous research investigates the measures of dollarization used in the financial system. To implement feasible administrative measures, it is necessary to understand which sector is dollarized, and what factors drive dollarization in households and enterprises. To understand the actual situation which households and enterprises face, we present micro-level empirical analyses of households and enterprises using unique data. In 2014, we conducted a survey of 2,271 households and 856 enterprises throughout the country. In Chapter III and IV, we discuss the design of the survey and the results of our analyses. We found that a lot of households and firms receive income in both local and foreign currencies, and manage to deal with both in their daily transactions. Importantly, we found that several firms experience a mismatch between the currency compositions of their revenues and expenditures, and some firms are servicing foreign currency loans, even if their operations are mainly in the local currency. However, we also found that these firms do not recognize the risks of exchange rate variations in their operations. Our study gives insights into possible measures for de-dollarization in the real economy.

The banking sector plays a vital role in dollarization. Since financial institutions mobilize excess funds in one sector for distribution to other sectors, this activity can transmit the impact of dollarization from one sector to another. Since deposit and loan dollarization have long been identified in the literature, there exist numerous relevant studies, including a number of previous studies on the impact of Cambodian dollarization. However, due to limitations of data availability, previous studies have generally only examined macro-level variations in the dollarization of the financial sector. However, as Brown et al. (2015) suggest, the extent of dollarization may vary across regions, and there could also be differences among financial institutions due to differences in the sources of funds (Brown et al. 2014). Even though there exist a number of previous studies of the Cambodian financial sector, understanding the actual mechanisms of dollarization at the financial institution level and the regional level is important. In this regard, in Chapter V we present an analysis of individual financial institutions: 10 commercial banks and 5 microfinance institutions. Further, we conducted an analysis of the branch-level financial statements of those financial institutions. We found that there are regional differences in evolution of dollarization over the period that we assessed. In some regions, we found evidence of an increase in demand for local currency deposits in both commercial banks and microfinance institutions. However, we also found a clear trend that MFIs have recently been increasing the share of foreign currency loans in total loans. We believe that these findings shed light on the effectiveness of the de-dollarization strategy in the Cambodian financial system, and suggest that dollarization is evolving even in the microfinance sector.

Money changers are unique features of the Cambodian economy. There are many operating all over Cambodia. They are acting to meet a need for the conversion of currency for households and enterprises. Although they make it smoother for economic agents to transact with each other in a multiple-currency circulating environment, there are some critics that suggest they are transmitting dollarization. Their behavior also affects households and enterprises though their decisions on selling rates and buying rates within exchange rates. To investigate the activities of money changers, Chapter VI provides results of a survey on their behavior. Although Khou (2012) investigated the behavior of money changers, existing studies on their activities are scarce in the literature of dollarization. How they decide exchange rates and how they manage their businesses are still unclear. Our study is the first to collect comprehensive information about their operations. In the light of our survey results, Chapter VII discusses the policy implications of promoting the use of the KHR in this situation.

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Chapter II: An Overview of the History and Previous Research on Dollarization based on Micro Data from Cambodia

Ken Odajima

Vouthy Khou

1. A brief history of Dollarization in Cambodia

After independence from France in 1953, Cambodia experienced a relatively short period of peace, political stability, and enjoyed stable but fragile economic conditions. However, from 1970, increasing strife in the wider Indochina Region led to internal turmoil in the country. The following two decades record a continuous erosion of confidence, trust, and credibility in the Riel resulting from this political and economic instability, and holding and using the Riel in economic and financial operations became less and less popular (Khou 2012). The period 1970–75 was characterized by the beginning of the civil war, when Cambodia had its first experience with limited dollarization during the Lon Nol regime (1970–1975), as the increases in US military personnel and assistance brought dollars into the country (De Zamaroczy and Sa 2002).

When the country fell to the Khmer Rouge regime in April 1975, an extreme revolutionary economic program was introduced. It included bans on markets, private ownership, all kinds of economic and financial transactions such as banking, and even the use of money, including the Riel. The central bank was closed and the country's financial infrastructure completely destroyed. However, once the Khmer Rouge regime ended in 1979, the central bank was re-established, and in March 1980, the Riel was reintroduced. In the period immediately after the re-establishment of the central bank, the banking system was a mono-banking system, based on a state-owned bank with central, commercial, and development banking roles (the NBC). A Foreign Trade Bank was established simultaneously inside the NBC to provide commercial banking services. Dollars started to flow into the country in the mid-1980s, 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 however, 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 though, the country started to transform its economy toward a market economy. Nonetheless, hyperinflation, and a massive devaluation of the Riel against the dollar during 1988–1991 further eroded the confidence of the public in the local currency.

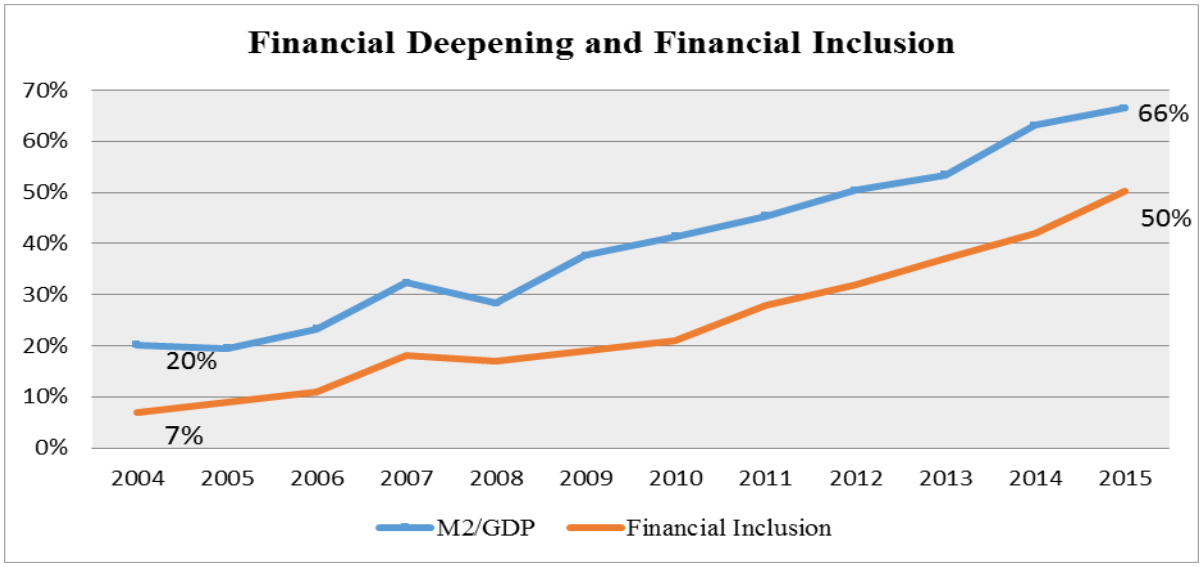
The continued use of the American dollar was further facilitated by large inflows during the operation of the United Nations Transitional Authority in Cambodia (UNTAC). During 1991–92, UNTAC spent US$1.7 billion, equivalent to about 75 percent of Cambodia's GDP at that time, mostly on rent and local services for its peacekeeping operation. Foreign currency deposits became an important component of the bank deposit base (Rumbaugh et al. 2000). It was at the beginning of this period that a two-tier banking system started to evolve. The first privately owned commercial bank, the Cambodian Commercial Bank, was established as a joint venture between Siam Commercial Bank and the NBC in July 1991, mainly to serve the activities of UNTAC (Jean-Daniel Gardère 2010).

From 1993, the political regime was officially transformed into a democratic framework; and within this the economy was transformed from a centralized and planned system to a market economy, and private ownership was gradually strengthened. However, the legal foundation for a two-tier banking system was established only after promulgation of the Law on the Organization and Operations of the NBC (26 January 1996), the Law on Foreign Exchange (22 August 1997), and the Law on Banking and Financial Institutions (18 November 1999). Based on this foundation, the NBC instituted a series of important reforms from 1998 to 2001. It abolished the requirement of a 15 percent NBC stake in all private banks, introduced a new classification of financial institutions that divided them into commercial banks, specialized banks, and microfinance institutions (MFIs), and increased the minimum

capital requirement of commercial banks (Praka[1] on Commercial Bank Minimum Capital, 9 February 2000).

The Law on Banking and Financial Institutions (1999) implemented a re-licensing process 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, which was intended 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. Since these reforms, the banking sector has rapidly developed both in terms of networks and services. The banking sector's assets have rapidly increased from 16% of GDP in 1999 to 131% of GDP in 2015 and financial deepening has raised from 10% in 1999 to 66% in 2015. At the same time, financial inclusion has been significant promoted to now 5.4% of adult population using financial services.

Figure 2.1: Composition of Broad Money and the Ratio of Foreign Currency Deposits to Broad Money

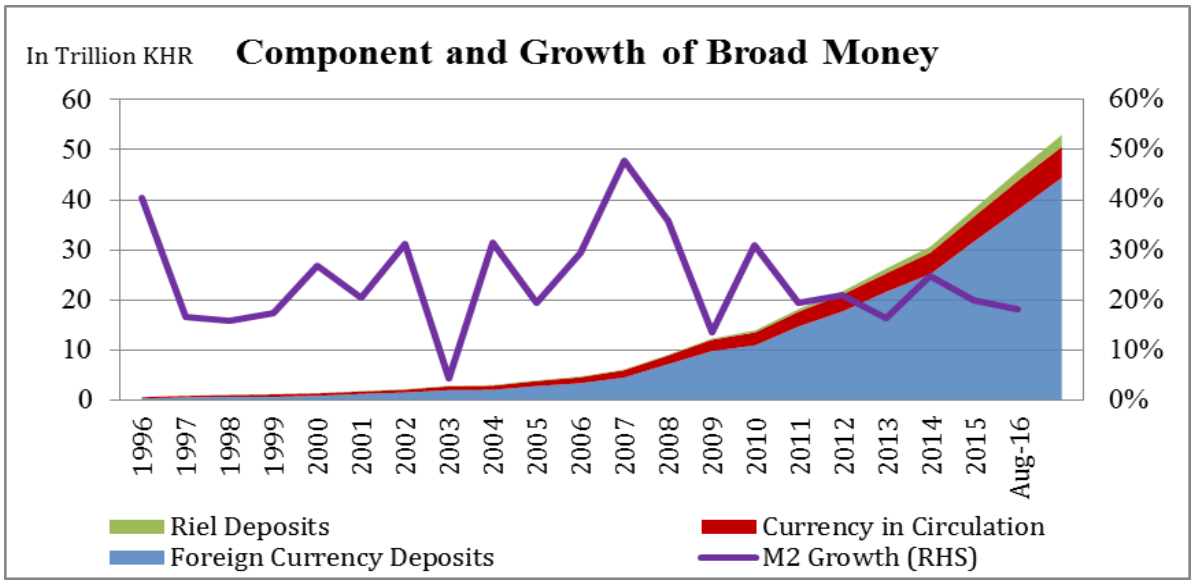


Source: National Bank of Cambodia.

The banking sector is mainly composed of commercial banks, specialized banks, and microfinance institutions. Each type specializes in different activities in their function as financial intermediaries. Commercial banks locate mainly in the urban areas, and provide three traditional services to individuals and corporations: credit, deposits, and controlling the medium of payments. Specialized banks may provide any one of these three financial services, but in practice they provide credits to the economy. Microfinance institutions normally locate in rural areas, and provide microcredits to the poor and SMEs. In addition, since 2007, the MFIs that are qualified have been able to apply for a license to take deposits from the public (these are called a Microfinance Deposit-Taking Institution).

[1] Prakas are regulations issued by a Minister, or by the Governor of the National Bank of Cambodia, concerning banking or financial issues. They must conform to the Constitution and to the law or sub-decree to which this refers.
(http://asianbondsonline.adb.org/regional/guides/definition.php?term=Prakas accessed on 7 July, 2015))

Figure 2.2: Composition of Broad Money and the Ratio of Foreign Currency Deposits to Broad Money

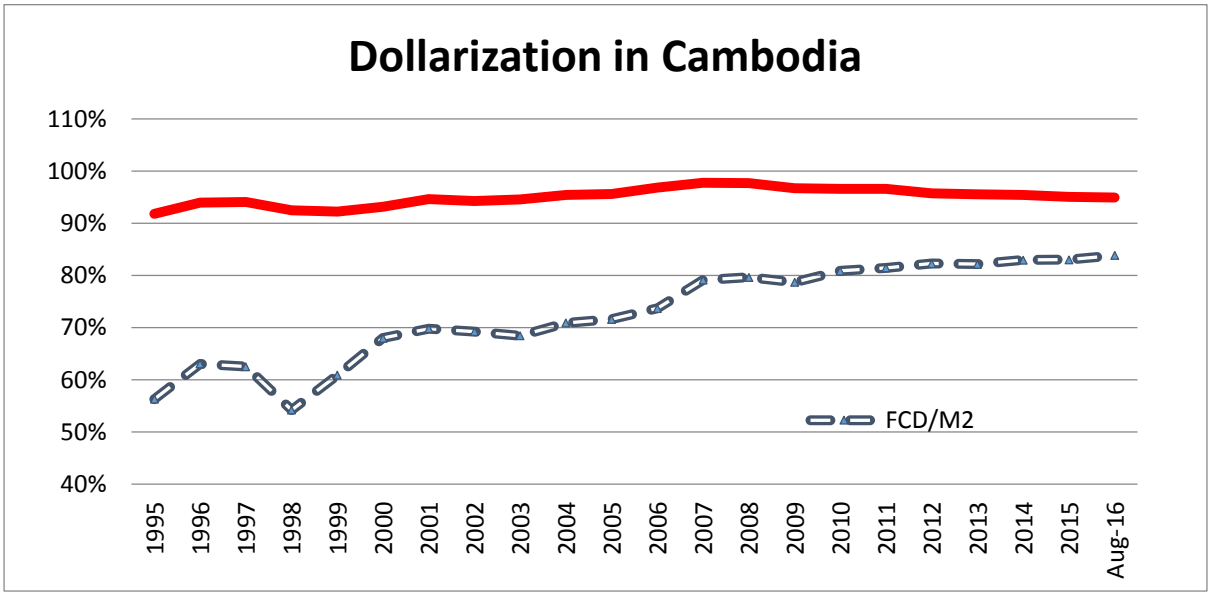


Source: National Bank of Cambodia.

As the data in the banking sector are well managed, strictly supervised and the most reliable, the degree of dollarization on the financial front is easily measured. There are at least two measurements of financial dollarization: one is the ratio of foreign currency deposits to broad money (FCD/M2), and the other is the ratio of foreign currency deposits to total deposits (FCD/TD). Based on these two indicators, dollarization in Cambodia has rapidly grown, and has remained at a high level compared to other dollarized countries in the world (Figure 2.2). FCD/M2 increased from just 36% in early 1993 to 68% in the 2000, and now to 84%. At the same time, FCD/TD remained above 90%. Despite this growing dollarization, it is worth mentioning that Riels in circulation have been rising at a rapid pace, around 31% per annum, and Riel deposits have increased by 17% per annum. These increases show that US dollars are not substituted for Riels, but that the Riel's role is rather enhanced by the inflows of dollars to the economy, and the effect of network externalities that reduce the costs of and the convenience of the use of US dollars. The inflow of dollars has essentially been supported by foreign direct investments, tourism receipts, remittances, exports, and other capital flows. These US dollars have most used directly in domestic transactions without being exchanged for the local currency.

In addition to the measurement of economic impact from financial dollarization, there are also various indicators that reflect the real dollarization in the economy by including the US dollars in circulation. One of these indicators is the ratio of the sum of FCD and dollars in circulation over the broad money supply. However, these indicators are not really reliable, and in practice cannot be calculated, as the number of dollars circulating in the economy is unknown, especially in a cash based economy like Cambodia's, given that a significant part of this type of economy is informal. There have so far been some estimation of the number of dollars, but the methodologies used to calculate this are questionable, as they not based on any survey. As we mentioned earlier, US dollars have been used for price quotation, payment, and as a store of values, and are largely accepted across the country. Thus, the number of US dollars circulating *outside* the banking system in Cambodia might be significant (Léon Chef 1997; De Zamaroczy and Sa 2002; Dabadie and Im 2007).

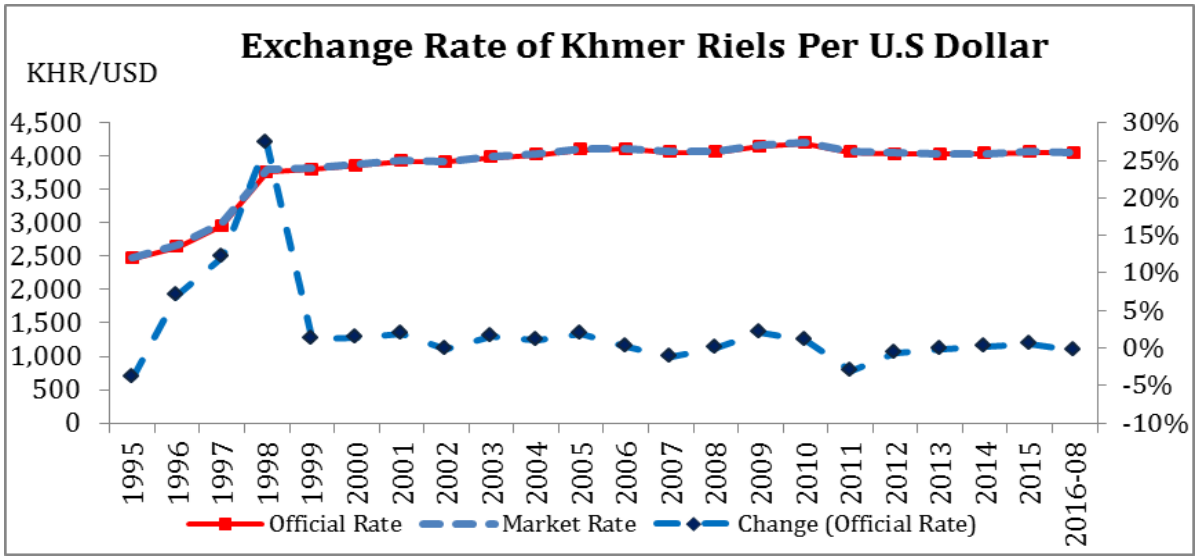
Figure 2.3: Measurement of Dollarization Ratios in Cambodia



Source: National Bank of Cambodia.

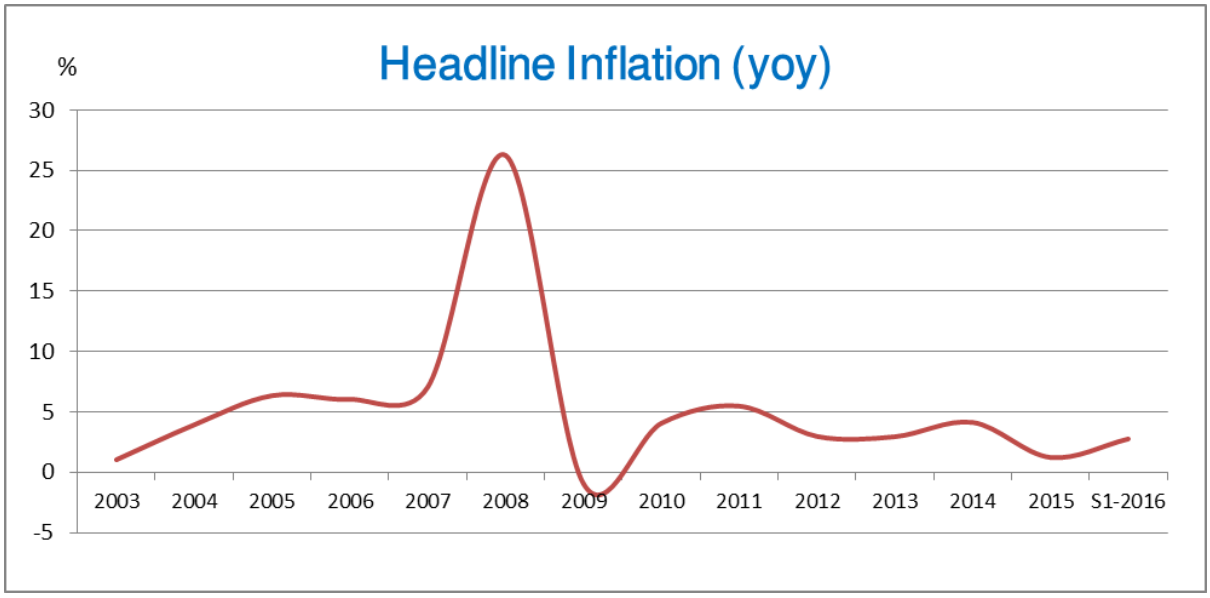
As the economy remains highly dollarized, the available monetary policy instruments are also limited. The central bank has implicitly adopted exchange rate targeting as its monetary regime. In this context, the stabilization of the exchange rate is a main anchor of price stability. Therefore, the central bank has stabilized the exchange rate through intervention in the foreign exchange markets, and keeps the official exchange rate close to the prevailing market rate. It is important to highlight that between 1989 and 1992, the spread between official and market exchange rates in Cambodia averaged 20 percent; but from November 1992, the NBC began maintaining the official rate within a 5-percent margin of the average parallel market rate over the previous two-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 percent of the market rate on a daily basis (Dodsworth et al. 1996). From Figure 2.3, we can observe that the divergence between official and market rates has been kept marginal regardless of their fluctuation.

Figure 2.4: Trends in Exchange Rates



Source: National Bank of Cambodia.

Figure 2.5: Trends in Exchange Rates

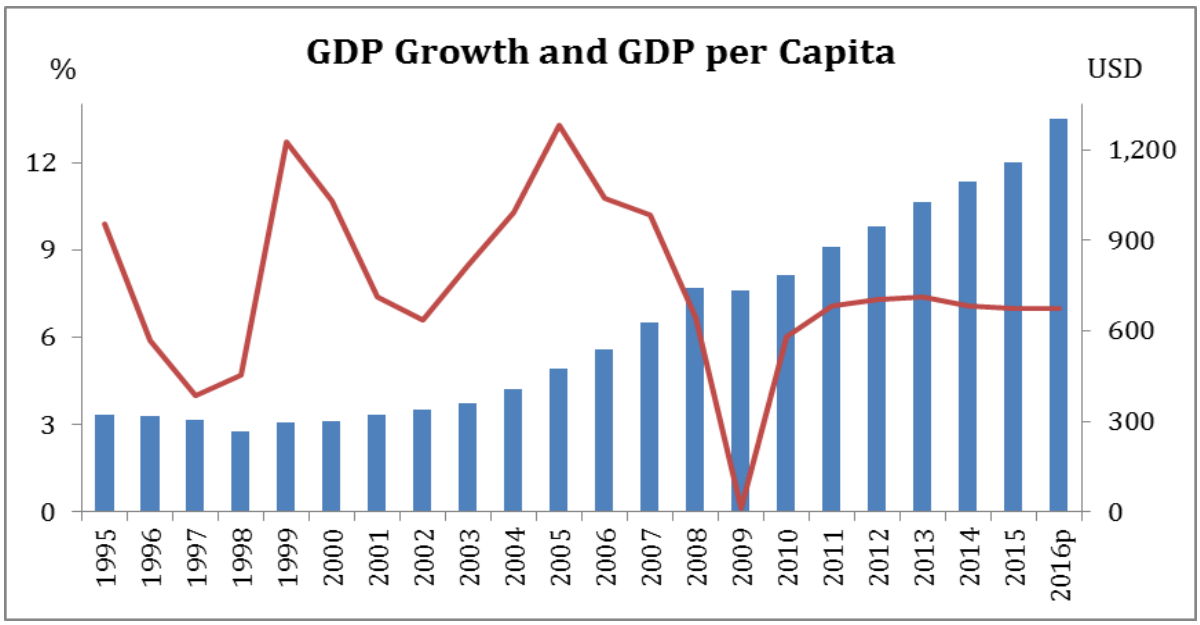


Source: National Bank of Cambodia.

During nearly three decades then, Cambodia has experienced the use of multiple currencies in circulation in the economy, whereby the local currency is general accepted across the country, US dollars are commonly used in the urban area, and largely accepted in rural area, the Thai Baht is present in economic and financial transaction on the Thai-Cambodia border, and the Vietnamese Dong has a limited role in the Vietnamese border area (Khou 2012). According to Duma (2014), the Cambodian economy is thus in two parallel worlds: one is a dollar-based urban economy comprising a flourishing garment sector, tourism, construction, foreign direct investment, and aid; and the other is a generally Riel-based rural economy that is dependent on agriculture.

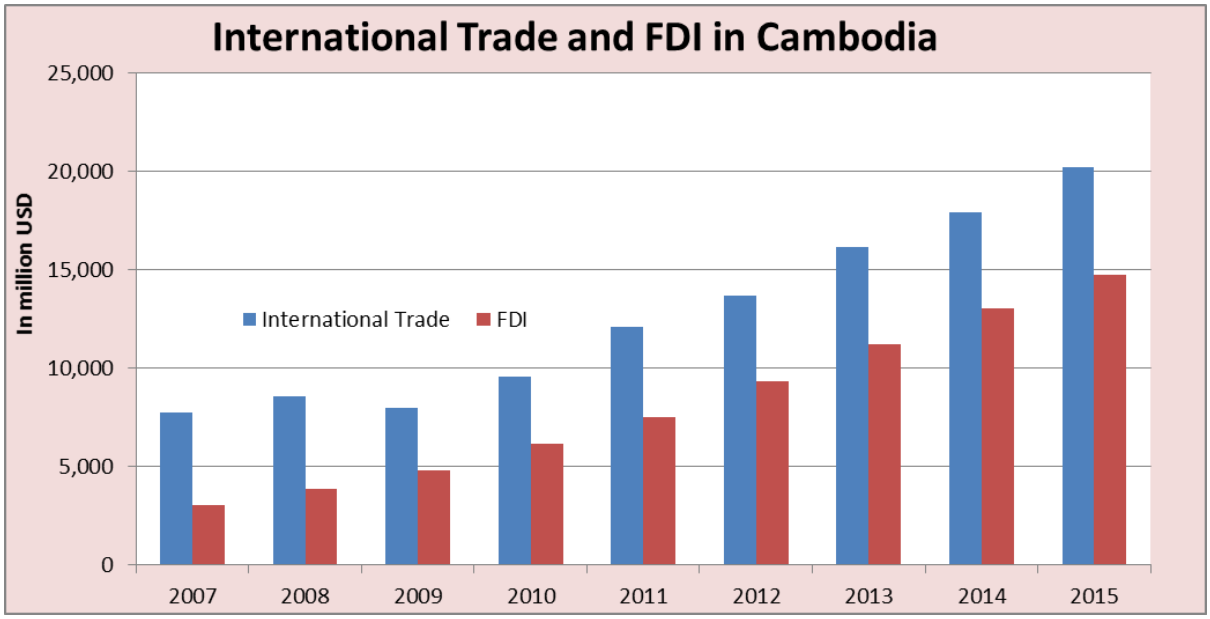
Thus far, dollarization in Cambodia has not been an obstacle to economic development, as the country's economic growth rate has been robust (Figure 2.4), and the financial sector has rapidly developed. In addition, the country's economy has been integrating into the region and the world, especially in terms of international trade, investment and financial power. Together with the liberal economic regime, international trade volumes have increased quite significantly, and the country has attracted sufficient foreign direct investment inflows to sustain economic growth. This is undeniably the positive side of dollarization. Thus, as long as the economy is growing and the financial sector deepening, trade can be diversified. However, when the global economy becomes uncertain, Cambodia is also exposed to more risks because it does not have effective monetary and exchange policies that can protect the economy and preserve financial stability from the impacts of a high internal exposure to a major foreign currency. At the same time, the regionalization that promotes other regional currencies to be used in regional trade, and the investment and financial sector, has also appeared as another challenge ahead for Cambodia (Khou 2012).

Figure 2.6: Trends in GDP growth and per capita GDP



Source: National Bank of Cambodia.

Figure 2.7: International Trade and FDI in Cambodia



Source: National Bank of Cambodia.

There have been two recent initiatives for the development of the financial market in Cambodia: establishing a stock (securities) exchange market, and introducing Negotiable Certificates of Deposit (NCDs). In respect of securities 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 Riels. As of the end of 2015, only three companies[2] had been

[2] According to the Cambodia Security Exchange, the Phnom Penh Water Supply Authority (listed in April 2012),

listed on the exchange, and traded volume remains quite low. NCDs were introduced in September 2015 to promote the development of an inter-bank and money market. Using these instruments, financial institutions are able to manage their liquidity, and lend to other financial institutions on a secured basis (NCDs can be used as collateral for repo-transactions). NCDs are currency-neutral, and can be issued in either Riels or USD.

2. Policies and measures to promote the use of the Riel

For some experts and researchers, it is still difficult to measure the absolute costs and benefits of dollarization with respect to Cambodia's economy (Dabadie and Im 2007; Menon 1998, 2008; Gardère 2010). However, there are a growing number of studies that show that the costs of dollarization outweigh the benefits (Kang 2005; World Bank 2015). In addition to this, international experience, in particular after the last global financial crisis 2007-2008, also shows that dollarized countries have strived to de-dollarize their economies, due to the increasing cost of dollarization, and that dollarization persistence is not synonymous with dollarization irreversibility: some highly dollarized countries have experienced remarkable de-dollarization in recent years (Catao and Terrones 2016).

In Cambodia, the government has clearly pointed out that dollarization is a major challenge for the economy, and that de-dollarization is a long term policy. However, in the short and medium term, the government promotes the use of Riels (Rectangular strategy Phase II, 2008- 2013, Phase III, 2013-2018, National Strategic Development Plan, 2014-2018, and the Financial Sector Development Strategy (2001-2010, 2006-2015, 2011-2020). In line with this vision, a number of measures have been implemented since early 2000s. They are as follows:

- Enhance public confidence in the KHR through stabilization of the exchange rate against the USD. This is to restore the confidence that was heavily eroded by the civil war period;
- Differentiate the reserve requirement rate in KHR and USD deposits to promote financial intermediation in the Riel;
- Provide liquidity instruments in KHR to financial institutions by issuing Negotiable Certificate of Deposits in Riels with higher interest rates compared to USDs;
- Require all taxes and utility costs to be paid only in KHR, and open Riel-based bank accounts for public sector employees; and
- Improve the awareness of the importance of the Riel through various campaigns, films and documentaries.

These measures have contributed to increase the use of the Riel in both economic and financial transactions, as the number of Riels in circulation has risen by 18% per annum, and Riel deposits by 29% per annum during the last decade. However, the degree of dollarization has not decreased; it continued to grow until 2007, and has stayed around 80% since then. This means that the use of USD was still growing more in proportion terms before 2007, and has continued at a similar rate during the last decade. Given this trend, it does not seem that dollarization would decrease even if there are further policies and measures aimed at promoting the use of the Riel in order to achieve de-dollarization in the long term.

3. A short review of previous research on Dollarization in Cambodia

Dollarization in Cambodia has been studied in terms of macro-economic management and policy implications (for example, Zamaroczy and Sa (2002); Menon (2008); and Duma (2011)). The researchers tried to investigate the causes of dollarization, and propose policy options to de-dollarize the economy. Most recent policy papers have been prepared by the IMF (2014), and these suggest that currency substitution has not been a factor in dollarization. Instead, Cambodia's narrow and unbalanced economic base is driving dollarization, particularly in respect of urban exports and tourism. They also argue that institutional weakness are a cause of dollarization. They draw policy options for de-dollarization from international experience and, thus, have concluded that a combination of supportive and market oriented policy measures are needed for the promotion of local currencies.

Grand Twins International Plc (listed in June 2014), and the Phnom Penh Autonomous Port (listed in December 2015) are listed (http://csx.com.kh/data/lstcom/listPosts.do?MNCD=5010; accessed on 13 January 2016).

However, they were not able to employ micro data to analyze detail behavior of economic agents, and their studies therefore have some limitations, particularly when they are evaluating details of policy options and action plans at the time of implementation. Micro data is better suited for evaluating details of policy options and action plans, since it will reveal the behavior of economic agents in detail, and the motives behind their currency choice. In fact, in recent years there has been an increase in studies using micro data and focusing on economic behavior under dollarization. These studies have focused on foreign currency borrowing within households and firms, particularly in Europe (Pellényi and Bilek, 2009; Beer et al. 2010; Brown et al. 2011; Fidrmuc et al. 2013; and Beckman and Stix 2015). In terms of Asian countries, there are however very few studies, and in the case of Cambodia there are only two studies that have used micro data.

The first ever attempt to measure the degree of dollarization in Cambodia by collecting micro data was a survey carried out by Khou (2012). In his research on the circulatory function of the 'plurality of monies,' Khou conducted an extensive survey in twelve main provinces, including the capital, touristic areas, and border areas. These are areas that are exposed to foreign currency circulation. His study covered 3232 economic agents (households, merchants, money changers, expatriates and tourists) across Cambodia, and found that as part of the pluralism in the monetary system, there is geographical, revenue, and sectorial fragmentation in the use of currency. Each area, each economic agent, and each economic sector is affected by dollarization in different degrees, and more importantly, each currency plays a role not only as a competitor, but can also be an important complimentary currency to another. The Riel is therefore playing an indispensable role in the Cambodian economic system, especially in rural areas, where the agricultural sector dominates, by carrying out the three roles of money described earlier, even though it loses its role to the US Dollar as a store of value in the urban area. Another important motivation for the fact that multiple usages of currencies continue to run the system, despite the need to maintain macroeconomic stability, is thus because the foreign currencies are sources of income and so currencies of expenditure for households. Their usage is facilitated by price quotations and payments in foreign currencies by sellers, their acceptance in all financial sectors, and especially by the dynamic role of money changers that are everywhere present in the country. According to Khou's survey, some economic agents are satisfied with these forms of monetary circulation, especially the merchants, but the majority prefer to use a single currency instead of multiple currencies due to the transaction costs, the difficulties in holding and spending in different currencies, and motivations relating to nationalism. Further, he attempted to estimate the degree of dollarization based on currencies used by households, and found that US dollars in circulation accounted for 47 percent of the money supply, Riels in circulation accounted for 43 percent, and Baht holdings (10 percent), and Dong holdings (0.6 percent), made up the remainder.

Based on Khou's survey (Khou 2012), Siregar and Chan (2014) tried to identify the driving factors behind the holding of foreign currency by surveying 1500 households in Cambodia. They focused on 17 provinces that were thought to be dollarized. Using their unique data set, they identified the key features and characteristics of each household's holding patterns in foreign currencies. Their results suggest that factors such as income level, economic sector involved, or access to finance determine the level of foreign currency holding. As they suggest, it would be desirable to extend such surveys at the firm level to gain a better understanding of firm involvement by industry and area.

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Chapter III: Foreign Currency Usage and Perception: Evidence from a survey of Households

Ken Odajima

Vouthy Khou

1. Introduction

It is well known that Cambodia is highly dollarized in terms of FDC/M2 or other financial sector figures. These figures give people an impression that almost all transactions are done in foreign currency. These data are useful whenever cross country comparison is needed, but sometimes mislead the real picture. It may be difficult to see how households are using foreign currency in their transactions from them. Moreover, since economic activities and their environments differ significantly by area, household behavior relating to currency usage may also be differentiated across the regions of the country. From the aggregated data it is impossible to see such difference. The survey data showed us well diversified usage of currencies of people living in multi-currency environment.

The previous literature on the foreign currency borrowing of households using micro data has identified several factors that significantly impact upon household economic behavior. Seeking interest rate differentials between foreign currency loans and local currency loans, hedging foreign currency risks, or avoiding volatility on returns are some of the significant factors to drive households to borrow in foreign currencies (Fidrmuc et al. 2013). In the literature on the dollarization of transactions, network externality has also been discussed as a factor affecting foreign currency usage (Valev 2010). Thus, we know that households use foreign currencies differently depending on the types of transaction being undertaken. However, the motivations behind such foreign currency usage are complicated and not easily understandable.

In this chapter, the primary objective is to present the real picture of dollarization of households, using survey-based data from October 2014 to January 2015. This survey obtained responses from 2273 sample households from 25 provinces. We saw different aspects of household behavior, such as income, expenditure, saving, borrowing, currency notes usage, potential risks of currency mismatches in the household budget, and perception and opinions. This chapter is intended to facilitate discussion on foreign currency usage, particularly from a household perspective. The rest of this chapter is organized as follows: the next section reviews the literature on dollarization from the household perspective, then the following section outlines the survey design for households, and the data collected. The remaining sections present the results of this survey from several aspects, allowing us to see the real picture of household behavior. The final section gives our conclusions, and some implications for policy makers.

2. Previous Studies on the Dollarization of Household Behavior

It may well be said that previous studies on dollarization with a particular focus on household behavior have been rather limited compared to those on financial institutions or enterprises. This is partly because previous studies of dollarization began by using aggregated macro data derived from the financial system, or used the financial statements of listed companies. Data that allows analysis of the actual behavior of households is not as readily available as the data commonly used for the analysis of financial institutions or enterprises. Such analyses require micro data to analyze these behaviors.

In the past, studies on households were either focused on borrowing activities, or on currency preferences in terms of externality. The former strand of studies used micro survey data analyzing household choice of borrowing currency. Pellinyi and Bilek (2009) for example, used household survey data from Hungary to analyze the determinants of foreign currency borrowing. They did not find evidence that Hungarian foreign currency borrowers were better educated, wealthier or more risk-loving than their peers. However, they did find that foreign currency borrowers were likely to believe that depreciation could decrease the cost of taking loans in a local currency. Borrowers are more usually

driven by macroeconomic factors such as: the high interest rate spread between local currency and foreign currency loans, a relatively stable exchange rate, and competition from foreign owned banks. Beer et al. (2010) analyzed the characteristics of FX (Swiss franc) borrowers in Austria. They used a uniquely detailed financial wealth survey of Austrian households to sketch a comprehensive profile of the attitudes and characteristics of the households involved. They found that risk seeking, affluence, and the marital status of households, were more likely to influence the taking of a housing loan in a foreign currency. Moreover, financially literate or high-income households were more likely to take a housing loan in general. These socio-economic characteristics of foreign currency borrowers led them to conclude that Swiss franc borrowing may not be a serious threat to financial stability.

Fidrmuc et al. (2013) studied the determinants of foreign currency loans of households, using data on the behavior of households in nine Central and Eastern European Countries (CEECs). Due to the richness of their data, they could examine hypothesis affecting loan currency in terms of macro variables and micro surveyed variables. However, their particular contribution to this strand of literature was that, instead of focusing on existing loans, they used information about respondents' intentions to take out a loan, which they interpreted as a measure of the demand for foreign currency loans. This approach ennobled them to separate supply factors from demand factors affecting the currency choice outcome. They found that trust in domestic and foreign financial assets (saving) and institutions were the most robust determinants of foreign currency loans. Moreover, hedging factors such as remittances and household income in foreign currency would increase the probability of foreign currency loans.

Beckmann & Stix (2015) studied household behavior in foreign currency borrowing, particularly focusing on their knowledge about exchange rate risk. They tested the proposition that demand for foreign currency loans was driven by a lack of knowledge about the exchange rate risk emanating from such loans. They employed individual-level survey data from eight Central and Eastern European countries that provided them with information on agents' knowledge about exchange rate risks. They showed that a majority of respondents were aware that depreciation will increase loan installments, and that knowledge about exchange rate risks exerts a strong impact on the choice of the loan currency. Finally, they outlined the negative effect of exchange rate literacy on foreign currency borrowing.

Later studies on the externality of currency usage also used micro surveyed data to analyze household preferences on currency. Valev (2010) examined the effect of externalities as well as that of expected depreciation on foreign currency preferences, using survey data from Bulgaria. In this survey, households were asked about currency preferences in terms of seller perspectives on real estate sales, car sales, real estate rentals, and labor sales (wages). He showed that foreign currencies were preferred in transactions if households perceive that they are widely used in the economy. But expected depreciation played a rather limited role in currency preferences. It was observed only for residents in small towns and villages. Based on these findings, he concluded that it may be necessary to distinguish between factors affecting financial dollarization and those affecting dollarization of transactions.

3. Survey Data and Methodology

The authors carried out a survey of households from October 2014 to January 2015. This collected information from all 25 provinces of Cambodia (Table 3.1). We divided our sample survey into seven regions: (1) Phnom Penh; (2) Siem Reap; (3) the Northeast Area; (4) the Northwest Area; (5) the Central Area; (6) the Southeast Area; and (7) the Southwest Area.[3] In this survey, we interviewed 2,273 households; to simplify the data collection process and to avoid sampling biases, we employed stratified sampling at the provincial level according to the actual regional population from the General Census of 2008 (covering 2,841,897 households)[4]. Our questionnaire covered income, expenditure,

[3]The Northeast Area includes Kratie, Modul Kiri, Ratanak Kiri, and Stung Treng. The Northwest Area includes Banteay Meanchey, Otdar Meanchey, and Preah Vihear. Central Area includes Kampong Cham, Kampong Chhnang, Kampong Speu, Kampong Thom, and Kandal. Southeast Area includes Kampot, Kep, Prey Veng, Svay Rieng, Takeo, and Tboung Khmum. Southwest Area includes Koh Kong, Preah Sihanouk, Pursat, Battambang and Pailin.

[4] We obtained the General Census 2008 from the National Institute of Statistics (NIS).

tangible and financial assets, and borrowings, and also demographical variables such as age and the education levels of household heads. In the sample, districts/communes close to the borders with Thailand and Vietnam were included, which enabled us to analyze the usage of foreign currency other than the US Dollar in these areas.

Table 3.1: Summary of the Household Survey

Region	Province	Sample Size		
		Urban	Rural	Total
Phnom Penh		78	72	150
Siem Reap		64	56	120
The North-East Area	Kratie	31	29	60
	Mondul Kiri	31	29	60
	Ratanak Kiri	31	29	60
	Stung Treng	31	29	60
The North-West Area	Banteay Meanchey	59	61	120
	Oddar Meanchey	27	23	50
	Preah Vihear	27	23	50
South-East Area	Kampot	54	45	99
	Kep	31	29	60
	Prey Veng	71	62	133
	Svay Rieng	46	36	82
	Takeo	61	46	107
	Tbong Khmum	55	46	101
South-West Area	Koh Kong	31	29	60
	Preah Sihanouk	31	29	60
	Pursat	37	33	70
	Battambang	76	68	144
	Pailin	29	25	54
Central Area	Kandal	78	74	152
	Kampong Cham	54	46	100
	Kampong Chhnang	52	42	94
	Kampong Speu	65	56	121
	Kampong Thom	56	50	106
Total		1206	1067	2273

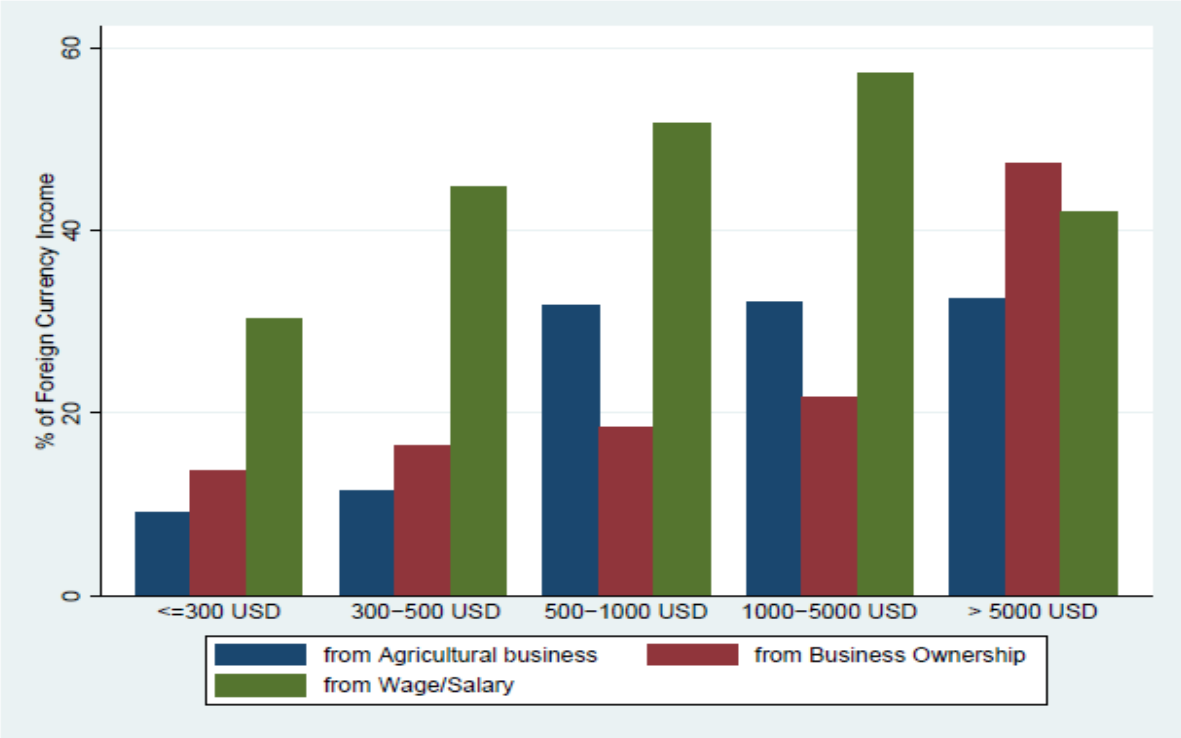
4. Survey Results

4.1. Income Dollarization

As discussed in Fidrmuc et al. (2013), income in foreign currencies can be interpreted as one of the major hedging measures that facilitates other economic behavior based on foreign currencies. For

our study, we first classified the income sources of households into three: salary/wage income, income from business ownership, and income from agriculture (Figure 3.1). When looking into foreign currency denominated income by source of income, we observed that salary/wage income has the highest ratio of foreign to local currency, with a mean value of 38.3 percent, while business ownership and agricultural operations use around 16.9 percent and 5.0 percent respectively. Thus, salary/wage income is one of the key drivers for income dollarization. Specifically, the data suggests that among wage earners, those engaged in the garment/shoe manufacturing sector showed the highest mean value of dollarization, at 87.5%, and those in the banking/finance sector recorded the second highest at 62.2%. By area, those living in Phnom Penh showed the highest mean value of 66.2%, and those in Siem Reap had the second highest at 51.4%.

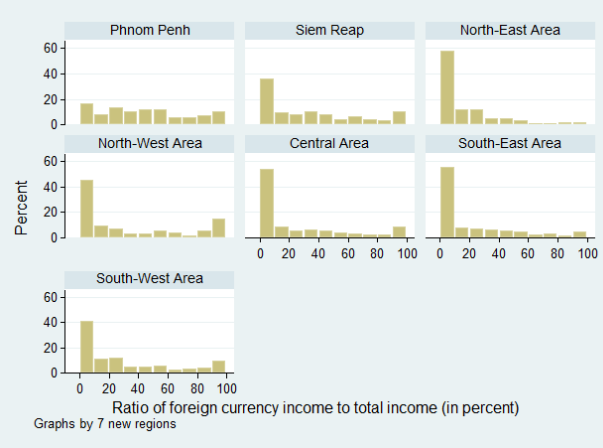
Figure 3.2: Income Dollarization (by source of income and income level)



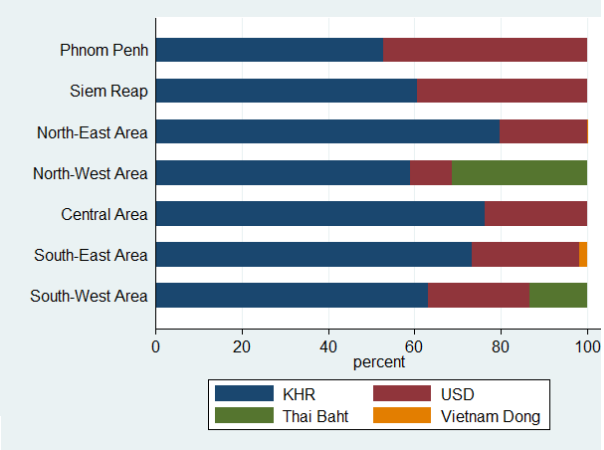
The mean value of total income (excluding remittances) dollarization ratios was 21.6 percent for the 2,164 effective respondents. However, our survey showed that there were significant differences in level of income dollarization by area. We examine the degree of dollarization in different areas of Cambodia in Figure 3.2.

Figure 3.3: Ratio of FX in Income

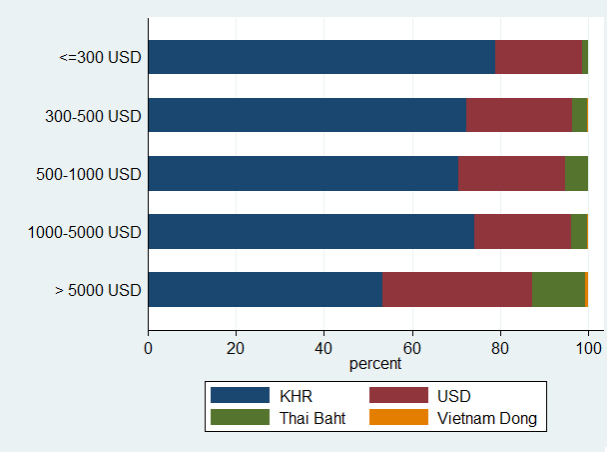
Panel A: Ratio of FX in Income



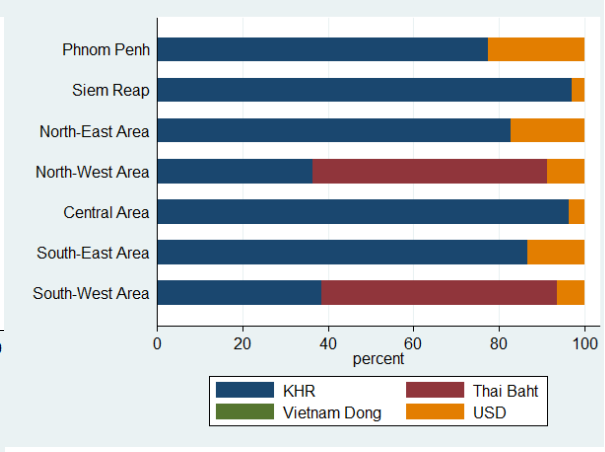
Panel B: Currency Composition of Income by Area



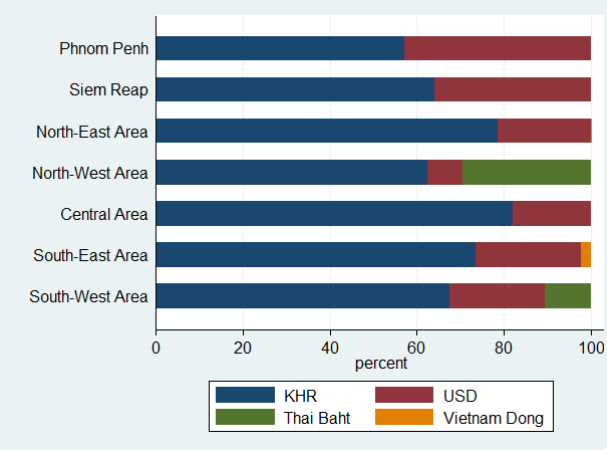
Panel C: Currency Composition of Income by Income Level



Panel D: Currency Composition of Agriculture Income by Area



Panel E: Currency Composition of Income of Business Ownership by Area



Panel F: Currency Composition of Wage/Salary Income by Area

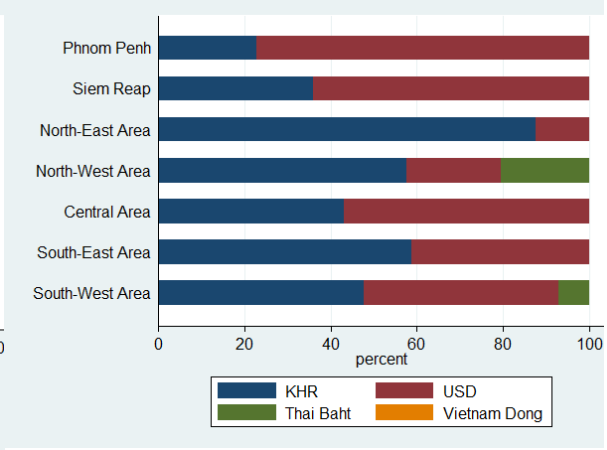


Figure 3.3: Ratio of FX in Income gives the distribution of ratios of foreign currency denominated income to total income by individual sample. Panel B gives the average level of currency composition of income by area. In Phnom Penh the ratios were uniformly distributed, while in the other areas the ratio ranging from 0-10 % was most frequently observed. In Siem Reap we observed samples evenly distributed in the range from 10% to 60%, but still the lowest range of less than 10% was the most popular one (Panel A). On average in Phnom Penh, Siem Reap, the Northwest Area, and the Southwest Area, there was a higher composition of foreign currencies in total income, while in the Northeast, Central, and Southwest Areas this ratio was lower (Panel B). Based on these results, we may say that other than in Phnom Penh, the most common currency for household income is the KHR. Though observable, foreign currency usage for income was not so common. However, in Phnom Penh it is quite common for people get their income in foreign currencies, and the degree of dollarization varies significantly. This result conforms well to the anecdotal evidence that dollarization is led by foreign direct investment (FDI) and the tourism sector, which are common in these urban areas. In the Northwest and Southwest Areas, usage of the Thai baht contributed to the rise of foreign currency usage. In the Southeast Area we observed usage of the Vietnamese Dong, but its contribution was quite low. Thus, in the west side of the country, particularly in the Northwest Area, people use the currencies of the neighboring country, as this might generate income from cross border transactions with the Thai people for example.

Panel C gives the average level of currency composition of income by income level. Here we divided income levels into five categories; ranging from the lowest with a monthly income of USD 300 equivalent or less, to the highest with a monthly income above USD 5000 equivalent. In general, the data show that the higher is the income level, the higher is the ratio of foreign currency in total income. As income in foreign currencies can be a good hedging measure for other foreign currency transactions; thus those with higher incomes may use foreign currencies more frequently than those with lower incomes. Panel D gives the currency composition of average agriculture incomes by area. In general, the use of foreign currencies for agriculture income is quite limited. This can be interpreted by noting that farmers sell their products into local markets in KHR. However, the pattern is quite different in the Northwest and Southwest Areas. Use of foreign currencies dominates agriculture income, particularly the Thai Baht, which is the most common currency in these areas. Farmers there sell their products to the market or to middle man and get paid in Thai Baht. Panel E analyses the currency composition of income from business ownership. It is observed that Phnom Penh has the highest ratio of foreign currency use in business income. In the second rank is the Northwest Area, and the third is Siem Reap. It is noted that use of the Thai Baht raises the ratio in Northwest Area in general. The Central and Northeast Areas show the lowest and the second lowest ratios. Finally, Panel F gives the currency composition of wage/salary income by area. In general, it can be observed that wage/salary income is

the leading source for income dollarization for households except in the Northeast Area. This is particularly clear for wage/salary earners in Phnom Penh and Siem Reap.

Overall, we can say that as an individual household behavior; income dollarization is an important phenomenon for those living in Phnom Penh or to some extent in Siem Reap. In the rest of the country, particularly in the Northeast Area, foreign currency use in income generation is not significant. Even if we include remittances in household income, the main results stay the same. It is also noted that in the Northwest and in Southwest Areas the use of the Thai Baht pushes up the ratio of foreign currency composition significantly, suggesting the development of cross border transactions in these areas.

4.2. The Dollarization of Expenditure

As discussed in Valev (2010), foreign currencies are preferred in transactions if they are already used widely in the economy. To test such perceptions of households, in the expenditure section we asked respondents for the ratios of foreign currency use by items: (1) food; (2) rice; (3) tobacco & alcoholic beverages; (4) house rent; (5) recreation & culture; (6) clothing & footwear; (7) restaurant & eating out; (8) communication; (9) education; (10) health including toiletry; (11) transportation; (12) furniture & appliances; and (13) water & electricity. The results told us that in general foreign currencies widely used in Cambodia, but depending on items its degree of usage differs significantly. Depending on the items bought, people used different currencies for purchase or payment. Generally speaking, for food and beverage, alcohol and tobacco, water and electricity, and health including toiletries, people used the KHR. However, for house rent, communication, and furniture and appliances they used foreign currency. Depending on what they purchase or for what they pay then, they differentiate the use of currencies. This again conforms to anecdotal evidence that durables like furniture, appliances, and particularly real estate and their related services are basically transacted in dollars, while KHR is used frequently for daily and small transactions. However, in Phnom Penh, for expenditure on recreation & culture, clothing & footwear, restaurant & eating out and education, we observed a different pattern of foreign currency usage compared to the other areas. Respondents in Phnom Penh used foreign currency more frequently for such expenditure compared to the other areas. (Figure 3.3, Panels E, F, G, I)

With regard to the ratios of foreign currency use to total expenditure, Panel N in Figure 3.3 shows the average level of currency composition by area. Phnom Penh has the highest ratio of foreign currency use in total expenditure. The second highest was the Southwest Area, and the third was Siem Reap. Panel O in same figure gives the average level of currency composition by income level. We found that the higher the level of income, the more foreign currency is used. This may be interpreted as households with high income level will consume more durables like furniture, appliances, and particularly real estate and their related services. Thus, the weight of daily and small items such as food or toiletry is small in their total expenditure basket.

The survey results suggest that respondents use either local or foreign currency differently by type of products or services. Some items showed high usage of foreign currency in their purchase or payment patterns. In terms of daily expenditure, foreign currency is not the major method of payment for households. However, for large transactions, such as for payment of house rent or furniture/appliances, there is reliance on foreign currency The results here are consistent with the discussion of Valev (2010) that perceptions of the use of foreign currencies are influenced by an individual's personal experience of use. The results show that there is network externality in the context of Cambodia, as Valev (2010) suggested.

4.3. The Use of Currency exchange in Sales of Assets

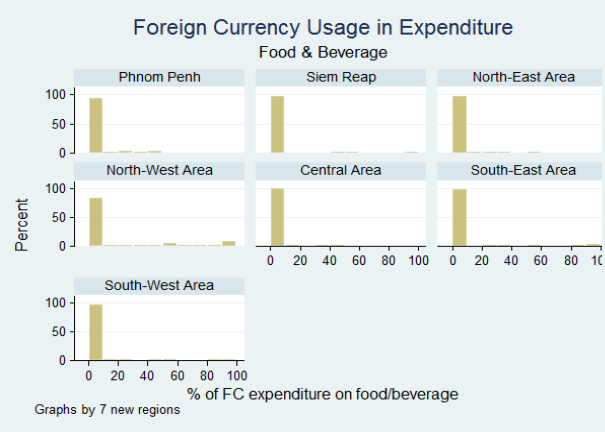
In order to examine household preferences for currencies in transactions, we asked which currencies they would prefer to receive for sales of their assets: real estate, furniture and appliances, motorcycles & cars, other machinery & equipment for business/personal use, livestock, and inventories for business/farming. In terms of the sales of real estate, out of 2169 respondents, 82.5% responded that they preferred US Dollars. Only 13.9% said that they preferred KHR. In terms of the sales of furniture and appliances, 61.9% of 2156 respondents preferred KHR while 34.4% said USD. For motorcycles & cars, 81.4% of 1911 respondents preferred USD, and 47.3% of 1032 respondents preferred KHR for

sales of other machinery & equipment for business/personal use. For livestock, 84.0% of 886 respondents preferred KHR, and of 1402 respondents, 79.5% preferred KHR for sales of inventories for business/farming (Figure 3.3).

These results are far different from what was observed in the case of Hungary by Valev (2010). There, only 35.8% of respondents preferred foreign currency for real estate sales. In case of the sales of vehicles, just 32.7% of respondents preferred foreign currencies. From these figures we may well say that the dollarization environment in Cambodia is far different from what was observed in Hungary. In fact, we may expect stronger effects to network externality for the use of foreign currencies in Cambodia. Moreover, we also observed significant differences by areas: Panels A to F of Figure 3.4 give currency preferences by area. As for sales of real estate, and motorcycles & cars, USD was the most preferred currency to receive in all areas (Panels A, C). But for livestock, and inventories for business/farming, KHR is the most preferred currency in all areas (Panels E, F). For furniture and appliances KHR is the most preferred currency except in Phnom Penh (Panel B). And for other machinery & equipment for business/personal use, foreign currencies including the Thai Baht were preferred to local currency except in the Central and Southeast areas (Panel D).

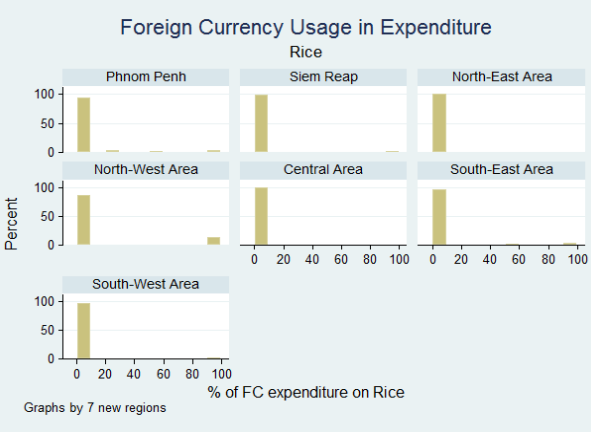
Figure 3.4: Ratio of FX in Expenditure

Panel A



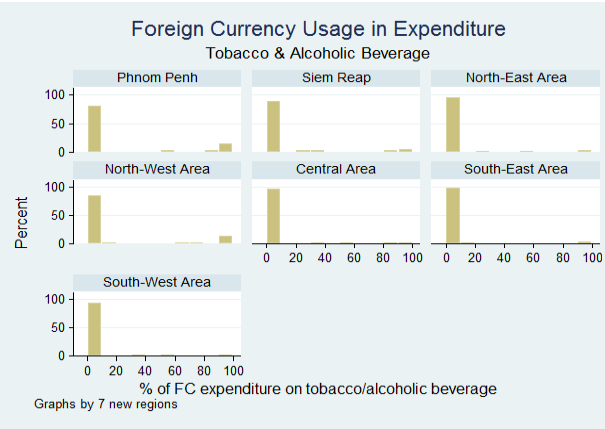
Note: For this question, the effective number of respondents was 2264.

Panel B



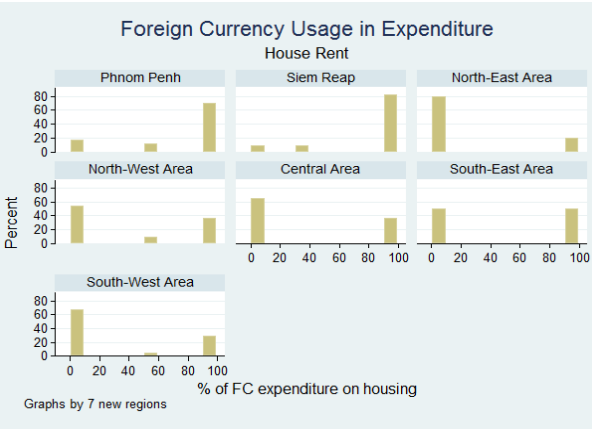
Note: For this question, the effective number of respondents was 1364.

Panel C



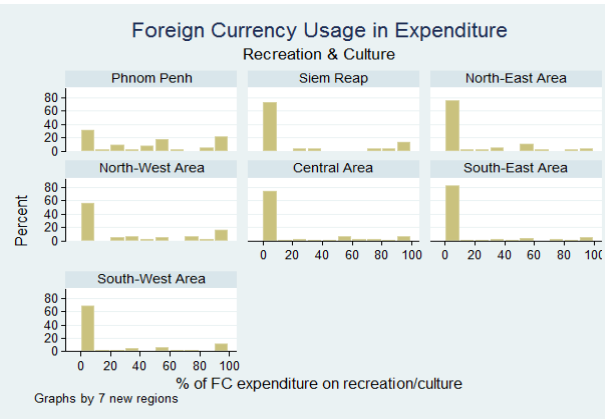
Note: For this question, the effective number of respondents was 795.

Panel D



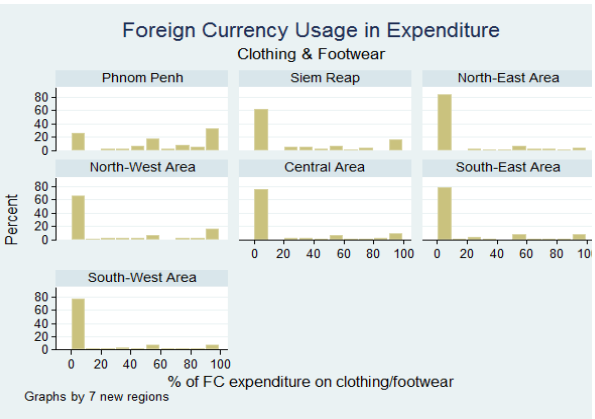
Note: For this question, the effective number of respondents was 90.

Panel E



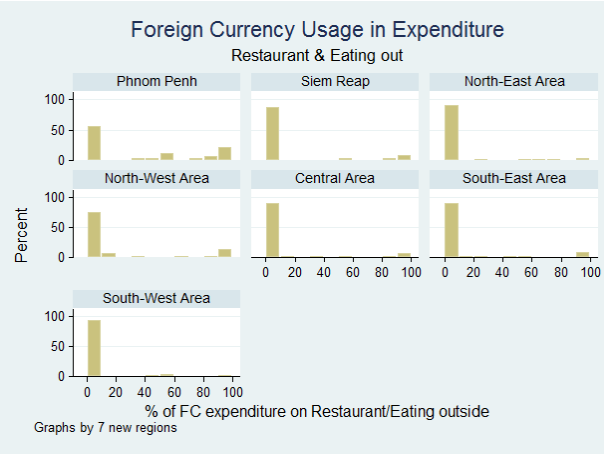
Note: For this question, the effective number of respondents was 478.

Panel F



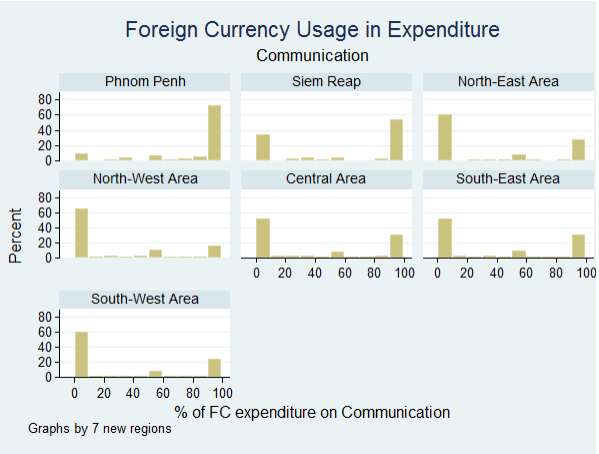
Note: For this question, the effective number of respondents was 1628.

Panel G



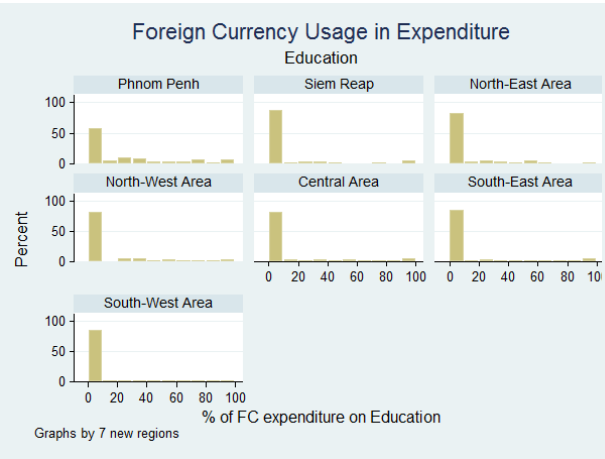
Note: For this question, the effective number of respondents was 560.

Panel H



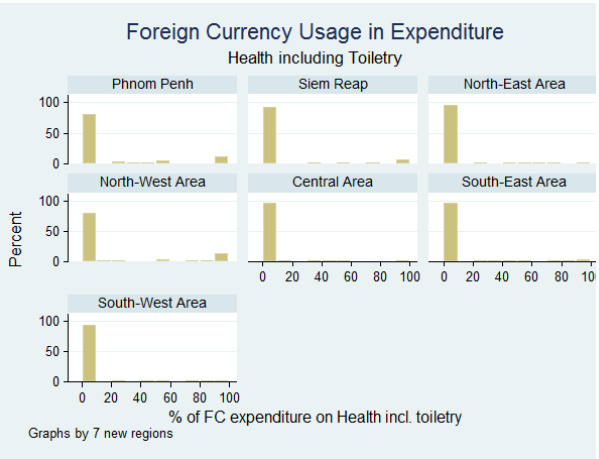
Note: For this question, the effective number of respondents was 2015.

Panel I



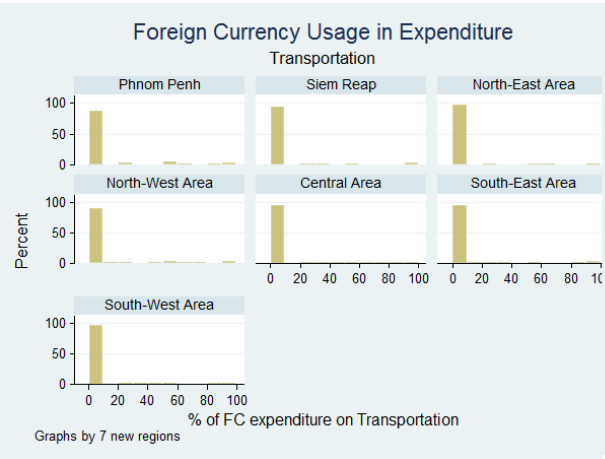
Note: For this question, the effective number of respondents was 1475.

Panel J



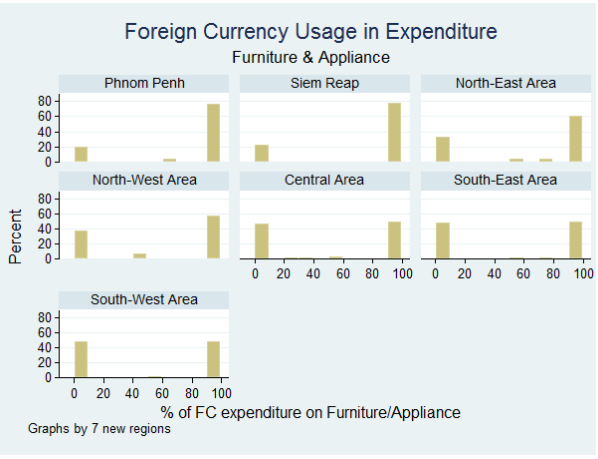
Note: For this question, the effective number of respondents was 2095.

Panel K



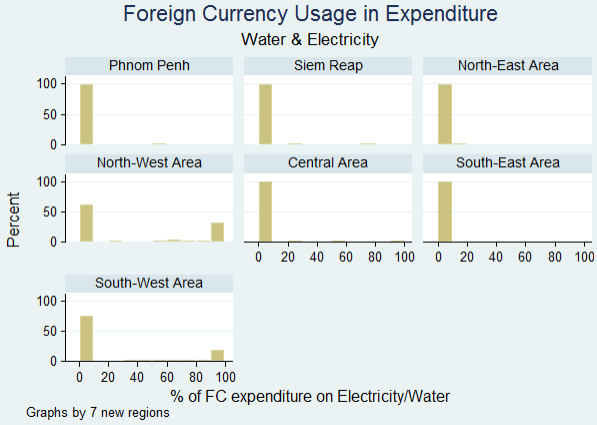
Note: For this question, the effective number of respondents was 2029.

Panel L

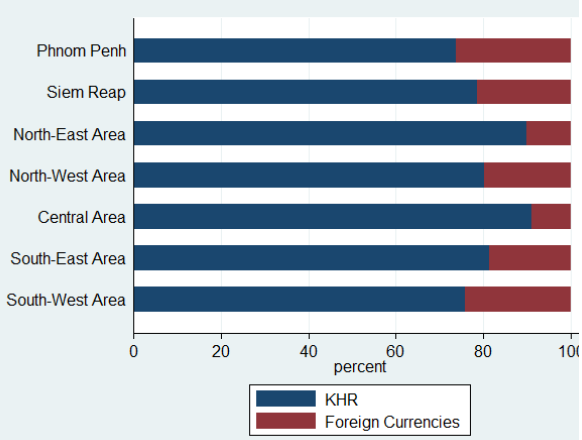


Note: For this question, the effective number of respondents was 299.

Panel M



Panel N: Currency Composition of Total Expenditure



Note: For this question, the effective number of respondents was 2209.

Panel O: Currency Composition of Total Expenditure by income level

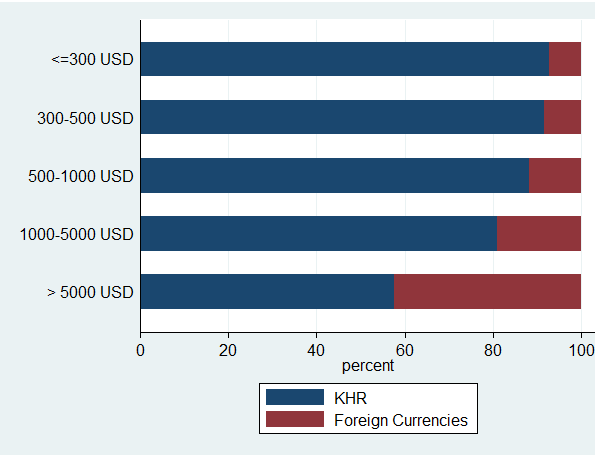
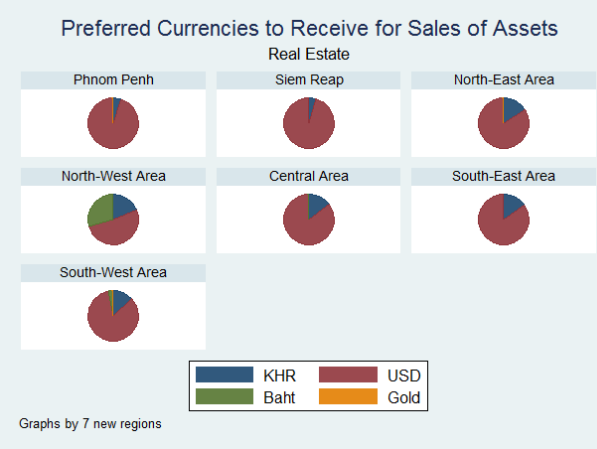


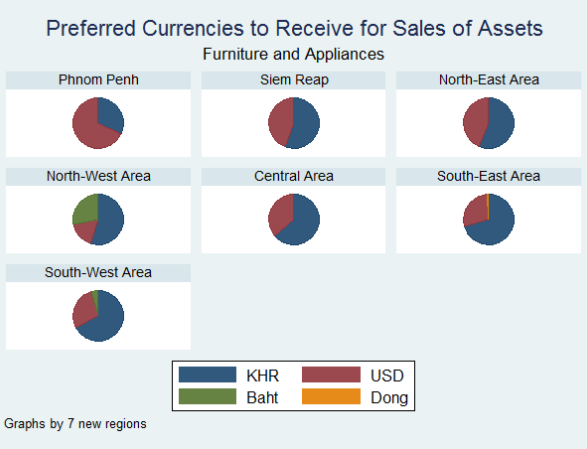
Figure 3.5: Preferred Currency to Receive

Panel A



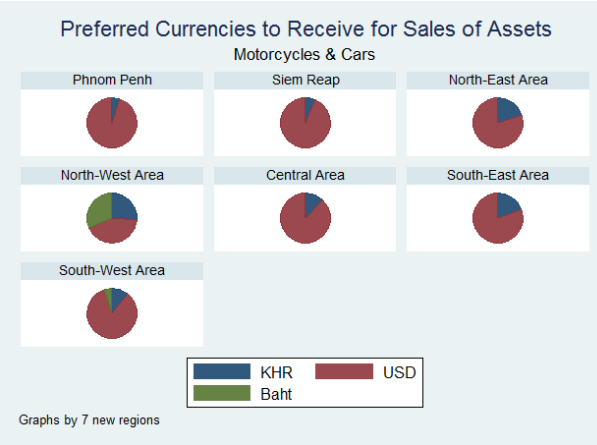
Note: For this question, the effective number of respondents was 2169.

Panel B



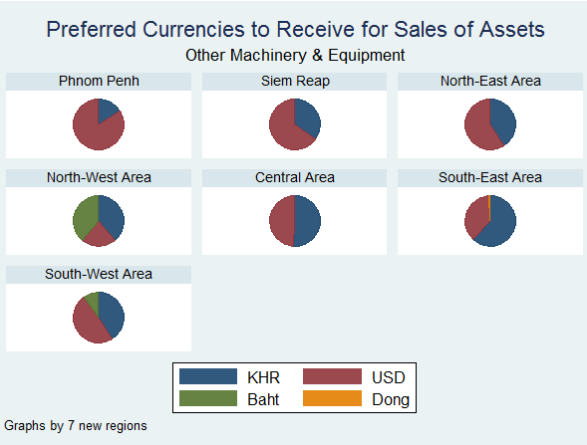
Note: For this question, the effective number of respondents was 2156.

Panel C



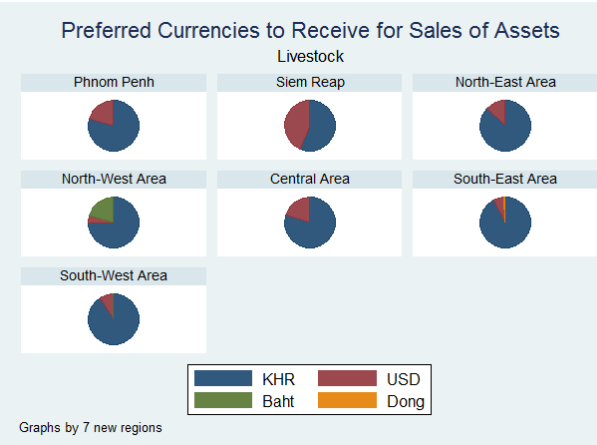
Note: For this question, the effective number of respondents was 1911.

Panel D



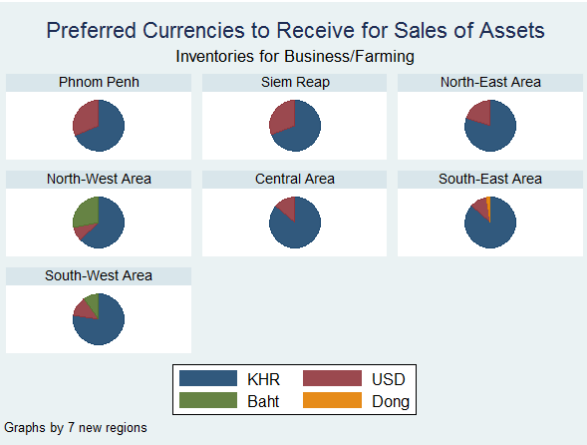
Note: For this question, the effective number of respondents was 1032.

Panel E



Note: For this question, the effective number of respondents was 886.

Panel F



Note: For this question, the effective number of respondents was 1402.

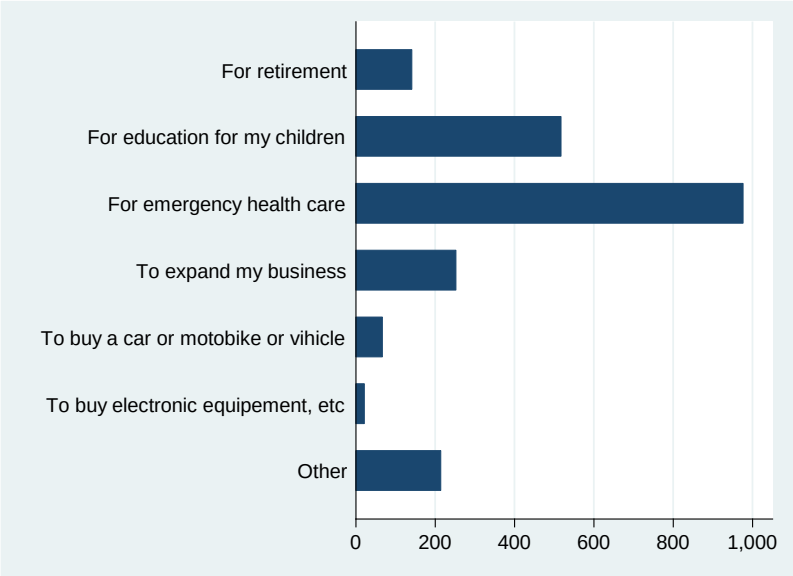
4.4. Saving Behavior

4.4.1. Currency Choice for Saving

To determine the saving behavior of households, respondents were asked their current saving habits. Though we asked several questions regarding assets, as it is common in Cambodia, particularly in rural areas, to save in kind, in order to identify preferences in currency usage we focused on financial assets. Because in Cambodia the financial products available for households are quite limited, we concentrated on savings in deposits in financial institutions (bank or MFI), cash held at home, and savings in other schemes.

Of 2232 effective respondents, 60.5% (1351) answered that they had savings. These households saved money in the form of financial assets (cash or deposits). In terms of currency choice for such savings, 1329 households expressed their choice of currencies (Figure 3.7: Currency Choices for Saving Panel A): of these, 87.0% (1,157 households) saved their money in KHR, and 43.9% (584 households) saved their money in USD, while 32.4% (431 households) saved in both currencies. In terms of headcounts, KHR is more popular for saving than USD. Thus, we found that in terms of numbers of households, Cambodian households save in local currency rather than in USD. This feature is quite different from what we can observe in terms of the amount of deposits, here the use of KHR is quite marginalized. It is noted that those who had income in KHR tended to save only in KHR, while those possessing USD savings tended to save in both currencies. We may infer that there would be differences in terms of holding costs, accessibility, or purpose between saving in KHR and those in USD (Figures 3.5 and 3.6).

Figure 3.6: The Purpose of Saving



Note: This table shows the frequency of answers to the question "For what purpose are you/your household head saving? Select top 3." (Q51)

Figure 3.7: Currency Choices for Saving

Panel A: Currency for Savings

Saving in USD	Saving in KHR		
	Yes	No	Total
Yes	431	153	584
No	726	19	745
Total	1,157	172	1,329

Note: Panel A and B are the summary responses to the question asked "Approximately how much cash do you and your household head have in saving, and in which currency?"

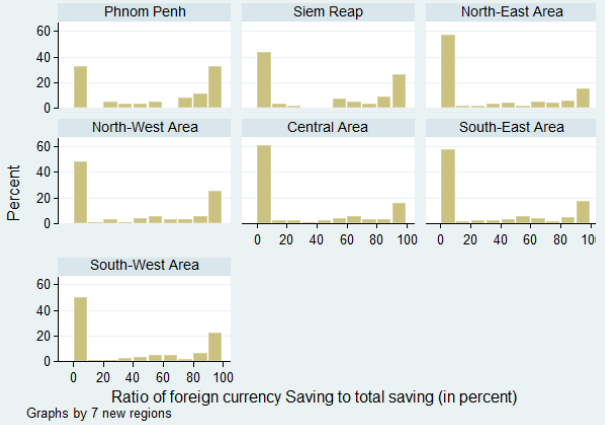
Some respondents were dropped from households who answered that they had some savings.

Panel B: Details of Savings by Currency

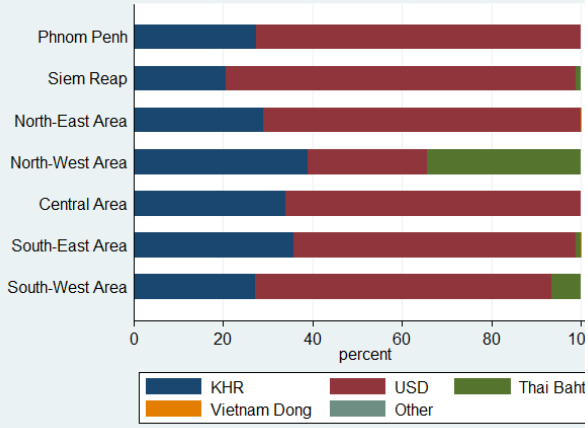
Type of Currency	Obs	Mean	Std. Dev.	Min	Max
ALL					
KHR savings	1098	382	1205	0	30000
USD savings	1098	743	2646	0	40000
Baht savings	1098	67	1389	0	45590
Dong savings	1098	1	11	0	234
Others	0				
Amounts > 0					
KHR savings	943	445	1290	4	30000
USD savings	461	1771	3857	10	40000
Baht savings	53	1383	6233	5	45590
Dong savings	8	106	70	35	234
Others	0				

Note: Expressed in USD except for observation numbers. Upper panel is the summary statistics of saving amount answered. Due to non-responses, sample size was reduced from 1329 to 1098. The lower panel gives summary statistics using respondents with positive amounts only.

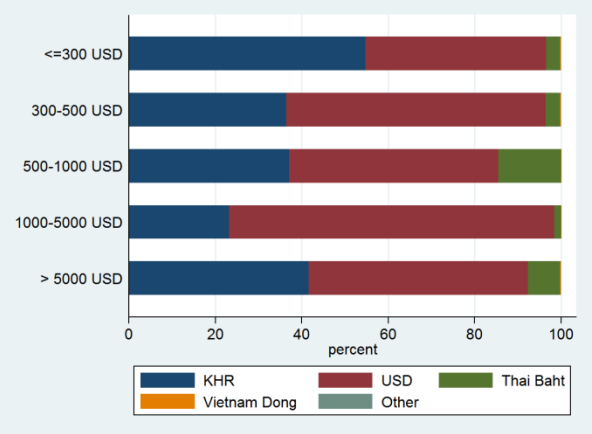
Panel C: Foreign Currency Usage in Savings



Panel D: Currency Composition of Savings by area



Panel E: Currency Composition of Saving by income level



Of 1329 respondents, 82.6% (1098 households) revealed the amount they saved. From Panel B in Figure 3.7: Currency Choices for Saving we can observe that USD saving has much higher value than that of KHR. Therefore, we may understand that KHR is a more popular currency for savings, but the savings in KHR are smaller than those in USD. Panel C Figure 3.7: Currency Choices for Saving

shows the distribution of the ratio of foreign currency denominated savings to total savings of individuals, and Panel D gives the average level of currency composition of savings by area. When we analyze the regional differences for choice of currencies, the popularity of KHR in terms of number of households using it remained the same in all areas (Panel C), but in terms of the level of savings, foreign currencies dominated in all areas (Panel D). It is noted that in the Northwest Area, the Thai Baht makes up a significant part of total savings. Finally, Panel E shows average level of currency composition by income level. We found that the higher the level of income, the more foreign currency is saved, except for the highest income group. This may be interpreted as that the objective of saving for households with higher income levels is to purchase consumer durables or real estate often traded in USD, while for those with lower income levels it is to keep local cash on hand for emergency purposes.

4.4.2. Deposit Accounts in Financial Institutions

Of a total of 2272 effective responses only 14.3% (325 households) answered that they had more than one account in financial institutions. Table 3.2: Currency Choice for Accounts gives respondents' currency choice for accounts. This turned out to be different from what was observed in terms of savings in general; when it comes to accounts in financial institutions, KHR and USD had comparable levels of choice.

Table 3.2: Currency Choice for Accounts

Currency Type		Total
KHR account only		151
USD account only		120
Other Currency only		1
KHR & USD		53
KHR & Other Currency		0
USD & Other Currency		1
KHR, USD and Other Currency		0

Note: Sample is reduced to households which answered "Yes" to the question "Do you and your household head save money?" (Q50). Furthermore, households which refused to answer the currency type of deposit account were excluded from the sample. The total number of respondents in the analysis was 325.

But when we examine the regional differences for choice of account currencies in Table 3.2, there are observable differences in the choice (Table 3.3). In Siem Reap, USD accounts are more common than KHR ones; while in the other areas a KHR account is more common. In Phnom Penh and the Central Area, both currencies have same level of popularity. It is noted that, in general, the percentage of households with accounts is quite low, making up only 14.3% of the total sample. Even in Phnom Penh, only 19.3% of respondents possessed a bank account. This situation is far from what we saw in answers to the savings question (of 2272 respondents, 1351 households answered that they had savings). Therefore, deposit accounts are still a very minor means of saving.

Table 3.3: The Currency Composition of Accounts

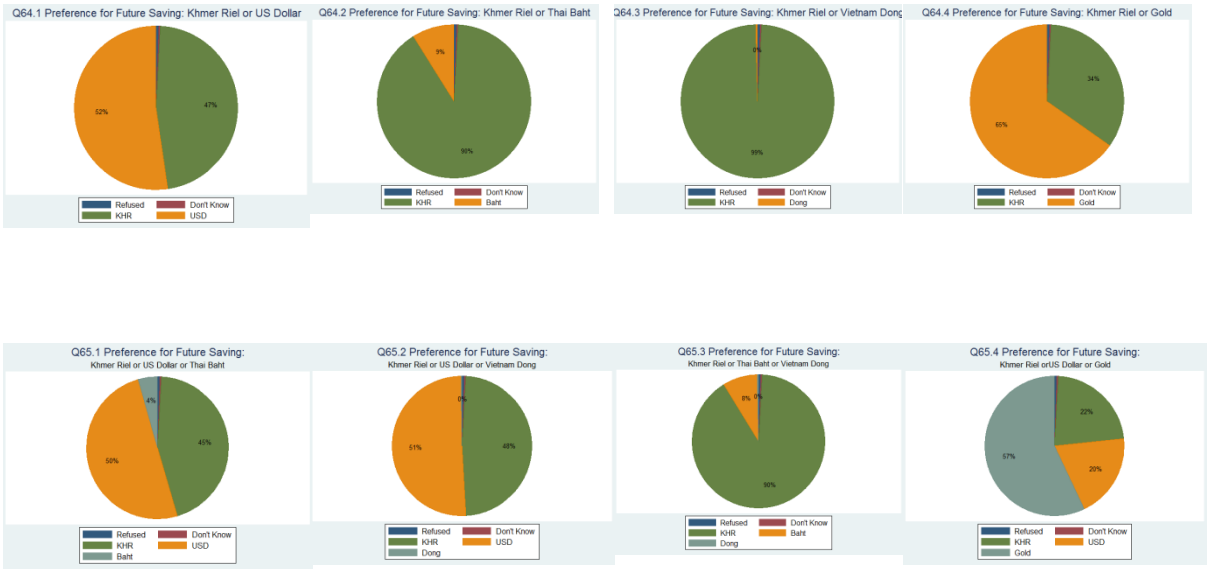
		KHR account		USD account		Having account	All
Phnom Penh		17	58.6%	16	55.2%	29	150
SiemReap		5	33.3%	12	80.0%	15	120
North-East	Area	29	70.7%	23	56.1%	41	240
North-West	Area	19	61.3%	13	41.9%	31	220
Central	Area	44	57.9%	44	57.9%	76	573
South-East	Area	57	67.1%	38	44.7%	85	582
South-West	Area	33	68.8%	27	56.3%	48	388
Total		204		173		325	2273

Note: The numbers of households having KHR deposits, USD deposits, deposits, total number of households interviewed are shown in column 1-4, respectively. The percentages of households having KHR/USD deposits relative to the number of households having deposits in any type of currency are shown.

4.4.3. Currency Choice for Future Saving

Respondents were asked to show their preference on currency choice for future saving (Figure 3.7). There were two types of questions: The first asked respondents to choose either currency A or currency B for saving and the second group asked them to pick up one from three choices. The results showed that gold was the most preferable choice, while the Vietnam Dong or Thai Baht were very unpopular. Comparing KHR and USD, the USD was a slightly more popular choice for saving.

Figure 3.8: Currency Choice for Future Saving



These results may imply that a simple restriction or ban of USDs for cash holdings or saving would result in gold holding. Since saving in the form of gold holding cannot be integrated in the formal financial system, such a ban would limit the development of the financial sector.

4.5. The Borrowing behavior of Households

4.5.1. Currency for borrowing

Respondents were asked about the details of their outstanding loans when interviewed. The questions covered type of lenders, currencies, and amounts loans. Of the 2273 respondents, 634 households answered that they had loans. Most of these had one loan, but some had two or three loans. Thus, in total we tracked the details of 673 loans. Panel A of Figure 3.8 gives the currency denominations of 673 loans by lenders. Of the 673 loans, 436 were in USD while only 210 were in KHR. It is clear that USD is the more popular choice for borrowing than other currencies. However, it should be noted that such choices differed significantly by lender type: 76% of bank loans, 66% of MFI loans, and 50% of loans from family and friends were denominated in US Dollars. In terms of regional differences in the choice of borrowing currencies, there was a difference between Phnom Penh and the other areas of the country (Figure 3.9: Currency Choices of Borrowings Panel B) If we look more closely, in Phnom Penh, regardless of lender type, households were borrowing in USD only. However, in other areas some of the households were borrowing in KHR from all type of lenders. Thus, we might

say that the loan market in Phnom Penh is totally dollarized, while in other areas, households still have room to make a choice of loan currency. Therefore, it may be appropriate to start promotion of use of KHR for loans other than in Phnom Penh.

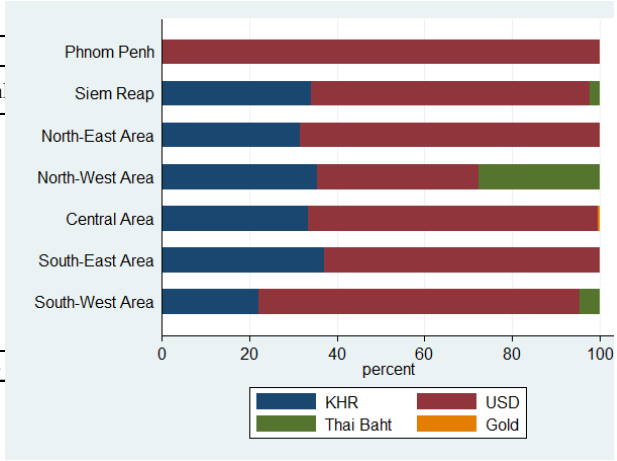
Panel D gives average level of currency composition by income level. We found that the higher was the level of income the more in foreign currency they borrowed. It may be interpreted that objectives of borrowing for households with higher income level is to purchase durables or real estates which are normally traded in USD, while for those with lower income level it is to make both ends meet.

Figure 3.9: Currency Choices of Borrowings

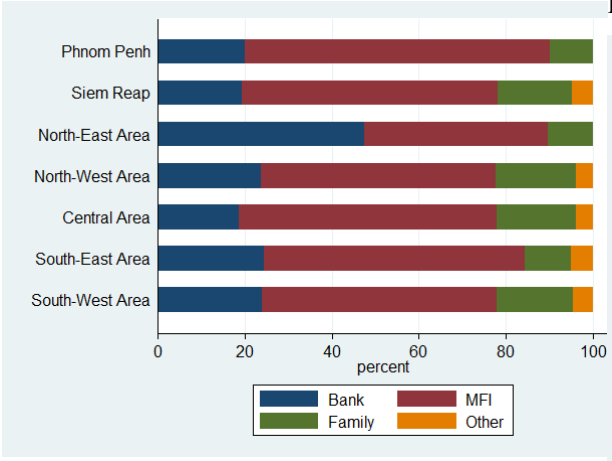
Panel A: Frequency of Loans by Currencies and Lenders

	Currency				
Lender	KHR	USD	Baht	Gold	Total
Commercial Bank	31	123	8	0	162
Microfinance institution	123	252	8	0	383
Family or friends	42	51	9	1	103
NGO	3	5	0	0	8
Other informal lender	7	4	2	0	13
Others	4	0	0	0	4
Refused	0	1	0	0	1
Total	210	436	27	1	674

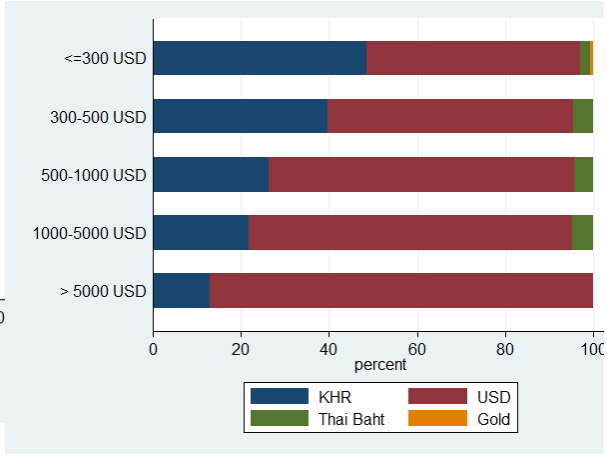
Panel B: Currency Composition of Loans by Area



Panel C: Lender Composition of Loans by Area



Panel D: Currency Composition of Loans by Income Level



4.5.2. Reasons for taking out local currency/foreign currency loans

Households were asked for the top two reasons for currency choice in relation to loans taken out in the past three years. In response, 782 respondents said that they had borrowed in foreign currency (FX), while 476 said that they had borrowed in local currency (Table 3.4).

Table 3.4: Reasons for the Loan Currency Choice

I borrowed in foreign currency because…(782 respondents)	Yes
It is easier to borrow large amounts of money in FX	146
The purpose of my loan requires FX currency amount	537
I cannnot find a loan in KHR for the amount I need	33
The interest rate of foreign currency is better	34
The transactions I am involved in require that I pay in foreign currency	211
Don't want to risk exchange rate losses	15
Others	21

I borrowed in KHR because… (476 respondents)	Yes
I would borrow KHR if the amount was less than 1,000 dollars	57
Interest rates are better than USD	5
Transactions are in KHR	216
Don't want to risk exchange rate losses	40
Others	232

Of the 782 respondents who borrowed in a foreign currency, 537 households said that their purpose required foreign currency, and 211 of them said that their transaction needed to be done in foreign currency. This may imply that household choice of loan currencies is influenced by the type of network externalities discussed by Valev (2010). This accords well with the fact that households normally borrow money in order to purchase real estate, cars & motorbikes, or furniture & appliances, which are normally available in foreign currency. We also observed though that accessibility or availability matter in the choice of currency. That is, 146 households gave ease of obtaining a loan as their reason for the choice, and 33 households said that they could not find the loan amount they needed in KHR. Thus, these results tell us that size of loan may affect choice of currency. It is noted however, that level of interest rates or recognition of the risks associated with exchange rate fluctuations are not major reasons for currency choice.

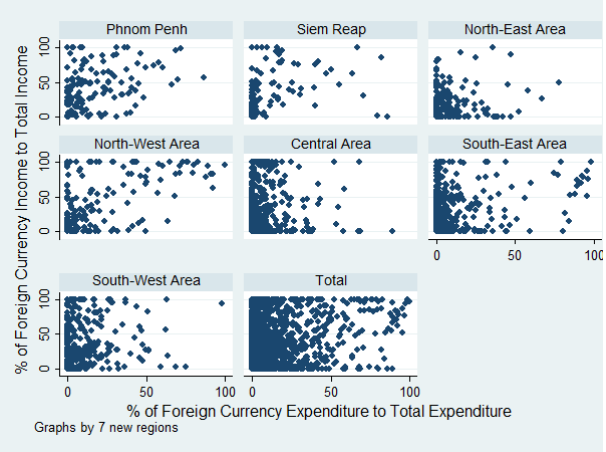
Of the 476 respondents in this category, 216 households who had borrowed in KHR said that their transactions needed to be done in KHR. This was the most popular reason for choosing KHR. The second most popular reason was the amount of the required loan. They chose KHR because the amount was less than 1,000 dollars equivalent. Here again we can confirm that the amount of loan matters for choice of currency; in the case of using KHR markets for this, smaller loans affected the choice of currency. In the case of KHR borrowing, we observed again that the level of interest rates or exchange rate risk did not play significant role in the choice of currency. Finally, Panel B gives the average level of currency composition of loan by area. In terms of regional difference, it is clear that in Phnom Penh loans are usually in USD. However, in other areas including Siem Reap, even though USD was still dominant; loans denominated in KHR had a 20-30% share of the market. It should again be noted that in the Northwest and Coastal Areas, the Thai baht is used as loan currency together with the USD or KHR.

4.6. Currency mismatches in Income /Expenditure/Borrowing

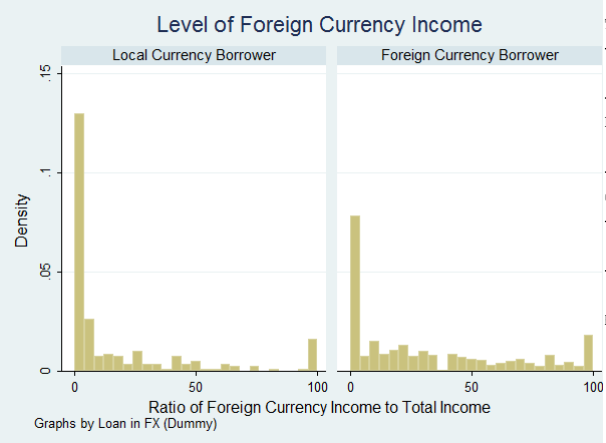
Panel A in Figure 3.9 shows the relationship between the ratio of foreign currency income to total income, and the ratio of foreign currency expenditure to total expenditure by households. We observe a clear relationship between them. Households having higher ratios of income in foreign currencies did not necessarily spend in foreign currencies, and vice versa. Panel B gives the distribution of the ratio of foreign currency income to total income by currency choice of loan. It is clear that those who had loans in KHR tended to have lower ratios compared to those with a foreign currency loan. We were able to confirm this with a t-test result of two groups of samples - KHR loan holders and foreign currency loan holders (Panel C). The results show the distribution of the ratio of foreign currency saving (sum of deposit in bank/MFI and cash at home) to total saving, by currency choice of loan. It is clear that those who had loans in KHR tended to have lower ratios compared to those with a foreign currency loan. Again, we confirmed this pattern using a t-test of the relationship between KHR loan holders and foreign currency loan holders (Panel E). The survey results thus show that households have currency mismatches between income and expenditure. However, in terms of financial activity, they are trying to match currency for borrowing to that of income or saving.

Figure 3.10: Currency Mismatch of Households

Panel A: Ratios of FX currency in income and expenditure



Panel B: Ratios of FX currency in Income by Borrowing Currency



Panel C: T-test of Foreign Currency Income by Borrowing Currency

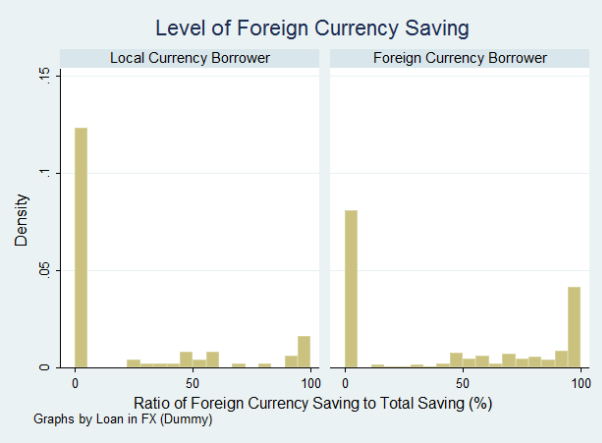
Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Local Cu	198	17.98312	2.055469	28.92301	13.92958	22.03667
Foreign	453	32.21381	1.567104	33.35392	29.13409	35.29352
combined	651	27.88558	1.282079	32.71187	25.36806	30.4031
diff		-14.23068	2.732487		-19.59627	-8.865102

diff = mean(Local Cu) - mean(Foreign) t = -5.2080
Ho: diff = 0 degrees of freedom = 649

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

Panel D: Ratios of FX currency in Saving by Borrowing Currency



Panel E: T-test of Foreign Currency Saving by Borrowing Currency

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Local Cu	89	21.32501	3.69549	34.86319	13.981	28.66902
Foreign	234	43.53337	2.814906	43.05978	37.98745	49.07929
combined	323	37.41404	2.342628	42.10218	32.80525	42.02283
diff		-22.20836	5.103051		-32.24801	-12.16871

diff = mean(Local Cu) - mean(Foreign) t = -4.3520
Ho: diff = 0 degrees of freedom = 321

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 1.0000

4.7. Currency Exchange

Almost all households declared that they exchanged currency, normally at a money changer, and to lesser extent at a shop (

Figure 3.11: Money **Changing**). A few respondents exchange currency at banks, and very few at microfinance institutions. We divided the frequency of the currency exchange of households into four categories: rarely (about 3 times per year), sometimes (every 2-3 months), frequently (every month) and very frequently (everyday/every week). The respondents show that the frequency of their currency exchange is in between rarely to sometimes. Not surprisingly, for bilateral exchange, USD and KHR are the most usual currencies involved, followed by THB and KHR (Figure 3.11). On an area basis, households would rather exchange from USD to KHR in Phnom Penh, most parts of the Central Area, and in Takeo and Sihanoukville. This pattern could reflect the fact that these regions receive more USD than other regions, or it may mean that they demand KHR in their economic and/or financial payments. We see the same in the direction of exchange between THB and KHR; households would rather exchange from THB to KHR than in the opposite direction. At the regional level, the exchange between THB-KHR is concentrated in the provinces of the Northwest and Southwest that have borders with Thailand. As for other possible exchanges, such as those from KHR to VND, or from USD to THB, VND, or another currency, we did not see any frequent operations; in fact, this rarely or never happened.

The demand for currency exchange has made foreign exchange activities more profitable. This has attracted money changers. It has also intensified competition in this market, and has resulted in minimizing the spread bid-ask of the exchange rate in Cambodia. This mild spread in turn favors the usage of foreign currency (Table 3.5).

Figure 3.11: Money Changing (Place of Change)

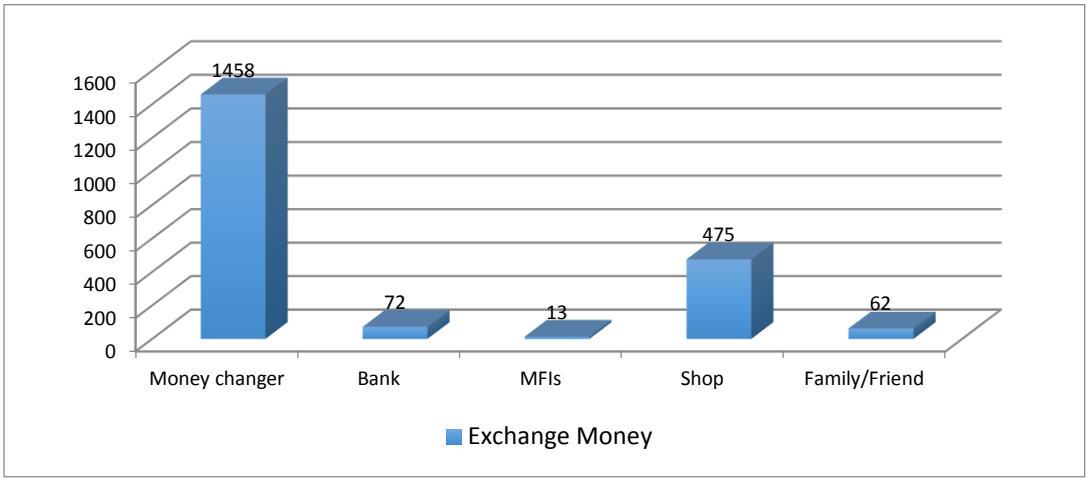
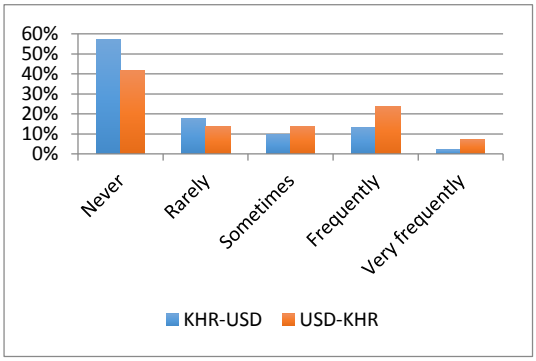
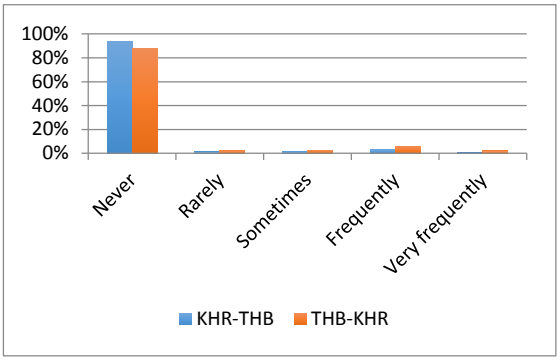
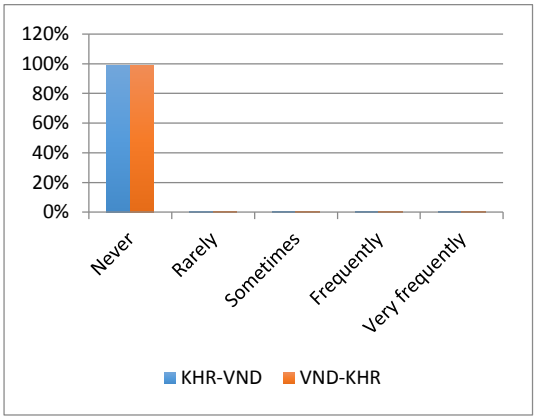
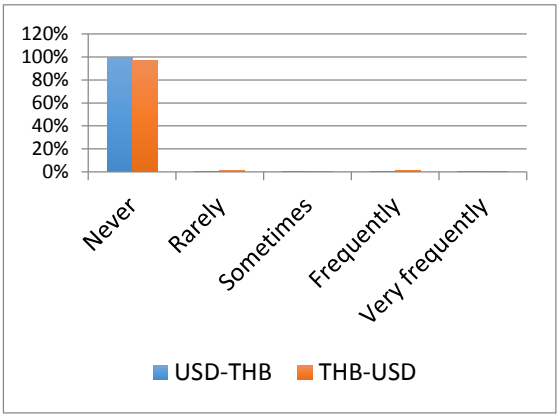


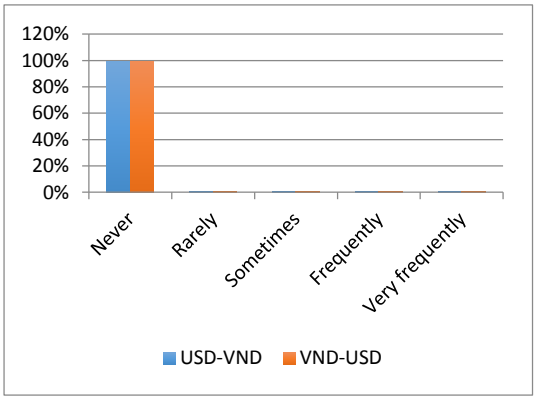
Figure 3.11: Money Changing (Direction of Change)











Note: As for direction of money change, "Currency A- Currency B" means that currency A is converted to currency B. For example, USD-KHR stands for currency conversion from USD to KHR.

Table 3.5: Mean Value of Frequency of Currency Exchange from One Currency to the Other across Regions

Region	Province	KHR-USD	USD-KHR	KHR-THB	THB-KHR	KHR-VND	VND-KHR	USD-THB	THB-USD	USD-VND	VND-USD
Phnom Penh		2.03	3.03	1.00	1.00	1.00	1.01	1.02	1.00	1.00	1.00
Siem Reap		1.79	2.44	1.00	1.18	1.00	1.00	1.00	1.05	1.00	1.00
NE	Kratie	1.67	2.00	1.00	1.05	1.00	1.00	1.00	1.00	1.00	1.00
	Mondul Kiri	2.50	2.33	1.00	1.00	1.13	1.08	1.07	1.00	1.13	1.05
	Ratanak Kiri	1.87	2.40	1.00	1.00	1.00	1.07	1.00	1.00	1.00	1.03
	Stung Treng	1.70	2.05	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
NW	Banteay Meanchey	1.52	1.61	1.86	3.04	1.00	1.00	1.08	1.42	1.00	1.00
	Otdar Meanchey	1.62	1.88	2.42	1.78	1.00	1.00	1.20	1.10	1.00	1.00
	Preah Vihear	1.72	2.28	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
SE	Kampot	1.74	2.30	1.00	1.05	1.00	1.01	1.00	1.03	1.00	1.00
	Kep	1.31	1.92	1.00	1.05	1.02	1.02	1.00	1.00	1.00	1.00
	Prey Veng	1.66	2.60	1.00	1.05	1.03	1.00	1.00	1.02	1.00	1.00
	Svay Rieng	1.55	2.44	1.00	1.00	1.38	1.27	1.00	1.00	1.51	1.35
	Takeo	1.95	3.08	1.01	1.08	1.00	1.00	1.00	1.00	1.00	1.00
	Tbong Khmum	2.13	2.12	1.00	1.00	1.01	1.03	1.00	1.00	1.00	1.00
SW	Koh Kong	1.45	2.27	2.67	2.12	1.00	1.00	1.02	1.07	1.00	1.00
	Preah Sihanouk	1.76	2.98	1.00	1.05	1.02	1.00	1.00	1.00	1.00	1.00
	Pursat	2.03	2.24	1.00	1.33	1.00	1.00	1.00	1.01	1.00	1.00
	Battambang	1.79	1.81	1.15	2.24	1.00	1.00	1.04	1.22	1.00	1.00
	Pailin	1.70	1.81	2.04	3.02	1.00	1.00	1.15	1.52	1.00	1.00
CA	Kampong Cham	2.09	2.18	1.00	1.04	1.00	1.00	1.00	1.00	1.00	1.00
	Kampong Chhnang	2.11	2.93	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Kampong Speu	2.10	3.03	1.01	1.01	1.00	1.00	1.00	1.00	1.00	1.00
	Kampong Thom	2.10	2.14	1.03	1.05	1.00	1.00	1.00	1.00	1.00	1.00
	Kandal	1.95	3.05	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.00

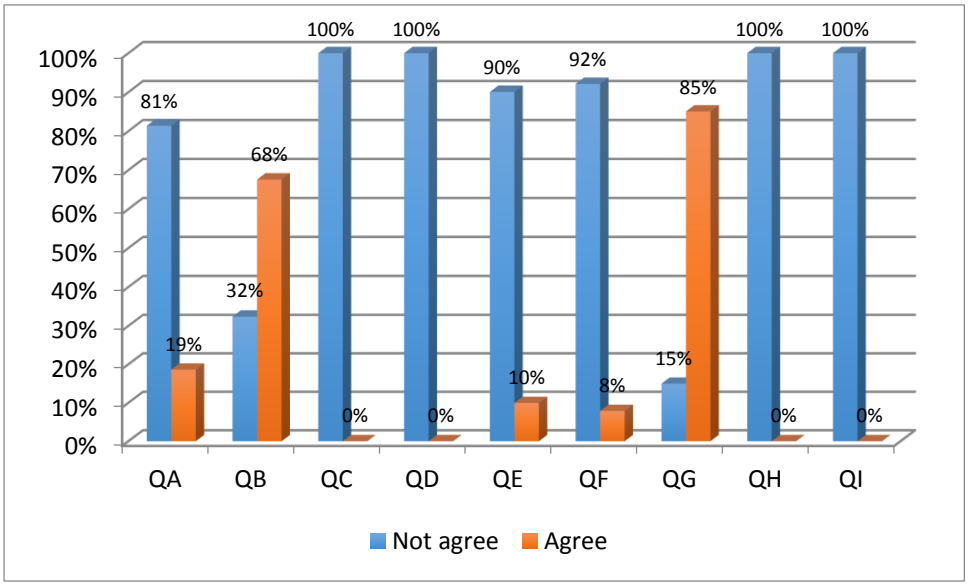
Note: Data are the mean value of the exchange from one currency to another currency, for example from KHR to USD (shortcut: KHR-USD). NE: Northeast Area, NW: Northwest Area, SE: Southeast Area, SW: Southwest Area, CA: Central Area. The value is from 1 to 5, 1: is never, 2: is rarely (about 3 times per year), 3: is sometimes (every 2-3 months), 4: is frequently (every month) and 5: is very frequently (every day or every week).

4.8. The reaction to Payment in Different Currencies from the Currency Quotation

In the situation when foreign currency circulates at the same time as the local currency, it frequently happens that the currency in which the quotation of goods and services is made is different from the currency that the buyers dispose for actual payment. To cover this situation, we asked questions about this coincidence that allowed for different possible answers, to examine the range of household reactions (Figure 3.11). According to the answers QE and QG of the households, less than 15% said that they always pay in the currency of the bill or the request of the sellers. In this case, only a minority would negotiate the exchange rate with the sellers; 80% accept the rate that is fixed by the sellers (QA and QB). At the same time, there are around 10% of respondents that change their currency before they pay to sellers, when the bill or request requires disbursements in a currency that is different from the

currency that they have, because they wish to avoid exchange losses (QF). As a result, households generally tend to keep different currencies with them in order to pay in the currency of a bill or the request of the seller. Otherwise, they will make losses. This could be in the form of time and money, and is caused by seeking currency exchange but facing an unfavorable exchange rate fixed by the sellers when using different currencies to pay.

Figure 3.11. Payment in Different Currencies



Note: Question: Do you ever pay goods and services in different currency from the seller's request?

Answers to the above question:

QA: Yes, I do and I can negotiate the exchange rate or have an arrangement on the exchange rate.

QB: Yes, I do but I cannot negotiate the exchange rate. The seller fixes it.

QC: Yes, I pay by ATM transfer from my bank account and the bank does the currency exchange.

QD: Yes, I pay by transferring from a Mobile account and the bank does the currency exchange.

QE: No, I always pay in the currency of the bill or request.

QF: No, I change the currency at the market/bank/MFI, and then pay seller in the currency of the bill.

QG: No, I generally have sufficient currencies needed for payments and pay in the currency they request.

QH: No I pay by doing ATM transfer from my bank account to the seller in the currency they request.

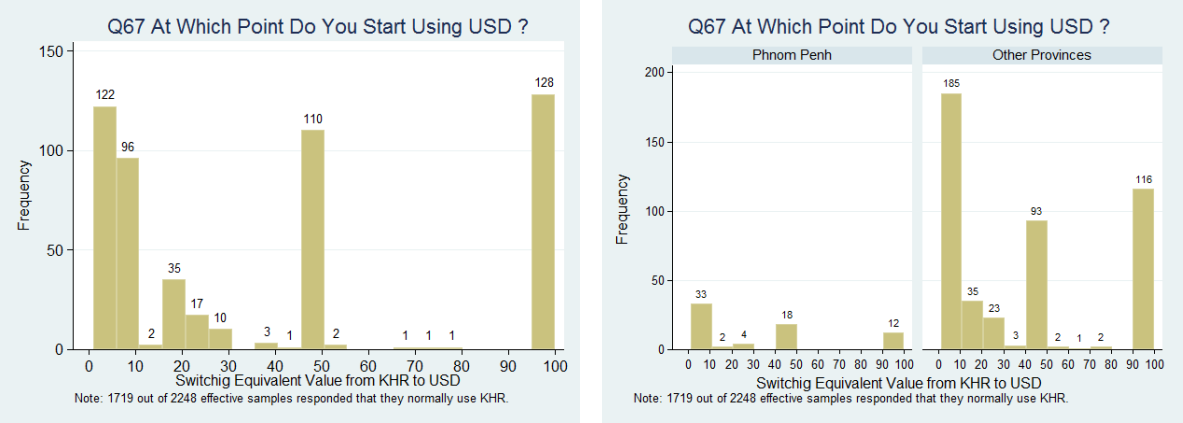
QI: No, I pay by doing transferring from a mobile account to the seller in the currency they request.

4.9. Perceptions and Opinions

4.9.1. The Choice of Currency

Respondents were asked to indicate at which point they generally start using USD instead of KHR (Figure 3.12). The responses show that 11% of them declare that they mainly use USD when it is possible to do so in all kind of payments, from amounts of 0 to 20 dollars equivalent. Some 6% of them start using USD for payment from between 20-50 dollars equivalent, and 6% of them pay with USD from 50 dollars. Overall, only 24% of households show that they have used USD notes however, and this means that another 76% usually use KHR notes in their payments. The results by region show that there is not much geographical difference in the pattern of switching from KHR to USD.

Figure 3.12: Choice of Currency Usage



4.9.2. Potential Need for larger Value KHR Notes

Sometimes it is said that it is inconvenient to use KHR as there is no note higher than 100,000 Riels (equivalent to USD 25), particularly for high value transactions. This inconvenience forces people to use USD notes, especially the higher value notes. Respondents were asked whether they would use more KHR if notes of higher value were issued. In the case of 200,000 Riel note, more than 60% of effective respondents answered they would use or possibly use it in all areas. In the case of 300,000 or 400,000 Riel notes, the number was less, but still a majority of respondents suggested they would use them if they became available. This confirms that the current largest KHR denomination is still small in value, and people need larger ones. However, it also shows that people would not likely to use new denominations that had values higher than USD 100 equivalent. It seems that these denominations would be inconvenient for them, perhaps because of too many zeros.

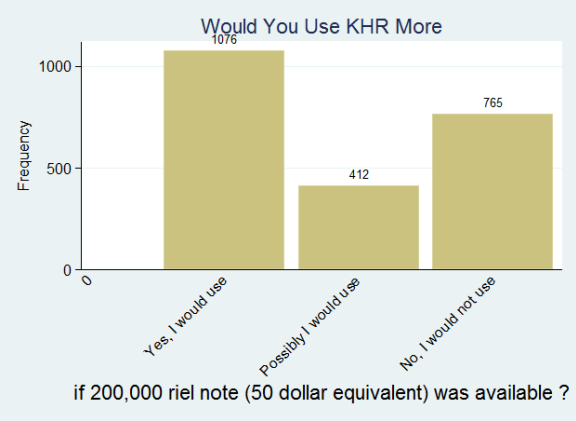
4.9.3. Usage patterns of KHR notes and USD notes

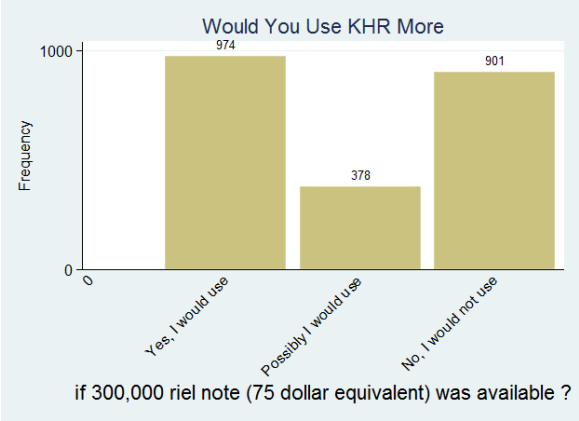
To capture the usage patterns of currently available KHR notes, respondents were asked to indicate frequency of use in five levels, from never to very frequent (Figure 3.13)[5]. With regard to the 50 Riel note, most respondents said they never use it, regardless of the geographical area they live in. From the 100 Riel note to the 10,000 Riel note in a high frequency of use was recorded in all areas. But from 20,000 Riel note responses began to change, ranging from never to very frequently, but showing an increasing number of negative (never or rarely) answers. In the case of the 50,000 Riel note, 39.7% of respondents answered negatively. In the case of the 100,000 Riel note, 81.5 % responded that they never, or very rarely use it. It is worth mentioning that the distribution of respondents on these questions was not so different across the regions (Table 3.6).

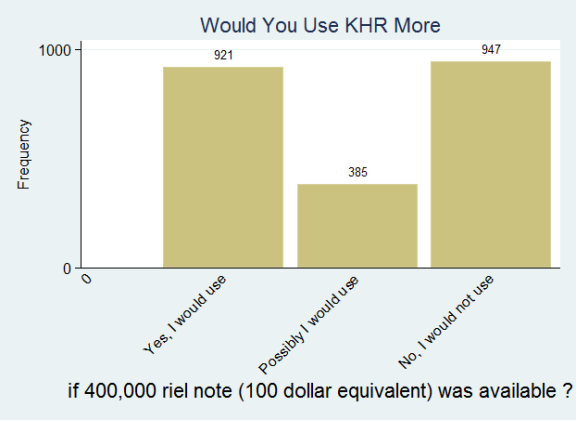
This could show that USD notes were preferred instead of KHR for these amounts, or there are numbers of households whose living standards are too low for them to use these large values. To verify this, we also looked at those respondents who use USD notes (Figure 3.14). The numbers of respondents that sometimes, frequently and very frequently use USD notes, concentrated on the 1 dollar note (77%:1737/2258), 5 dollar note (72%:1623/2258), and the 10 dollar note (69%:1557/2258), but the numbers decrease with the 20 dollar note (61%:1377/2258), the 50-dollar note (49%:1105/2258), and the 100-dollar note (44%:983/2258), though use percentages are still relatively high.

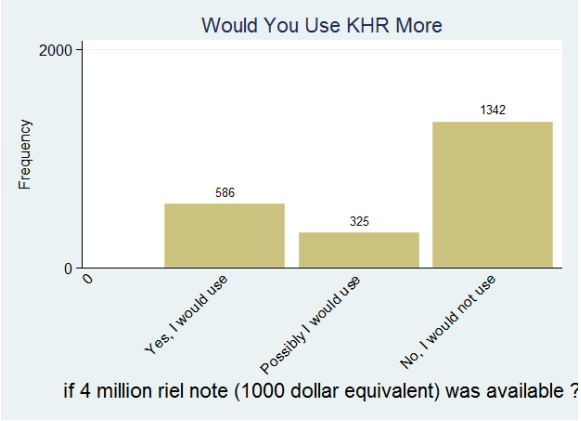
[5] Frequency was defined as follows: 'never' as for less than 2 or 3 times in a year, 'rarely' as for 2 or 3 times a year, 'sometimes' as for 2 or 3 times a month, 'frequently' as for every month, and 'very frequently' as for every day/every week.

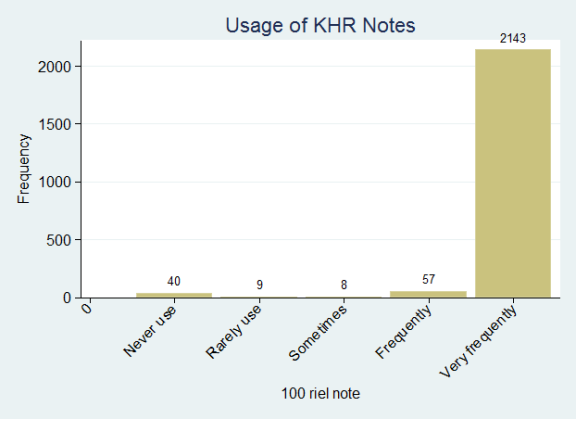
Figure 3.13: Usage of KHR Notes

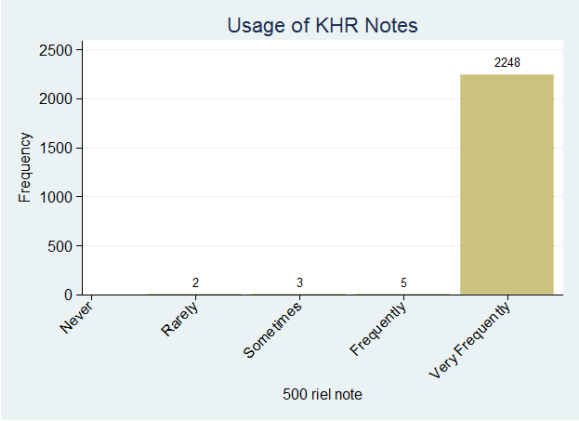


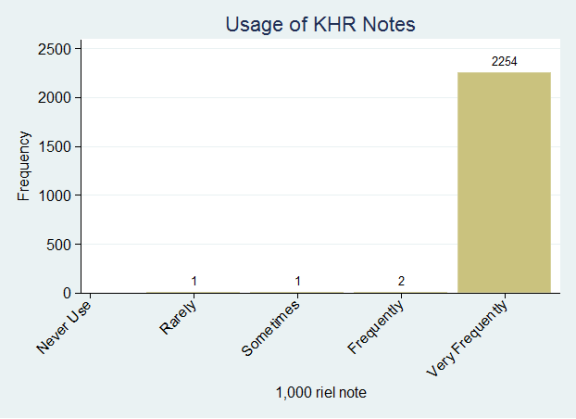


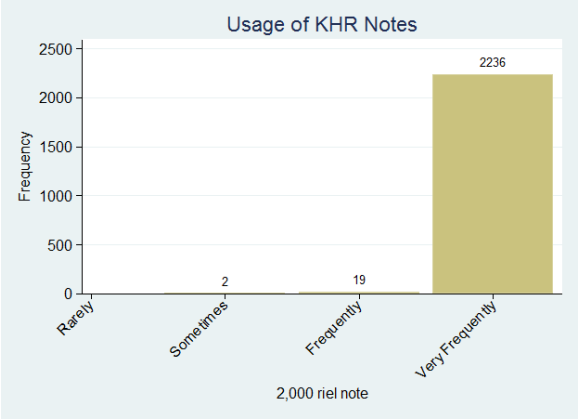


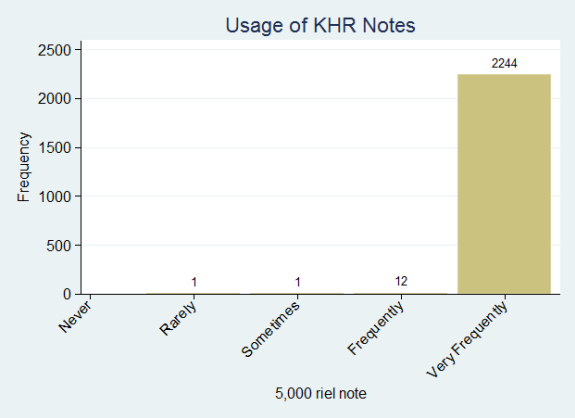


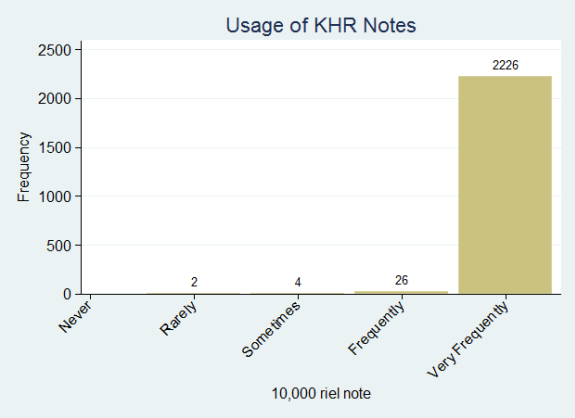


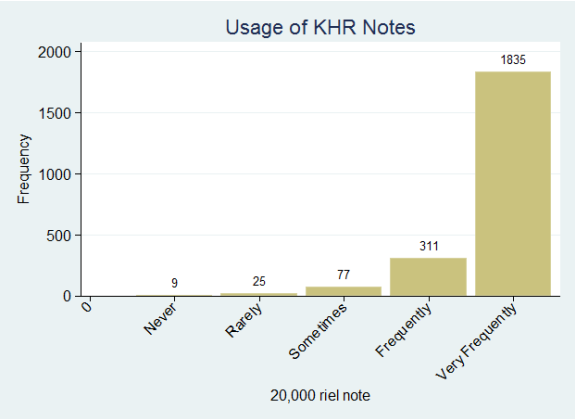


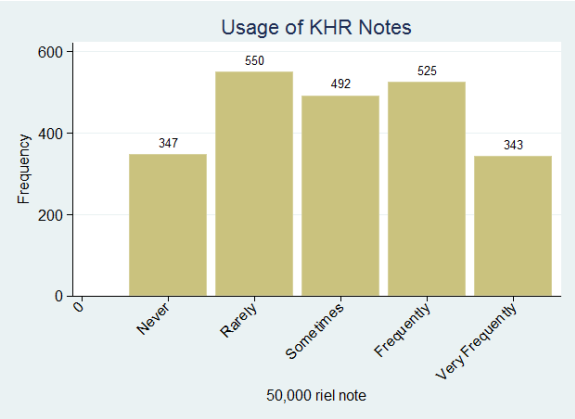





Usage of KHR Notes
Frequency
2500
2000
1500
1000
500
0
2244
1
1
12
Never
Rarely
Sometimes
Frequently
Very Frequently
5,000 riel note


Usage of KHR Notes
Frequency
2500
2000
1500
1000
500
0
2226
2
4
26
Never
Rarely
Sometimes
Frequently
Very Frequently
10,000 riel note


Usage of KHR Notes
Frequency
2000
1500
1000
500
0
1835
9
25
77
311
0
Never
Rarely
Sometimes
Frequently
Very Frequently
20,000 riel note


Usage of KHR Notes
Frequency
600
400
200
0
347
550
492
525
343
0
Never
Rarely
Sometimes
Frequently
Very Frequently
50,000 riel note

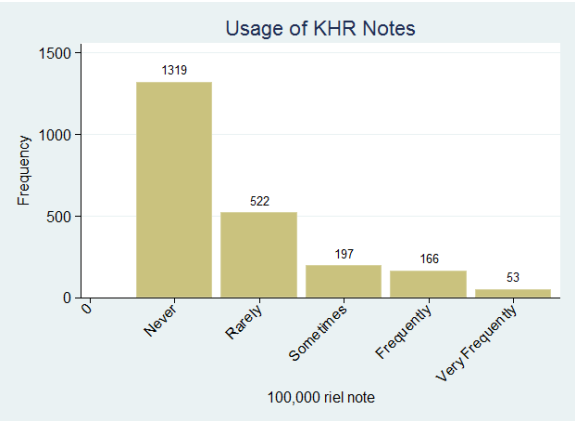
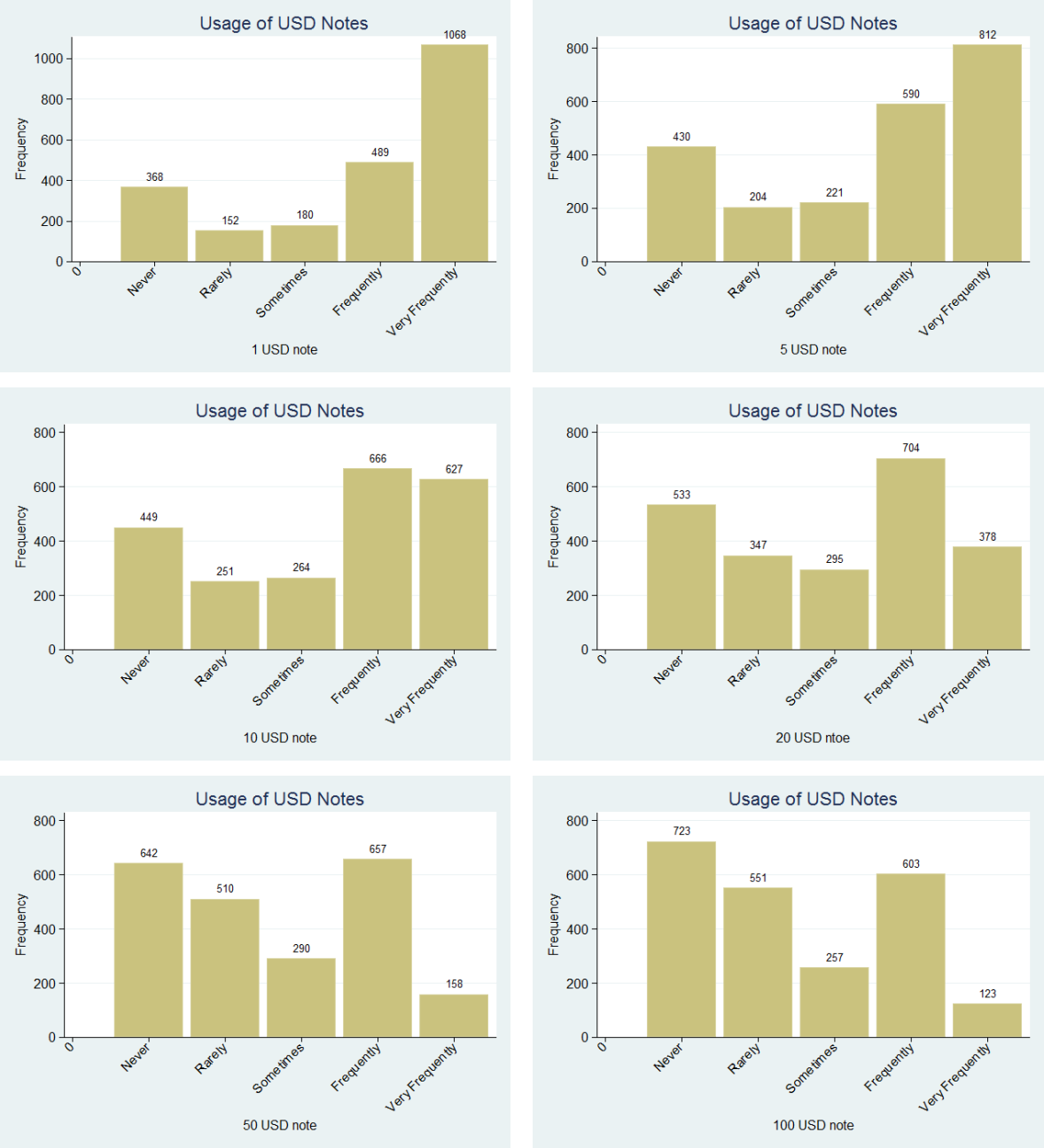

Usage of KHR Notes
Frequency
1500
1000
500
0
1319
522
197
166
53
0
Never
Rarely
Sometimes
Frequently
Very Frequently
100,000 riel note

Figure 3.14: Usage of USD Notes



At the regional level, in the case of the 1-dollar note, the majority of respondents in Phnom Penh, Siem Reap, and the Central Area use it very frequently in their daily transactions. In Phnom Penh in particular, 78.5 % of respondents used it very frequently, while only 2.0% responded negatively, either ‘never’ or ‘rarely’. But in the Northwest Area, 43.1% of respondents responded negatively. In case of the 5 dollar or 10 dollar notes, the negative answers in Phnom Penh are 2.7% and 2.0% respectively. Those using them ‘Very Frequently’ are again a majority there. In the case of the 20-dollar or higher notes, negative ratios go up to 22.8% (100-dollar), while 16.1% responded ‘very frequently’ even in the case of the 100-dollar bill. It is noticeable that in the North-East area, 10.8% responded that they use the 50-dollar bill ‘very frequently,’ and 11.3% said the same for the 100-dollar bill. These responses reflect the fact that the use of KHR and USD notes are in a competitive situation when the amount of payments are equal or below 10-dollars equivalent, but are also in a complementary situation

to some extent as KHR banknotes exist with a wide range of denominations below 10-dollars equivalent. These two currencies are rather complementary for the amount of payments above the 10-dollar equivalent level, as the two largest denominations of KHR are not frequently used (Table 3.6). It also means that USD notes are preferable currency for paying transactions when the amounts exceed the 10-dollar equivalent level.

Table 3.6: Usage of KHR High Value Notes

How Frequently Do You Use 50,000 Riel Note ?

	Refuse	Don't Know	Never	Rarely	Sometimes	Frequently	Very Frequently	Total
Phnom Penh	1	0	21	33	33	44	18	150
Siem Reap	1	0	21	34	37	20	7	120
North-East Area	0	0	24	23	36	58	99	240
North-West Area	2	0	41	66	38	60	13	220
Central Area	6	0	89	156	143	117	62	573
South-East Area	2	0	84	160	121	138	77	582
South-West Area	3	1	67	78	84	88	67	388
Total	15	1	347	550	492	525	343	2,273

How Frequently Do You Use 100,000 riel note ?

	Refuse	Don't Know	Never	Rarely	Sometimes	Frequently	Very Frequently	Total
Phnom Penh	1	0	73	38	17	18	3	150
Siem Reap	1	0	74	29	10	5	1	120
North-East Area	0	0	133	48	22	25	12	240
North-West Area	2	0	138	46	17	15	2	220
Central Area	6	0	332	142	50	37	6	573
South-East Area	2	0	336	132	53	39	20	582
South-West Area	3	1	233	87	28	27	9	388
Total	15	1	1,319	522	197	166	53	2,273

4.9.4. Feelings about particular Statements

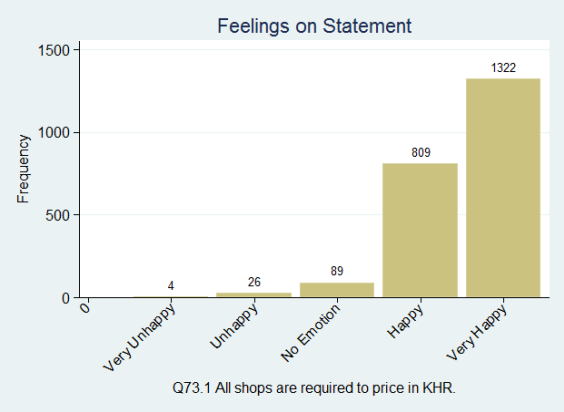
When respondents were asked about their feelings on the statement 'all shops are required to price in KHR'; more than 90% in all areas responded positively, as either 'happy' or 'very happy' (Figure 3.15 and Table 3.7). In the Northeast Area, 4.2% responded negatively, as either 'very unhappy' or 'unhappy'. The ratios of negative answers are very low or negligible in other areas. When respondents were asked their feelings on the statement, 'all minimum wages are announced in KHR', negative answers, either 'unhappy' or 'very unhappy,' increased in all areas. The total average ratio of negative answers on this dimension was 5.0%, but was 8.6% and 6.6% in the Vietnam Border area, and in the Central Area respectively. The lowest ratio was 1.7%, observed in the Northwest area.

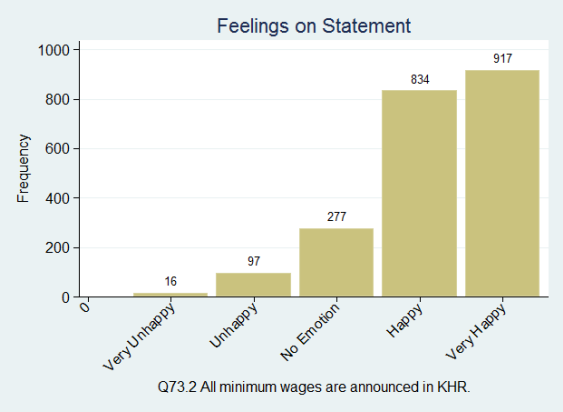
When respondents were asked their feelings on the statement 'KHR is going to be the preferred currency to use in the next five years,' negative answers (either 'unhappy' or 'very unhappy') were very low in all areas, averaging 1.2%. No negative responses were recorded in Phnom Penh or in the Northwest area. The highest negative ratio was 2.1% in the Northeast, and the second highest was observed in the Central Area at 1.9%. When respondents were asked their feelings on the statement, 'Governments will promote the use of the KHR more,' negative answers (either 'unhappy' or 'very unhappy') were also very low in all areas, 0.5% on average. No negative responses were recorded in Phnom Penh, the Northwest area, and in the Vietnam Border Area. The highest negative ratio was 1.3% in the Northeast area, and the second highest was observed in the Central Area at 0.9%.

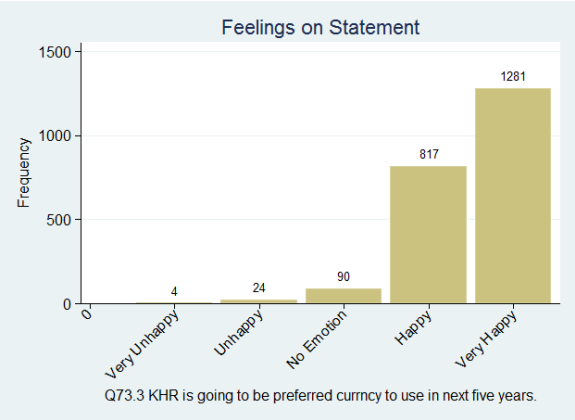
When respondents were asked about their feelings towards the statement 'All business transactions in Cambodia are required to be carried out in KHR,' negative answers were again low in all areas, averaging 2.1%. The highest negative ratio is 3.3% in Northeast area and the second highest

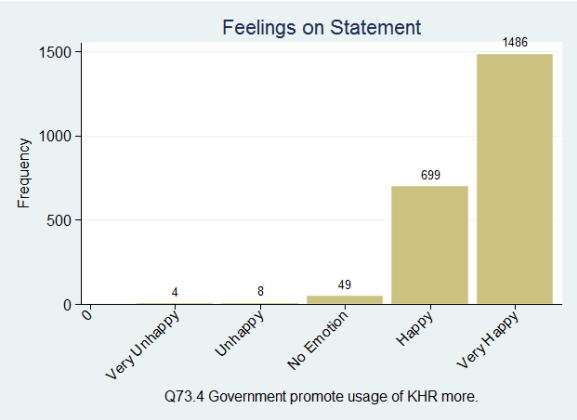
is observed in Central area with 2.7%. Therefore, there is a general consensus that the use of riels should be promoted by the government, and by implementing some regulatory requirements, such as currency of quotation and payment. However, there are still a very small group of people not so happy with the use of KHR for accounting the minimum wage (4.5% of households), and paying all business transactions in Cambodia (2% of households).

Figure 3.12 Feelings on Statements









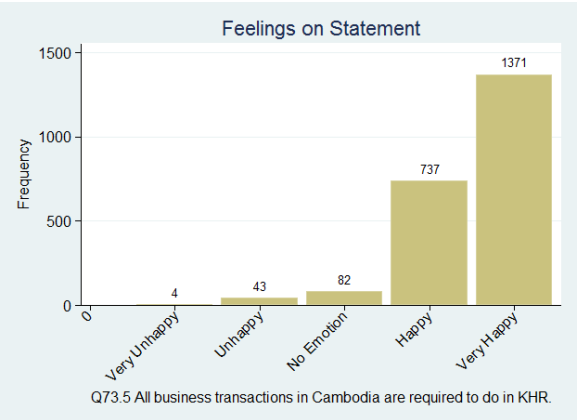


Table 3.7: Feelings on Statements by Area

Q73.1 All shops are required to put their prices in KHR								
	Refuse	Don't Know	Very Unhappy	Unhappy	No Emotion	Happy	Very Happy	Total
Phnom Penh	2	0	0	1	6	47	94	150
Siem Reap	1	0	0	1	5	44	69	120
North-East Area	0	0	2	8	11	81	138	240
North-West Area	2	0	0	1	7	82	128	220
Central Area	6	3	1	9	17	213	324	573
South-East Area	4	1	1	2	23	222	329	582
South-West Area	3	1	0	4	20	120	240	388
Total	18	5	4	26	89	809	1,322	2,273

Q73.2 All minimum wages are announced in KHR.								
	Refuse	Don't Know	Very Unhappy	Unhappy	No Emotion	Happy	Very Happy	Total
Phnom Penh	2	7	0	7	14	44	76	150
Siem Reap	1	0	0	6	19	49	45	120
North-East Area	0	14	2	6	18	82	118	240
North-West Area	2	7	1	4	26	81	99	220
Central Area	6	30	8	33	87	217	192	573
South-East Area	4	37	4	33	72	226	206	582
South-West Area	3	19	1	8	41	135	181	388
Total	18	114	16	97	277	834	917	2,273

Q73.3 KHR is going to be a preferred currency to use in Cambodia in the next five years.								
	Refuse	Don't Know	Very Unhappy	Unhappy	No Emotion	Happy	Very Happy	Total
Phnom Penh	2	3	0	0	1	43	101	150
Siem Reap	1	0	0	1	2	53	63	120
North-East Area	0	0	2	3	6	70	159	240
North-West Area	2	1	0	0	5	82	130	220
Central Area	6	20	2	9	38	239	259	573
South-East Area	4	10	0	8	24	227	309	582
South-West Area	3	5	0	3	14	103	260	388
Total	18	39	4	24	90	817	1,281	2,273

Q73.4 The government promote the usage of KHR more.								
	Refuse	Don't Know	Very Unhappy	Unhappy	No Emotion	Happy	Very Happy	Total
Phnom Penh	2	1	0	0	3	40	104	150
Siem Reap	1	0	0	1	1	53	64	120
North-East Area	0	0	2	1	8	67	162	240
North-West Area	2	0	0	0	1	77	140	220
Central Area	6	3	2	4	13	188	357	573
South-East Area	4	3	0	0	13	180	382	582
South-West Area	3	2	0	2	10	94	277	388
Total	18	9	4	8	49	699	1,486	2,273

Q73.5 All businesses transactions in Cambodia are required to do in KHR.								
	Refuse	Don't Know	Very Unhappy	Unhappy	No Emotion	Happy	Very Happy	Total
Phnom Penh	2	2	0	2	6	48	90	150
Siem Reap	1	0	0	2	7	42	68	120
North-East Area	0	0	3	5	6	73	153	240
North-West Area	2	0	0	3	10	77	128	220
Central Area	6	6	1	15	12	190	343	573
South-East Area	4	7	0	9	17	189	356	582
South-West Area	3	3	0	7	24	118	233	388
Total	18	18	4	43	82	737	1,371	2,273

5. Conclusions

Although there is a high level of dollarization throughout the country in terms of macro-aggregated figures, there has been little empirical study done on the behavior of households in Cambodia in relation to this situation. This chapter analyzed the real picture of households living in a multi-currency circulating environment, using survey-based data collected in 2014 and 2015 by a joint research project of JICA-RI and the National Bank of Cambodia. We analyzed the foreign/local currency usage of households from various angles: income, expenditures, savings, borrowings, usage of currency notes, money changing, and perceptions/opinions on these processes. Results were organized by area in order to capture regional differences in foreign currency usage. We found that, in the case of Cambodia: (1) wage/salary income is highly dollarized, compared to other source of income; (2) the level of dollarization of expenditure differs significantly by type of products or services, and is particularly high for large transactions, such as for the payment of house rents or furniture/appliances; and (3) there exist relatively wide mismatches in the currency composition of income/expenditures and income/borrowings.

From these findings we can draw some policy implications. The household sector turns out to be less dollarized than the enterprise sector in terms of foreign currency usage for its income/revenue, expenditure, or borrowings transactions. In this sense households hold, in general, positive perceptions with respect to policies or statements designed to promote the use of local currency. It may as a result be easier to start implementing promotion programs targeting household activities in this area. For example, reducing transaction costs associated with the use of KHR notes, particularly for high value transactions. In this sense increasing more bank account in KHR would encourage the payment of salary in KHR and the transaction by KHR. It would reduce cash holding and its associated risks as well as facilitate the use of KHR through different types of payment instruments. It could also address some complains about inconvenience of holding too much KHR to make their large payments. While it is necessary to examine these perceptions further, there may exist network externalities for the dollarization of financial transactions. Reducing network externality through raising cost for USD transactions, while reducing them for KHR, may facilitate pricing in KHR. Moreover, given the wide mismatch in currency composition of income/expenditures and income/borrowings, some households were not aware of the risks of exchange rate changes, or had concrete ideas on hedging strategies. It may be necessary to make some efforts to raise the awareness of risks associated with exchange rate fluctuations through financial literacy education. Such risk awareness of exchange rates will raise the preference for receiving wage/salaries in the local currency.

Before ending this Chapter, we would like to mention some limitations of the current data. We analyzed the currency choices of households in terms of income, expenditure, savings or loans. However, it is necessary to take into account the interests of their counterparts, such as sellers or lenders, that affect the outcome of currency choice. In this case, the wage/salary intentions of employers will impact on currency choice. When borrowing currency, lender intentions will also affect choices. In this regard, future studies should attempt to detangle the factors originated from the counterparts of households. The questionnaires for follow-up surveys on households should be designed so as to draw the intention of households directly, rather than the possible final outcomes of choice that we concentrated on.

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Chapte IV Dollarization and Enterprises'Behaviors

Daiju Aiba

Ranareth Tha

1. Introduction

Although Cambodia has been heavily dollarized for decades, the debate on dollarization has long relied on the measure of FX deposits over M2 or total deposits. However, it has been unclear to what extent enterprises are dependent on FX currency, or how much FX currency has prevailed in other industries. Since businesses often operate across provinces, enterprises are possibly significant drivers to spread FX currency widely throughout the country. The role of enterprises may be significant for the transmission of dollarization in Cambodia.

The primary objective of this chapter is to present the real picture of the dollarization of enterprises, using data from a survey carried out on 856 enterprises from 25 provinces from October 2014 to January 2015. We investigate different aspects of enterprises' operations, such as revenues, expenditures, price quotations, exchange rates, borrowing behaviors, and potential risks of currency mismatches in the firm's operations. Our analysis aims to facilitate discussion and provide policy implications for de-dollarization.

The operations of enterprises are more diversified even in developing economies, and their behaviors are complicated to explain. Meanwhile, in the previous literature of dollarization, several factors are found to have a significant effect on firms' behaviors in dollarized economies. In particular, hedging the risk of currency mismatch is one of the significant factors to drive enterprises to have foreign currency assets or borrowings (Brown et al., 2011; Mora et al., 2013). Currency mismatch can cause the decrease in the asset values of firms, and firms are supposed to minimize such risks in their operation. In addition, dollarization in revenues and expenditures of domestic firms (even non-exporting or importing firms) are also widespread even in provincial areas of Cambodia, apart from debt and assets. Therefore, we further focus on currency mismatches between the inflow and outflow in enterprises' operations. In this paper, we also assess how Cambodian enterprises manage to operate under the multiple-currency circulating environments.

The rest of this chapter is organized as follows: Section 2 describe the survey design for enterprises, and data. Section 3 presents the results of our analyses. Section 4 draws several policy implications and gives a conclusion.

2. Data Description

We carried out the survey on dollarization of enterprises from October 2014 to January 2015. In the survey, we collected data from a total of 856 enterprises from 25 provinces by interviewing managers of enterprises. We selected the sample at random from each stratum classified according to sizes and geographical distribution of enterprises, and in order to make strata, we followed actual enterprise distribution from the Economic Census 2011.[6] We defined the size classification based on the asset sizes of enterprises.[7] There are 204 large enterprises out of the 856 total sample, and 183, 251, and 218 medium-sized, small, and micro enterprises, respectively.[8]

[6] Data is available at the website of National Institute of Statistics. http://www.nis.gov.kh/index.php/en/

[7] As an available source, the Small and Medium Enterprise Development Framework 2005 proposed a workable SME definition in terms of employment and assets excluding land. However, in our survey, the definition of firm sizes is only based on asset size, for the sake of simplicity.

[8] Compared with the size distribution from the Economic Census 2011, our survey is slightly biased to the side of large enterprises, and to the side of enterprises in rural area. Therefore, when we interpret the results of analyses, it is worth noting that the whole sample is subject to the biases of such sample selection.

In the interview, managers were asked questions relating to (1) the financial condition, currency-wise, of enterprises at the end of 2013, (2) the currency choice in price quotations, (3) their own expectations of exchange rate changes, and (4) perceptions of behaviors of their competitors or government policy regarding currency usage.

Approximately 95 percent of the entire sample of enterprises were owned fully or mainly by Cambodian people. This result is in line with the Economic Census 2011 conducted by National Institute of Statistics. There were three industries that dominated more than 80 percent of the entire sample. The top industry in the sample was the wholesale and retail trade sector, with a 42 percent share of the entire sample. The second largest industry was the manufacturing sector, and the third largest was the accommodation and food service sector. The shares of the second and third largest industry in the sample were 21 percent and 20 percent, respectively. Table 4.9 highlights the sample sizes by areas. Because of the difference in the size of economic activities, the sample sizes varied across regions.

Due to space constraints, we have not provided here all the responses to our entire questionnaire and questions in detail. However, we highlight some of results to draw meaningful policy implications for strategies of de-dollarization in the next section.

Table 4.8: Numbers of Sample by Industries

Enterprise classification	Freq.	Percent
1 Agriculture, forestry and fishing	7	1%
2 Mining and quarrying	0	0%
3 Manufacturing	178	21%
4 Electricity, gas, steam and air conditioning supply	1	0%
5 Water supply; sewerage, waste management and remediation activities	4	0%
6 Construction	5	1%
7 Wholesale and retail trade; repair of motor vehicles and motorcycles	359	42%
8 Transportation and storage	10	1%
9 Accommodation and food service activities	170	20%
10 Information and communication	13	2%
11 Financial and insurance activities	1	0%
12 Real estate activities	5	1%
13 Professional, scientific and technical activities	9	1%
14 Administrative and support service activities	14	2%
15 Public administration and defence; compulsory social security	0	0%
16 Education	42	5%
17 Human health and social work activities	7	1%
18 Arts, entertainment and recreation	15	2%
33 Other service activities	16	2%
Total	856	100%

Table 4.9: Numbers of Sample by Areas

Area	Freq.	Percent
Phnom Penh	182	21%
Siem Reap	61	7%
North-West Area	64	7%
North-East Area	49	6%
Central Area	189	22%
South-West Area	136	16%
South-East Area	175	20%
Total	856	100%

3. Results of Survey

3.1. Currency usage in Operation

First, we investigated geographical differences in the dollarization of revenues and expenditures. We divided samples into seven regions, as we have done for households in Chapter III. We summarized the results in Figure 4.1. In Panel A and Panel C of Figure 4.1, we estimated the distribution of the usage of FX currency in revenues and expenditures by regions. We found that there were differences in the distribution of the ratio of FX currencies among regions. In Phnom Penh, Siem Reap, and the North-West Area, the distributions were biased to right-hand side, and most of samples were concentrated at the 90-100 percent interval. Those results mean that most firms in these areas reported their revenues mainly in USD. On the other hand, the distributions in other regions were thicker and flat, and the samples were clustered both near 0 percent and near 100 percent. This might suggest that samples in those regions were generated from the combination of two different distributions. In other words, there might be two types of enterprises: those mainly using KHR in their operation, and those mainly using FX currencies.

We also found that the distributions of the ratio of FX currencies in revenues and expenditures were similar to each other, except for in the Central Area, where the distribution was inclined to the right-hand side in revenues (which means that more firms are dollarized in revenues), while the distribution in expenditures is inclined to the left-hand side (indicating that firms are less dollarized in expenditures). Interestingly, there were huge variations in the usage of FX currencies even within regions, suggesting that there are possibly other factors involved driving firms to use FX currencies, apart from geographical factors.

Next, we estimated the average currency compositions of revenues and expenditures by regions. To do so, we calculated shares of each currency in revenues and expenditures within enterprises, and then calculated the average of shares of each currency in each region.[9] Panel B and Panel D in Figure 4.1 show the results. Overall, we found that enterprises on average had more FX currencies in their expenditures than revenues, and we observed the same result in every region. Next, there were differences in the extent of dollarization among regions: while we found that Phnom Penh, Siem Reap, and the North-West Area were dollarized more than 65 percent in both revenues and expenditures, in the Central Area, there was a gap between the currency composition of revenues and expenditures. Specifically, the expenditure sides of those regions were highly dollarized (56 percent), while the dollarization of the revenue sides was weak (35 percent). The North-East Area showed the relatively low extent of dollarization in both revenues and expenditures (31 and 41 percent, respectively).

Furthermore, we found that there were varieties of currencies used in operations aside from KHR and USD, particularly in the areas close to borders. In the North-East, North-West, and South-East Area, THB and VND were used in the operations as commonly as KHR and USD, though VND was less likely to be used in the expenditure side than in the revenue side.[10]

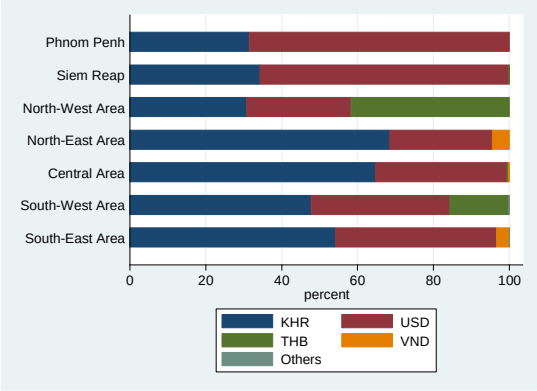
In Figure 4.2, we depicted the geographical distribution of dollarization in revenues and expenditures. We categorized the extent of dollarization into three levels, and used different colors for each level: (1) 0-33 percent, (2) 34-66 percent, and (3) 67-100 percent. We confirmed the same trend as is shown in Figure 4.1. In addition, we found that economically active areas such Phnom Penh, Banteay Meanchey, Sihanoukville, and Kep are heavily dollarized both in revenues and expenditures.

Figure 4.13: Usage of FX currencies by areas

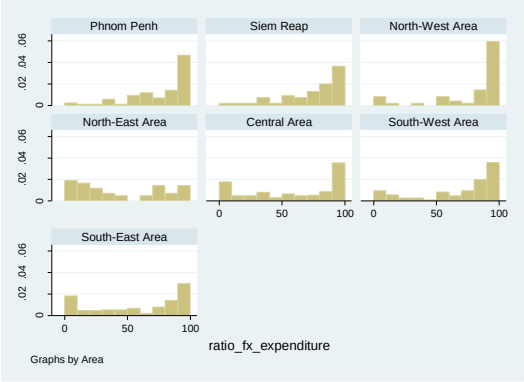
[9] In other words, we calculated the weighted average of shares of currency in total revenue and expenditures with total revenue and expenditures. Since the difference in asset size between large and small enterprises are large in our sample, simple aggregation represents merely behaviors of large enterprises. Therefore, we adapted weighted averages in this section. Apart from this method, we also calculated the aggregated amounts of revenue. This method rather focuses on large enterprises than small enterprises. The results are available on request.

Panel A: Ratio of FX currencies in revenues

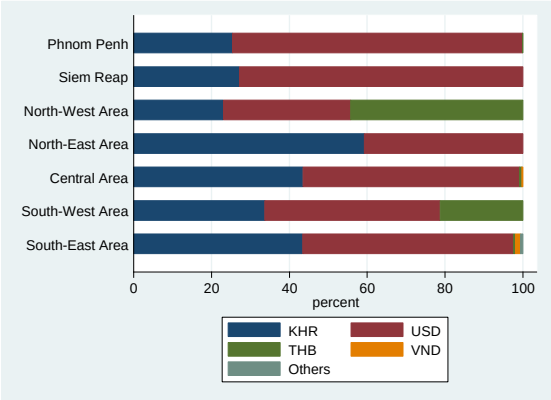
Panel B: Currency composition of revenues



Panel C: Ratio of FX currencies in expenditures



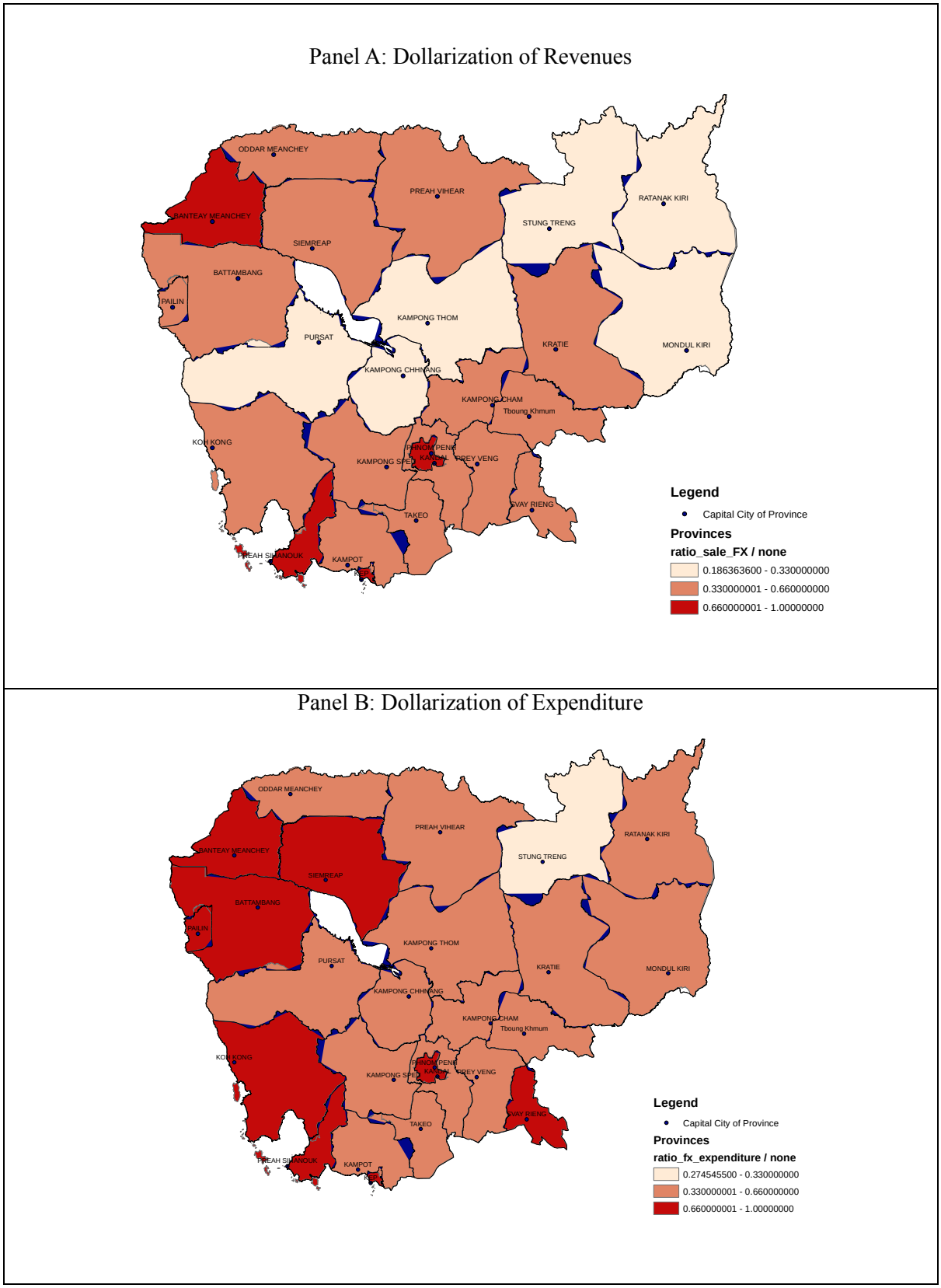
Panel D: Currency composition of expenditures



Panel E: Average of Shares of FX Currencies in Revenues and Expenditures

Area	Revenues	Expenditures
Phnom Penh	69%	75%
Siem Reap	66%	73%
North-West Area	69%	77%
North-East Area	31%	41%
Central Area	35%	56%
South-West Area	52%	66%
South-East Area	46%	57%

Figure 4.14: Geographical distribution of dollarization

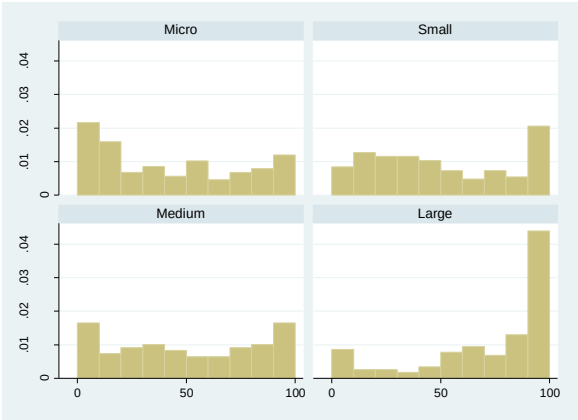


Next, to investigate the difference among enterprises of different sizes, we divided the sample into four categories by size: (1) large, (2) medium-sized, (3) small, and (4) micro enterprises. The results of the distribution of the ratio of FX currencies in revenues and expenditures, and average currency compositions of revenues and expenditures are shown in Figure 4.3. First, we found that, on the revenue side, a lot of enterprises were concentrated in the interval of 90-100 percent, while the distributions of other classes were thicker and flatter (Panel A). The currency composition of revenues of large enterprises was mostly dominated by FX currencies, particularly by USD. In addition, there was a clear trend showing the shares of FX currencies decreasing as the firm size becomes smaller (Panel B).

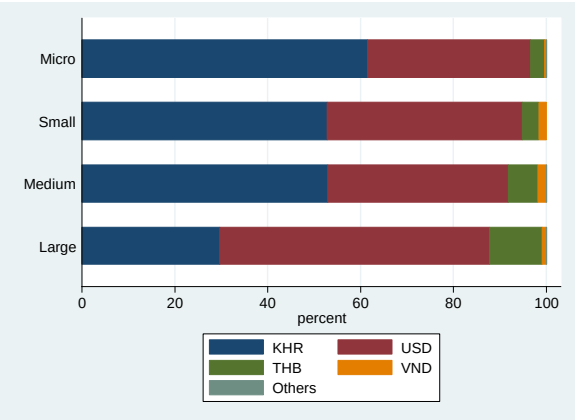
We found that there were differences in the usage of FX currencies between the revenue and expenditure sides. Compared to the revenue sides, the distributions in expenditures tended to be polarized to both the left- and right-hand sides in every size category (Panel A and Panel C of Figure 4.3). This might mean that enterprises tend to use one currency on the expenditure sides, while they receive multiple currencies on the revenue sides. In addition, in the case of small and micro enterprises, there were wide gaps between the currency compositions of revenues and expenditures. These firms had larger shares of FX currencies in the in the expenditure sides than revenue sides. (Panel B and Panel D). Those results might suggest that micro and small enterprises are likely to be more burdened by the risk of exchange rate changes than large- and medium-sized enterprises. In addition to regional differences, there were huge variations even within groups (Panel A and Panel C), suggesting that there were possibly important factors other than size which drive enterprises to use FX currencies.

Figure 4.15: Usage of FX currencies by size

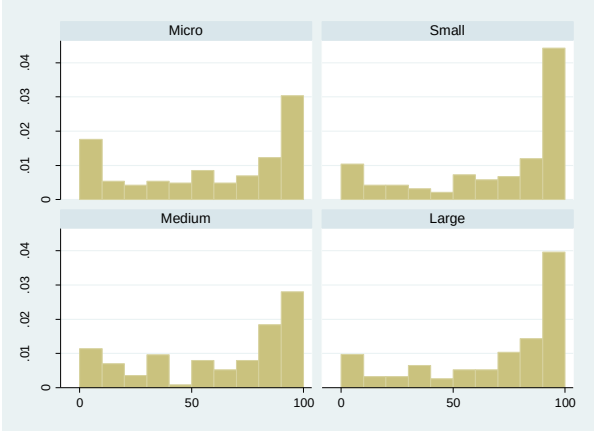
Panel A: Ratio of FX currencies in revenues



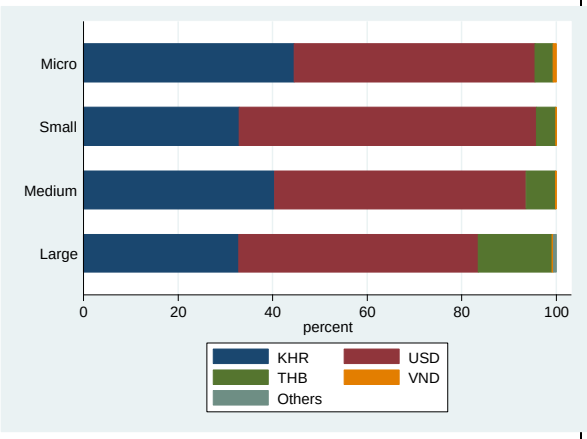
Panel B: Currency composition of revenues



Panel C: Ratio of FX currencies in expenditures



Panel D: Currency composition of expenditures



Panel E: Average of Shares of FX Currencies by Firm Sizes

	Revenues	Expenditures
Micro	39%	55%
Small	47%	67%
Medium	47%	60%
Large	70%	67%

It is expected that dollarization levels differ from one industry to another due to the differences in business connections and dependence on external funds. To investigate the differences across types of businesses, we divided the sample into 5 categories: (1) agriculture, (2) manufacturing, (3) wholesale and retail trade, (4) tourism, and (5) others.[11] In our sample, there were only seven enterprises categorized in the Agriculture sector. Thus, it is difficult to draw a statistically accurate inference about this sector. Therefore, we focus on the other four sectors.

In the manufacturing sector, if we take a look at the average currency compositions, there is no wide gap between revenues and expenditures, though in the revenue and expenditure sides, there were possibly two clusters in the distribution of the sector (Panel A and Panel C of Figure 4.4). This suggests that there are two different groups of manufacturing using FX currencies, with one group mainly using KHR currency, while another mostly uses USD currency.

In the wholesale and retail trade sector, the use of FX currencies differs between the revenue and expenditure sides. In the revenue side of the wholesale and retail trade sector, the distributions of the ratio of FX currencies was flat, while those on the expenditure side are concentrated on a right-hand side, especially in the interval of 90-100 percent (Panel A and Panel C of Figure 4.4). Furthermore, in this sector, the currency composition of revenues and expenditures are different from each other (Panel B and Panel D of Figure 4.4). In particular, although the dollarization of revenues is low (46 percent are in FX currencies), the expenditure sides are highly dollarized (71 percent are in FX currencies). The results indicate that the wholesale and retail trade sector needs to manage to convert KHR to USD in their operation. Presumably, the wholesale and retail trade sector in general purchases large amounts of goods at once, and sells them to many consumers. Therefore, they likely have a currency mismatch between revenues and expenditures.

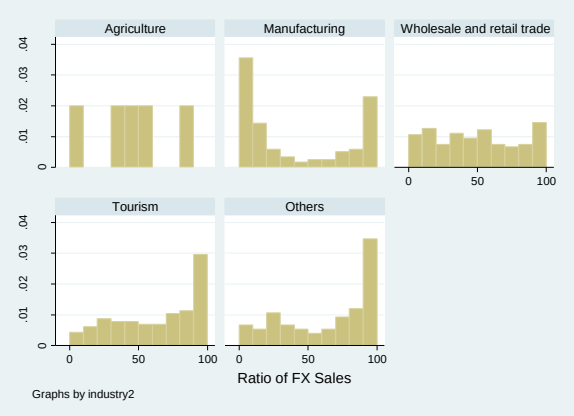
The tourism sector was highly dollarized both in revenues and expenditures, with the FX currency ratios were more than 50 percent on both sides. This might be because their main targets are foreigners, and they expend money on personnel in the currency they receive.

[11] According to the categories in Table, the agricultural sector includes (1) agriculture, forestry, and fishing sectors and (2) mining. The Manufacturing sector includes (3) manufacturing. The wholesale and retail sector includes (4) wholesale and retail trades. The tourism sector includes (5) transportation and storage and (6) accommodation and food service activities. Others includes all the other categories.

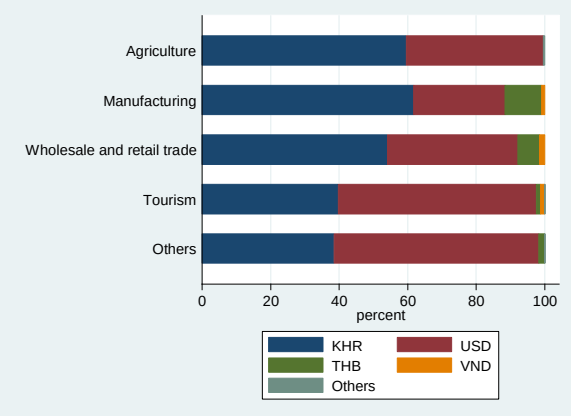
Figure 4.16: Usage of FX currencies by business types

Note: The sample size of each category is as follow: 7 for the agricultural sector, 178 for the manufacturing sector, 359 for wholesale and retail sector, 180 for tourism, 132 for others.

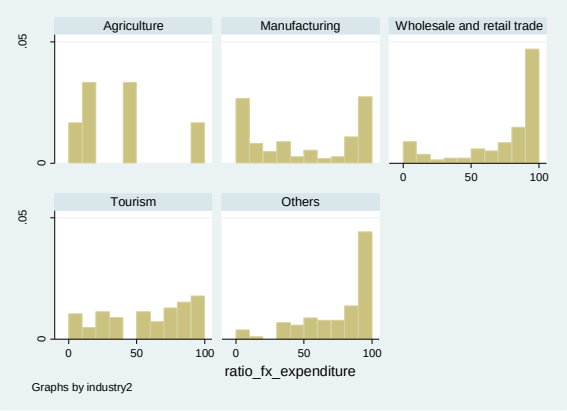
Panel A: Ratio of FX currencies in revenues



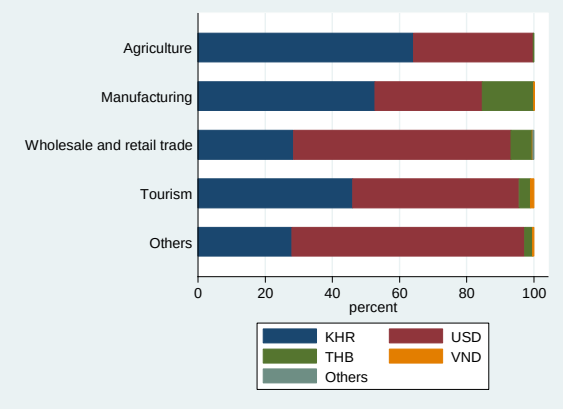
Panel B: Currency composition of revenues



Panel C: Ratio of FX currencies in expenditures



Panel D: Currency composition of expenditures



Panel E: Average of Shares of FX Currencies by Industries

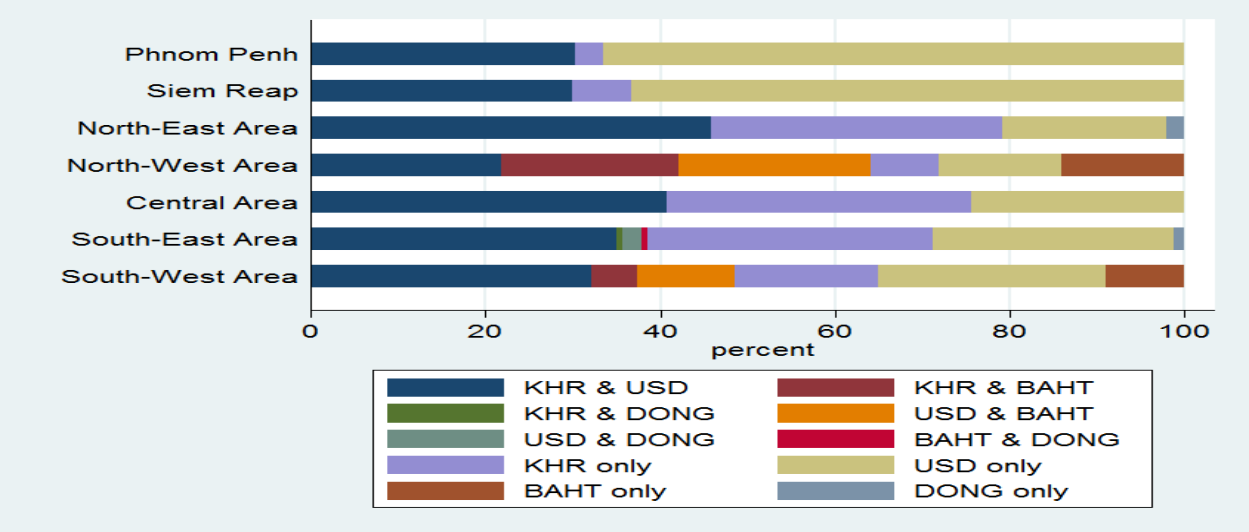
	Revenues	Expenditures
Agriculture	40%	36%
Manufacturing	38%	47%
Wholesale and retail	46%	71%
Tourism	60%	54%
Others	61%	72%

3.2. Price Quotation

Focusing on price setting, each currency has its own role based on geographical differentiation. Most entrepreneurs tend to set prices of their goods and services either only in USD, only in KHR, or in a mix of the two. Among the seven regions, we found that more enterprises located in Phnom Penh and Siem Reap set prices to sell their goods and services in one currency (USD), followed by those that

used a combination of KHR and USD, while the remaining small proportion used only KHR. The combination of KHR and THB was used by entrepreneurs in North-West and South-West Areas where cross-border trading with Thailand exists. It is noted that VND is rarely set for pricing, by only a very small portion of enterprises in the South-East Area. Additionally, KHR plays a very important role in terms of price setting in the Central, North-East, South-East and South-West Areas.

Figure 4.5: Ratios of Price Quotations in Each Currency



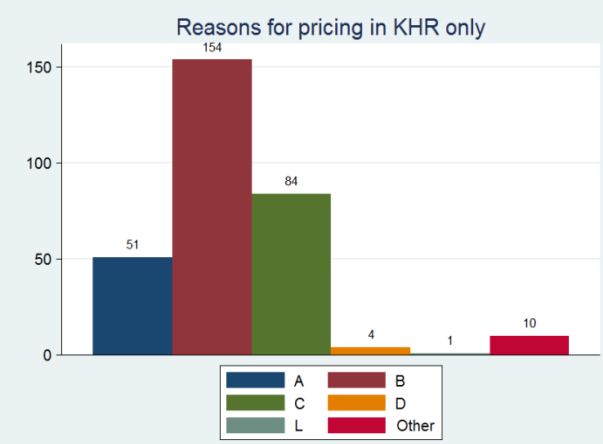
To promote price setting in KHR, it is helpful to make clear what factors are behind the price setting in FX and KHR. To do so, we identified the main reasons entrepreneurs set certain currencies for pricing, which are depicted in Figure 4.6. The main reasons enterprises price their products and services in a certain currency are their customers' compliance and convenience. Those enterprises that set prices only in KHR do so because most of their clients use KHR for payments, and it also seems easier for entrepreneurs to measure prices in KHR (Panel A). The main reason to set prices in a foreign currency is that it is easier for enterprises to measure prices, and also because they follow the currency used in the payment of input materials and workers' wages (Panel B). In addition, most enterprises that set prices both in FX and KHR currencies base their pricing decisions on what their customers want to use to pay (Panel C). From those findings above, we can conclude that pricing decisions are determined by both demand-side (customers) and supply-side (enterprises) factors. This means that a larger share of FX (KHR) currency in the currency composition of their expenditures makes them set prices in FX (KHR), while they are also following their clients' or customers' needs to pay in a certain currency. The mechanism behind price quotations seems complex, and accounting standards, modern side of products, and price comparisons are not really determinants of price quotations.

Although, there are several currencies used in price quotations, the majority of enterprises responded positively to a hypothetical mandate that the pricing of goods and services be conducted in KHR. This positive reaction to the question might be a good sign for the promotion of the use of local currency. There are three possible factors that enterprises would voluntarily change fees for goods and services to KHR: (1) the majority of competitors change their pricing to KHR, (2) more customers request KHR billing, and (3) stability of exchange rate.

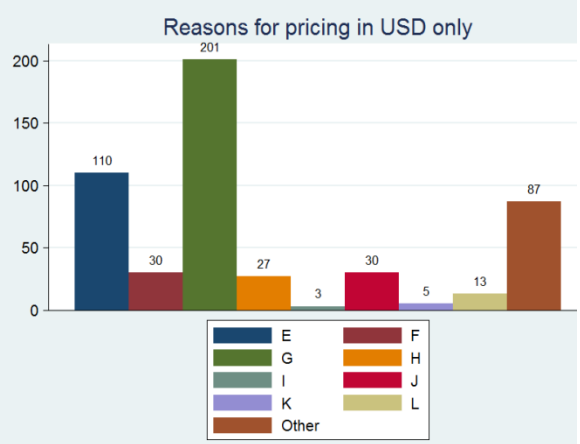
For those who set their prices in FX currencies, 75 percent of them also accept payment in KHR; out of these, 26 percent would receive the payment in KHR if they imposed their own exchange rate, while 49 percent of them would if the market exchange rate was used.

Figure 4.6: Reasons for Pricing the currency.

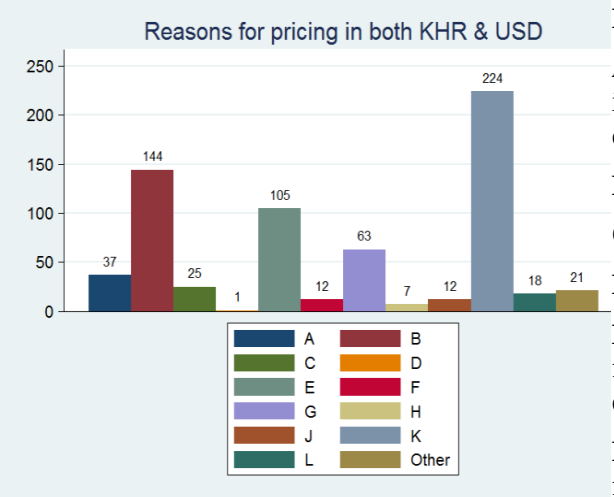
Panel A



Panel B



Panel C



Note:

A: Most of my purchasing of raw materials is in local currency therefore I price in a local currency

B: Most of my customers use the KHR

C: Easier to measure price in KHR

D: My accounting is in local currency

E: All my purchasing of raw materials is in a foreign currency therefore I price in a foreign currency

F: All products are exported and pricing in foreign currency is essential

G: Easier to measure prices in foreign currency

H: My accounting is in foreign currency

I: Price in foreign currency reflects modern side of the product

J: It protects clients/ buyers from foreign exchange loss

K: I use any currency (combination) based on what currency my customer want to pay in

L: It makes easy for clients to compare prices and help them to make decision faster

Others

3.3. Exchange rate

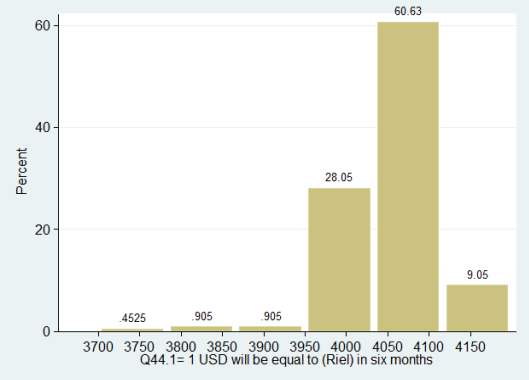
According to previous studies on enterprises' dollarization in other countries, risk-averse enterprises act to hedge the risks of exchange rate changes in their operation (Brown et al., 2011; Kamil, 2012; Mora et al., 2014). In our survey, we asked enterprises for their predictions of future exchange rate values in six months, in one year, and in five years. The results are presented in Figure 4.7. The majority of respondents (631 respondents) answered "Don't know" even to the question of exchange rates in six months, which possibly mean that only a small number of respondents understand exchange rate movement, and gave their predictions for future exchange rates. The minority who responded believe that the exchange rate would vary between 4000-4100 Riel/USD. To address this, NBC as a policy maker should strengthen its communications to the public regarding its exchange rate policy in addition to publicizing the daily official exchange rate.

More people answered "Don't know" to a question regarding the exchange rate between USD-THB, and the range of predicted values was huge across respondents compared to those for the USD-KHR exchange rate. This might reflect that usage of THB is not common and that enterprises do not care about the future exchange rate.

Figure 4.7: Perceptions on Exchange Rates

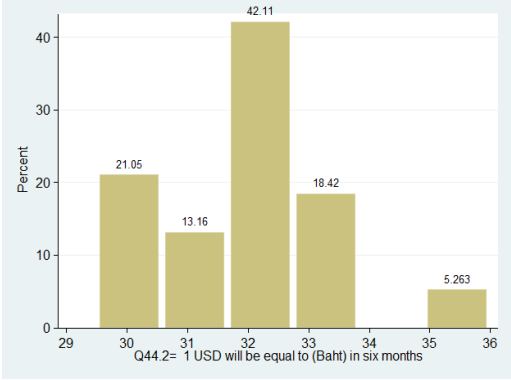
In six months

Panel A: USD/KHR



Note: 631 respondents answered "Don't Know," and 221 respondents provided their prediction.

Panel B: USD/THB

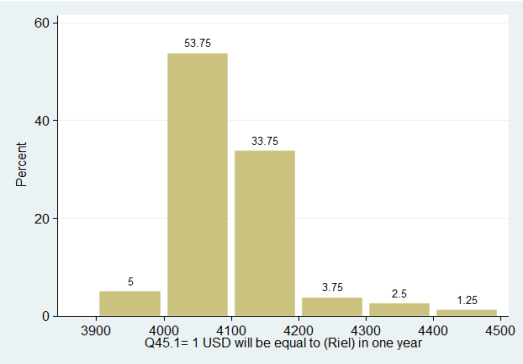


Note: 815 respondents answered "Don't Know," and 38 respondents provided their prediction.

In one year

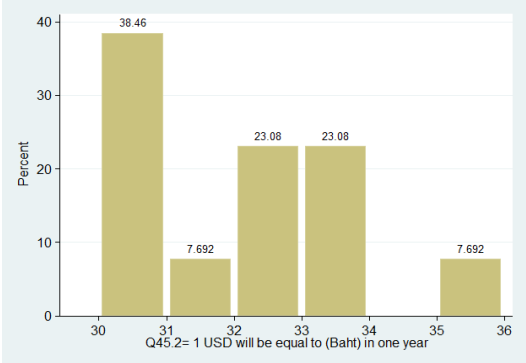
Panel C: USD/KHR

Panel D



Note: 772 respondents answered "Don't Know," and 180 respondents provided their prediction.

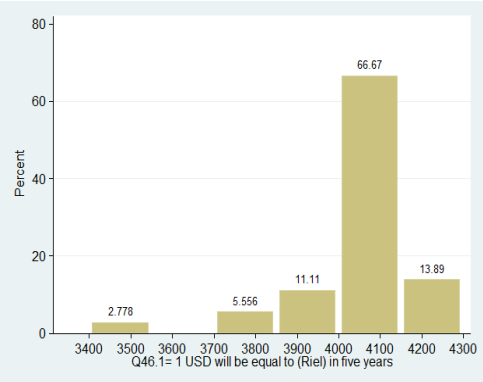
Panel D: USD/THB



Note: 839 respondents answered "Don't Know," and 14 respondents provided their prediction.

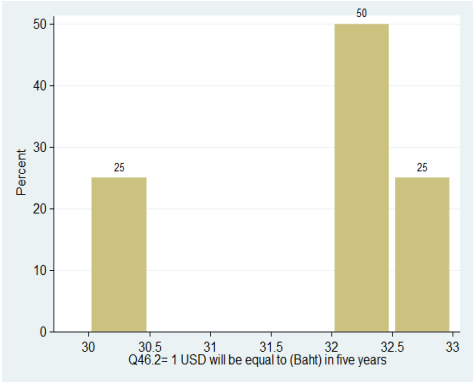
In five years

Panel E: USD/KHR



Note: 817 respondents answered "Don't Know," and 36 respondents provided their prediction.

Panel F: USD/THB



Note: 849 respondents answered "Don't Know," and 4 respondents provided their prediction.

3.4. Borrowing Behavior of Enterprises

We investigated the role of foreign currencies and local currency in the financing behaviors of enterprises. In the survey, managers of enterprises were interviewed about their outstanding loans. Specifically, they were asked about the interest rates, maturity, and initial amounts of their loans, the currency in which the loan was made, and who the lender is. The previous literature of dollarization has argued that firms with FX incomes, such as exporters, borrow FX loans in order to hedge the risk of exchange rate changes (Jeanee, 2000). Brown et al. (2011) and Mora et al. (2014) show empirical evidence that firms' FX currency borrowing can be explained by hedging purposes. In this section, we uncover how Cambodian enterprises have been managing to finance their operations and projects, and who borrows FX loans.

First, we look into incidence of borrowing by Cambodian enterprises. We found that out of 856 enterprises interviewed in the survey, 223 enterprises had a loan at the time the interviews were carried out. We found that some enterprises had more than one loan, and there was a total of 237 loans in our dataset. To assess what kinds of firms have access to loans, we focused on whether firms had loans or not. As we did in the previous section, we divided the sample into four sectors: (1) agriculture, (2) manufacturing, (3) wholesale and retail trade, (4) tourism, and (5) others. Table shows the frequency of firms having a loan by sector. We found that the manufacturing sector was more likely to finance their assets through the external finance, while the agricultural sector and the wholesale and retail trade sector also tend to borrow money. Comparisons of the incidences of loans held by large and small enterprises reveal no difference between large and small enterprises. Table shows the regional differences in whether or not enterprises had loans. Surprisingly, we found that enterprises in Phnom Penh were less dependent on loans than those in other regions. A possible explanation of this may be that since Phnom Penh is the most prosperous area, firms benefit from higher economic growth and are therefore likely to finance their business through internal funds, such as profits.[12] There might be another possible explanation. Since the survey seems not to capture trade credit as external finance, it is possible that enterprises in Phnom Penh borrowed from other firms as trade credit, and our results underestimate the debt dependency of firms. Because the institutional environment is better than other areas in Phnom Penh, then such better social capital, such as wide network of firms, better law enforcement, and higher business literacy, enables firms to rely on trade credits, and thus appear to be low dependency in Table 4.3.

Table 4.3 also shows the debt-to-asset ratio, shares of bank loans in total loans, and the average amount of loans per firm. It is noteworthy that shares of bank loans out of total loans were high (more than 50 percent) on the whole, even though the incidences of borrowing and debt-to-asset ratios were low. Furthermore, the shares of bank loans out of total debt seem different among types of firms: The manufacturing sector had the highest share of bank loans and exhibited the largest average amount of debts, while the wholesale and retail trade sector had the highest debt-to-assets ratio among industries. Firm sizes also might affect the dependence on external funds and access to bank loans. The results imply that smaller firms are likely to rely on other sources of funds than banks, and are less likely to access bank loans. Looking at regional differences, the debt-to-asset ratio of firms in Phnom Penh was high, while shares of bank loans were relatively low.

Table 4.4 shows the firm's currency choice in loans by lenders. Surprisingly, almost all loans were made in USD. In particular, loans from formal financial institutions, such as commercial banks and microfinance institutions were all in USD. Furthermore, we assessed which currency the Cambodian enterprises with loans were using in their operations using the question, "Which is the main currency in your operation?" and we summarized the result in Table. We found that 60 enterprises (about 27 percent of enterprises having loans) operated in KHR. This revealed that the Cambodian enterprises tended to borrow in a foreign currency despite some of them operating in the local currency. This result differed from those found by previous studies on firms' foreign currency borrowing. Largely, previous studies have found that firms tend to avoid currency mismatch by borrowing foreign currency loans only if a large part of their incomes or assets are also in the foreign currency (Gelo,

[12] Not sure where this footnote is?

2003; Allayannis et al., 2003; Aguiar, 2005; Brown et al., 2011; Mora et al., 2011; Kamil et al., 2012). Our results may suggest the possibility that enterprises are obliged to borrow in a foreign currency due to the lack of a developed financial market in the local currency, which in turn means that some Cambodian enterprises, particularly enterprises which use the local currency as the main currency in their operations, could be exposed to the risk of currency mismatch between the currency in operation and their loans.[13] The results may seem to indicate that lenders, particularly commercial banks, pass these risks of currency mismatch onto Cambodian enterprises.

Figure 4.8 shows the frequencies of answers to the question "For those who borrowed a foreign currency loan, why did you borrow money in a foreign currency/KHR? (Select only two)." Only firms which have borrowed money in the past three years were asked this question. In our dataset, out of total of 856 firms, 353 firms have borrowed an FX loan in the past 3 years, and 24 firms have borrowed a KHR loan in the same period. For foreign currency borrowing, the most frequent answer was "transaction I was involved in requires payment in a foreign currency," and similarly the most frequent answer for KHR borrowing was, "My transactions are in KHR." The results might indicate that firms seem to choose a currency for loans that matches the currency composition of their payments. Incidents of the answer "I don't want to risk exchange rate losses" were low, with only 5 answers for foreign currency borrowing and 2 for KHR borrowing. Therefore, it is likely that the Cambodian firms do not care about their exchange rate risks relating to the currency mismatch in their liabilities and income stream or assets. These results might be an indication that Cambodian firms were vulnerable to sudden changes in the exchange rate.

Table 4.3: Numbers/Percentages of Enterprises Having Access to Loans

	(1) Having loans	(2) All sample	(3) Percentages (=1/2)	(4) Debt/Assets	(5) Bank Loans/Debt	(6) Average Amounts of Debt
Industrial categories						
Agriculture	2	7	29%	40%	100%	40,000
Manufacturing	69	178	39%	24%	84%	331,201
Wholesale and retail trade	113	359	31%	41%	63%	34,499
Tourism	20	180	11%	29%	50%	26,763
Others	19	132	14%	21%	58%	76,167
Size crassifications						
Micro	48	218	22%	64%	46%	10,587
Small	75	251	30%	27%	63%	25,917
Medium	47	183	26%	19%	85%	59,597
Large	56	204	27%	22%	89%	486,906
Regions						
Phnom Penh	22	182	12%	55%	36%	81,927
Siem Reap	16	61	26%	37%	50%	36,738
North-West Area	20	64	31%	21%	71%	59,714
North-East Area	12	49	24%	39%	71%	29,571
Central Area	60	189	32%	19%	63%	35,427
South-West Area	41	136	30%	24%	80%	455,588
South-East Area	52	175	30%	52%	75%	90,167

[13] This situation could be harmful for economic development. The literature of currency mismatch suggests that investment rates, as a measure of firm performance, could deteriorate when the exchange rate is volatile (Carraza et al., 2003; Cowan, 2006).

Table 4.4: Choice of currency by lenders

	KHR	USD	Total
Commercial banks	0	172	172
Microfinance	0	19	19
Kinship Network	4	38	42
Informal Lenders	2	1	3
Others	0	1	1
Total	6	231	237

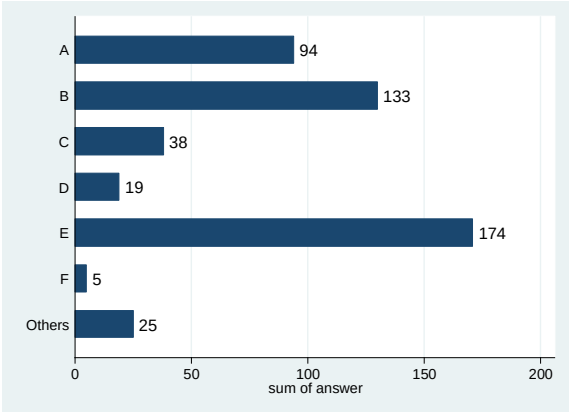
Table 4.5: Which currency does your company mainly use in operation?

	Frequency
KHR	60
USD	126
Other currencies	15
N.A.	21
Don't Know	1
Total	223

Figure 4.8: The reasons to choose the currency in borrowings.

Note: This figure shows the frequencies of answers to the question "For those who borrowed a foreign currency loan, why did you borrow money in a foreign currency/KHR? (Select only two)." Out of total of 856 firms, 353 firms have borrowed an FX loan in the past 3 years, and 24 firms have borrowed a KHR loan in the same period.

A: Foreign Currency Loans



A: It is easier to borrow large amounts

B: The purpose of my loan requires foreign currency

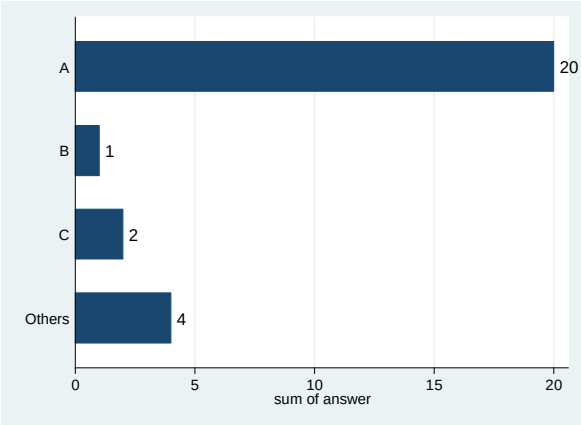
C: I cannot find a loan in KHR for the amount I need

D: The interest rate is better in foreign currency

E: The transactions I am involved in require payment in a foreign currency

F: Don't want to risk exchange rates losses

B: KHR Loans



A: My transactions are in KHR

B: The interest rate was better than USD

C: I won't risk exchange rate losses

3.5. Currency mismatch in operation

As seen earlier, Cambodian enterprises are likely to borrow in an FX currency even if their incomes are in KHR. This means that Cambodian enterprises with KHR income take risks relating to their balance sheets when borrowing.

In this section, we further assess the currency mismatch between inflows and outflows in enterprises' operations. Not only did Cambodian enterprises have income in an FX currency, but they also used an FX currency in their expenditures even in provincial areas. We assessed how Cambodian enterprises manage flows of their FX and KHR currencies in their operation, using the following measure that we constructed.

$$Surplus\ of\ FX\ currency_i\ (\%) = \frac{Sales\ in\ FX_i - Expenditure\ in\ FX_i}{Total\ Sales_i} * 100$$

where subscript i represents the individual enterprises. This measure shows the excess FX currency by subtracting the amount of expenditures in the FX currency from the amount of sales in the FX currency, and the measure is then normalized by total sales. This measure is supposed to capture the extent of the mismatch in currency composition between sales and expenditures. A result of zero indicates that the enterprise has no mismatch between their inflow and outflow of the FX currency, whereas a result greater than zero means that the enterprise has a surplus in the FX currency. Further, a result of less than zero means that the enterprise is short on the FX currency.

We summarized the results of currency mismatch in Figure 4.9. In Panel A, we plotted the ratio between revenues and expenditures of the FX currency, and the figure might suggest that many enterprises had mismatches in the currency composition of their revenues and expenditures. Furthermore, there were enterprises for which the currency compositions of revenues in operation were completely different from that of expenditures.

We further investigated the mismatches in FX currency usage using the measure above. In Panel B, Panel C, and Panel D, we divided the sample by regions, asset sizes, and industries, as we have done in earlier sections, and made histograms by groups to capture the differences among enterprises. In the calculation, we removed samples that took less than negative 100 percent since those enterprises which experience deficit in their operation, and those might be unlikely to operate rationally.[14]

In Phnom Penh and Siem Reap, both areas where tourism thrives, the distributions of the surplus of FX currency were largely located on the right-hand side (Panel B). On the other hand, in other areas, the distributions were thicker and show larger variance than those from Phnom Penh and Siem Reap, suggesting that enterprises are more likely to face currency mismatches in rural areas. In other words, inflows and outflows of FX currency might be unstable in rural areas.

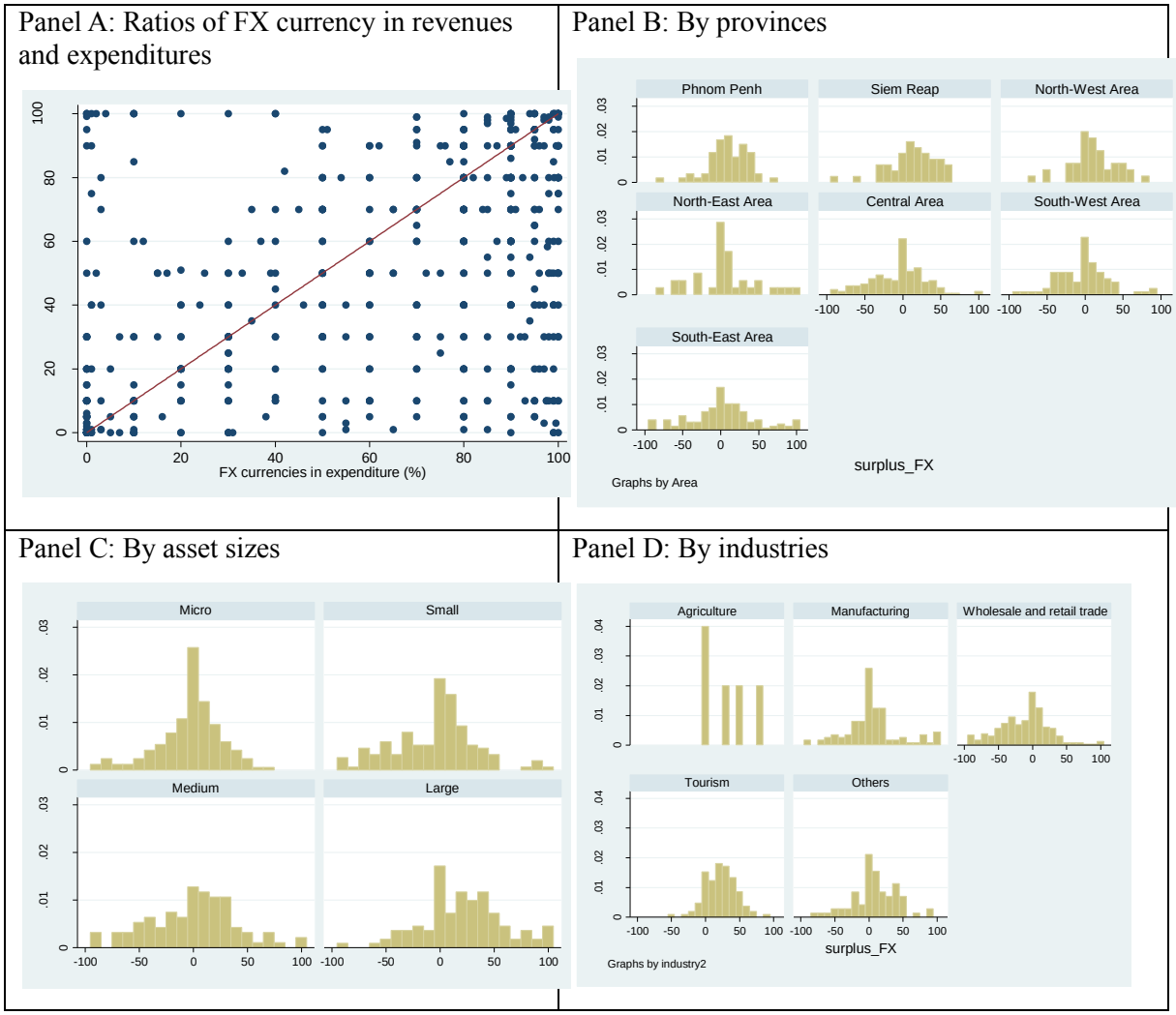
We also found that there were differences in the patterns of inflows and outflows of FX currency when enterprises were divided by asset sizes (Panel C). Compared to micro, small, and medium-sized enterprises, larger fragments of the distribution of large enterprises were located on right-hand side of graph, suggesting that large enterprises are likely to have a surplus of FX currency.

Finally, when dividing enterprises by industrial categories, we found clear differences in the distribution of surplus FX currency (Panel D). In particular, in the wholesale and retail trade sector, most enterprises showed negative values in the surplus of FX currency, meaning that the enterprises faced shortages of FX currency. This might be because the enterprises in the sector generally buy products in FX currency, sometimes from abroad and sell them at local markets in KHR.

[14] Six enterprises had less than -100 in our measure of surplus of FX currency.

Figure 4.9: Currency Mismatch in Operation

Note: In Panel B, Panel C, and Panel D, we divided sample by regions, asset sizes, and industries, as we did in earlier sections, and made histograms to capture the trend by each group. In histograms, we set the width of intervals at 10. In the calculation, we removed samples that took less than negative 100%.



4. Conclusion and Policy Implications

Although Cambodia has been heavily dollarized for decades, there has been no empirical analysis of Cambodian enterprises regarding dollarization. Our study first investigated the actual situation of enterprises in the multi-currency-circulating environments using survey-based data which was collected under the joint-project of JICA and NBC.

Although prior studies on dollarization mainly focused on FX currency in loans, in this chapter we analyzed FX currency usage of enterprises from various aspects: revenues, expenditures, price quotations, and debts. We also investigated those enterprises' conditions by regions, industries, and firm sizes. In addition to financial conditions, we further examined the perceptions of managers of enterprises regarding expectations of exchange rate changes, competitors' behaviors, and government policy relating to currency.

We found that, in the case of Cambodia, that (1) not only loans, but revenues, expenditures and price quotations are also highly dollarized. (2) The extents of dollarization vary across regions, firm size and industries. (3) Furthermore, there was a relatively wide gap in the currency composition of revenues and expenditures for enterprises operating in the central area, those of small sizes, or those

classified as the wholesale and retail trade sector. (4) Even though a lot of enterprises deal with multiple currencies in their operations, most of them do not recognize the risk of exchange rate changes and do not have hedging strategies.

Furthermore, we found that there are a lot of enterprises reporting more than 50 percent of their revenues and expenditures in FX currency, suggesting that enterprises used more FX in their operations than households.[15] Given that the financial system in Cambodia is still immature, the current financial dollarization has been possibly driven and widely spread by enterprises.

From the findings above, we can draw several important implications for policy making regarding de-dollarization in the enterprise sector. First, while most of transactions are in an FX currency in Phnom Penh, there are demands or wide usage of KHR currency in firms' operations in rural areas, and some firms in some areas are exposed to potential risks of currency mismatch. We found that a lot of firms had either a surplus or shortage of FX currency, meaning that they are required to convert currency to meet different currency compositions between revenues and expenditures. Furthermore, even firms that mainly used local currency borrowed FX loans from financial institutions. Accordingly, most Cambodian enterprises are likely to be exposed to potential risks of currency mismatches. Especially in the Central Area, enterprises of small sizes, or those classified as part of the wholesale and retail trade sector, potentially have a risk of exchange rate changes as part of their operations due to the mismatch in the currency composition between revenues and expenditures. This implies that they are likely to exchange money, especially KHR to USD in their operations. It could incur exchange rate risks on the operations of micro and small enterprises.

Second, there seem to be clear needs for local currency loans, especially bank loans. Even though most firms answered that they had only FX currency loans, some firms with FX loans were operating using the local currency as their main currency (as seen in 3.4). However, the local currency loans are currently not available in almost any commercial banks. Even though a few banks extend local currency loans for corporates, the loan provisions are inactive and rare. Thus, firms can't easily raise the large funds in local currency. Therefore, banks should be encouraged to make local currency options available and facilitate local currency loan provisions for those firms operating in local currency.

Third, governments should educate firms to recognize the risks of exchange rates. We also assessed how firms manage the risk of currency mismatch in their operations. Most firms do not seem to care about the currency mismatch risk in their operation (as shown in 3.3 and 3.4), probably because of long-lasting stable exchange rates. Since de-dollarization can more or less have a negative impact, such as an increase in currency mismatch risk, the firms lacking an awareness of exchange rate risk can be damaged during the process of de-dollarization. Thus, some measures, such as introducing hedging instruments, should be taken before implementing de-dollarization.

Our findings shed light on the strategies of de-dollarization in Cambodia. The de-dollarization process could possibly be accompanied by risks of exchange rate changes, which in turn could damage enterprises that do not prepare for risks. As dollarization has pros and cons for the Cambodian economy, de-dollarization might also have disadvantages. Governments should take steps to reduce the damages during the process. Our findings may provide insights into those sector and enterprises that are dollarized and thus face potential risks in dollarization or during the de-dollarization process.

However, there are limitations on our study. Since our data does not capture a sufficient number of sample of enterprises with local currency loans, we could not analyze behaviors related to currency choices for loans. Currency mismatch in assets and liabilities are one of the largest sources of risks and the purposes of risk-hedging against them might be a significant factor behind the currency choice in loans for enterprises. In our study, it is still unclear why Cambodian enterprises take out FX currency loans even though their revenues are in the local currency. To explore this, future study will explore the factors behind the currency choice of expenditures and loans. The next survey on enterprises should aim to develop analysis of the factors behind the FX borrowing and potential demand for local currency loans, with the design of the next survey reflecting the results of the first survey.

[15] See Chapter. III (Odajima & Khou) .

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Chapter V- Financial Dollarization: Evidence from a Survey on Branches of Commercial Banks and MDIs

Daiju Aiba

Pagna Sok

1. Introduction

Financial institutions, along with other economic agents such as households and enterprises, play a significant role in dollarization. Brown et al. (2014) investigated the loan-level data of a Bulgarian bank, and find that it is likely that foreign currency lending is a consequence of banks forcing firms to borrow in foreign currency, possibly due to an incentive to hedge against the risk of currency mismatch. Recent studies on banks' behaviors in foreign currency lending suggest that there might be heterogeneity in the banks' behavior, which comes from differences in funding sources or ownership structures (Brown et al., 2013). Furthermore, Brown et al. (2015) find that there are also regional differences in the extent of deposits and loan dollarization within a country, due to differences in regional inflation rates and other regional factors.

While several previous studies have investigated dollarization in the banking sector in Cambodia using those measures (Menon, 2008; Duma, 2011), no studies have been done on the behaviors of individual financial institutions in Cambodia, although banks' funding sources and target customers are different across types of financial institutions and banks' behaviors are different across institutional types.

In our study, we collected data from 15 main Cambodian financial institutions: 10 commercial banks (CBs) and 5 deposit-taking microfinance institutions (MDIs). In general, commercial banks emphasize profits and collect funds in the form of deposits, while MDIs collect funds by borrowing from other financial or non-financial institutions. In this paper, we investigate the currency compositions of banks' assets and liabilities, using financial data from banks' branches. In Cambodia, there have been no studies on foreign currency lending and deposits of financial institutions, even though Cambodia is one of the most dollarized economies. Because of this, we conducted a survey on headquarters and branches of 10 commercial banks and 5 microfinance institutions in 2014. In the survey, we collected information on currency compositions of balance sheets and income statements for both consolidated and branch-level disaggregated ones. Our study is the first study using individual bank and branch data to reveal how much banks lend in foreign currency and which factors may affect their behaviors in Cambodia.

In addition to the survey on financial data of CBs and MDIs, we also conducted a survey on the perceptions of bank managers through face-to-face interviews. In addition to the quantitative analysis on the bank behaviors, we attempt to investigate the reasons behind the banks' provisions of local and FX currencies using qualitative analysis.

As a result, we found that there were differences in the currency composition of loans and deposits among types of financial institutions and among regions. (1) We found that CBs rely much more on FX currency in their operations than MFIs. (2) However, the shares of local currency in deposits have been stable from the period of 2009 to 2013, despite recent rapid growths in the amounts of total deposits. (2) We found that financial institutions were likely to allocate excess funds (deposit amounts minus loan amounts) to branches that were short of funds. However, commercial banks did not allocate KHR funds, although they had large excesses of KHR funds in Phnom Penh. (3) In rural areas, shares of FX currency in loans and deposits were lower than Phnom Penh, although there were indications that shares of FX currency of loans have been increasing in rural areas during the period of study. (5) Shares of FX currency in MFI deposits have decreased in both rural and urban areas. This might be because recent improvements in financial inclusion have allowed people in rural areas, who are mainly using KHR in their daily transaction, to have access to bank deposits. Furthermore, (6) from

the perception survey, we found the possibility that financial institutions pass the exchange rate risks onto their borrowers. We believe that these findings are helpful for policy-making toward de-dollarization in Cambodia and other countries which experience the same situations.

In the rest of our paper is structured as follows. We present the review of literature of dollarization in Cambodia, and briefly describe the institutional details of the Cambodian banking sector in the second and third sections, respecitvely. We show the data description used for analysis in the fourth section, and the results of our empirical analysis in the fifth section. In the sixth section, we draw policy implication and conclude.

2. Literature Review on Dollarization in Financial Systems

Some previous research has argued that hedging behaviors in currency mismatch and profit maximizing would be factors driving foreign currency lending in dollarized economy. Basso et al. (2010) examine aggregate credit dollarization for 24 transition countries over the period of 2000–2006. They find that countries in which banks have a higher share of foreign funding display a higher share of FX loans, meaning that dollarization could be the consequence of banks' adjustments of the currency composition between their assets and liabilities. Similarly, using cross-country data, Lucas and Petrova (2008) found that sources of fund in term of deposit dollarization can impact foreign currency lending, while the foreign liability of banks has no relation to FX lending

Some previous studies find evidence that there is heterogeneity in banks' behaviors in foreign currency lending. In particular, the extent of foreign currency lending by banks seems to be dependent on banks ownership and accessibility of foreign borrowing. De Haas and Naaborg (2006) and De Haas and Van Lelyveld (2006, 2010) show that parent bank funding, typically denominated in FX currency, influences the credit growth of foreign subsidiaries. To the extent that subsidiaries do not swap these funds into local currency, access to parent bank funding may have a positive impact on FX lending. Degryse et al. (2011) provide evidence that FX lending in Poland is related to bank ownership, by examining individual Polish banks during the period from 1996–2006. They find that green-field foreign-owned banks provide more FX loans than domestic banks or foreign-owned banks. Brown and Da Haas's (2013) study on foreign banks and foreign currency lending in emerging Europe using bank-level data from 2001 to 2004, consisted of 95 foreign-owned banks and 98 domestic banks in 20 transition economies of Eastern Europe. They find that banks with more foreign currency shares in deposits tend to extend loans in foreign currency, regardless of the ownership structure.

In addition to the heterogeneity in banks' behaviors, Brown et al. (2015) suggest that there are regional differences in the extent of dollarization within a country. They employed data of aggregated amounts of deposits and loans by regions in Russia, and find that the regional inflation rates affect the extent of regional dollarization, as suggested by the theoretical argument by Ize and Levy-Yatagi (2003).

Currency choice in loans is bilateral. Both the lender and borrower sides possibly affect the choice. Using the loan application and granted loan data of one Bulgarian bank, Brown et al. (2014) investigate whether the supply side or demand side determine the currency choice in loans. The authors showed that banks' decision rather affects the choice of currency in corporate loans, since it is less risky and can mitigate the currency mismatch in bank asset and liability.

Even though Cambodia is one of the most dollarized economies, research on dollarization in the country is very limited, and there are no micro-level studies on financial institutions (Zamaroczy and Sa, 2002; Duma, 2011; Siregar and Chan, 2014). Zamaroczy and Sa (2002) empirically estimated the level of dollarization in the Cambodian economy using macro-level data. Duma (2011) did research on the cause and impact of Cambodian dollarization using macro data. She pointed out that despite macroeconomic and political stability, the level of dollarization keeps rising and surpasses the riel. She explained that there are two types of economy in Cambodia: the urban economy that is mostly dollar-based and has benefited a lot from the garment sector, tourism, FDI, and aid; and the rural economy that depends on agriculture and is riel-based. However, how banks' behaviors affect dollarization in Cambodia is still unclear.

Since Cambodia started to transform from a planned economy to a market-oriented one, a lot of foreign funds have flowed into the Cambodian banking sector in a variety of forms. Therefore, there may exist many types of financial institutions in terms of funding structures. Thus, bank behavior might be different from bank to bank. Furthermore, the low level of infrastructure development, especially for transportation, lead to the low integrity of regional markets. Therefore, it is likely that the dollarization could be different from region to region in Cambodia. Apart from the regional factors, the difference in branch network structures may also affect the extent of dollarization in bank deposits. In our study, we employ different types of data compared to the literature, namely branch-level financial statements of commercial banks and MFIs. We believe that our study provides useful facts to understand dollarization in the banking sector.

3. Trends and the Current Situation of the Cambodian Banking Sector

We briefly describe the institutional background of the Cambodian banking sector, and recent changes in the structure of their assets and liabilities. The Cambodian financial sector is composed of three financial institutions: commercial banks (CBs), specialized banks (SBs), and microfinance institutions. As of 2013, CBs had about 90 percent and MFIs had 10 percent of total assets in banking sector, while SBs had less than 1 percent. In particular, microfinance institutions can be divided into two entities: deposit-taking MFIs (MDIs) and non-deposit-taking MFIs (MFIs). More than 90 percent of total assets of the microfinance sector are owned by MDIs.[16]

Figure 5.1 shows the recent trends in the structure of assets and liabilities for CBs and MDIs. Overall, MDIs have experienced significant changes in the composition of their liabilities from 2006 to 2013. The figures also suggest that the trends are different between CBs and MDIs. As is the case in other developing countries, deposits dominate the majority of funding sources for CBs, while borrowings are more important funding sources for MDIs. However, in recent years, deposits as percentages of total liabilities have been increasing in MDIs, suggesting that MDIs have transformed to a sustainability-oriented entities, with more emphasis on commercial funding sources such as deposits.

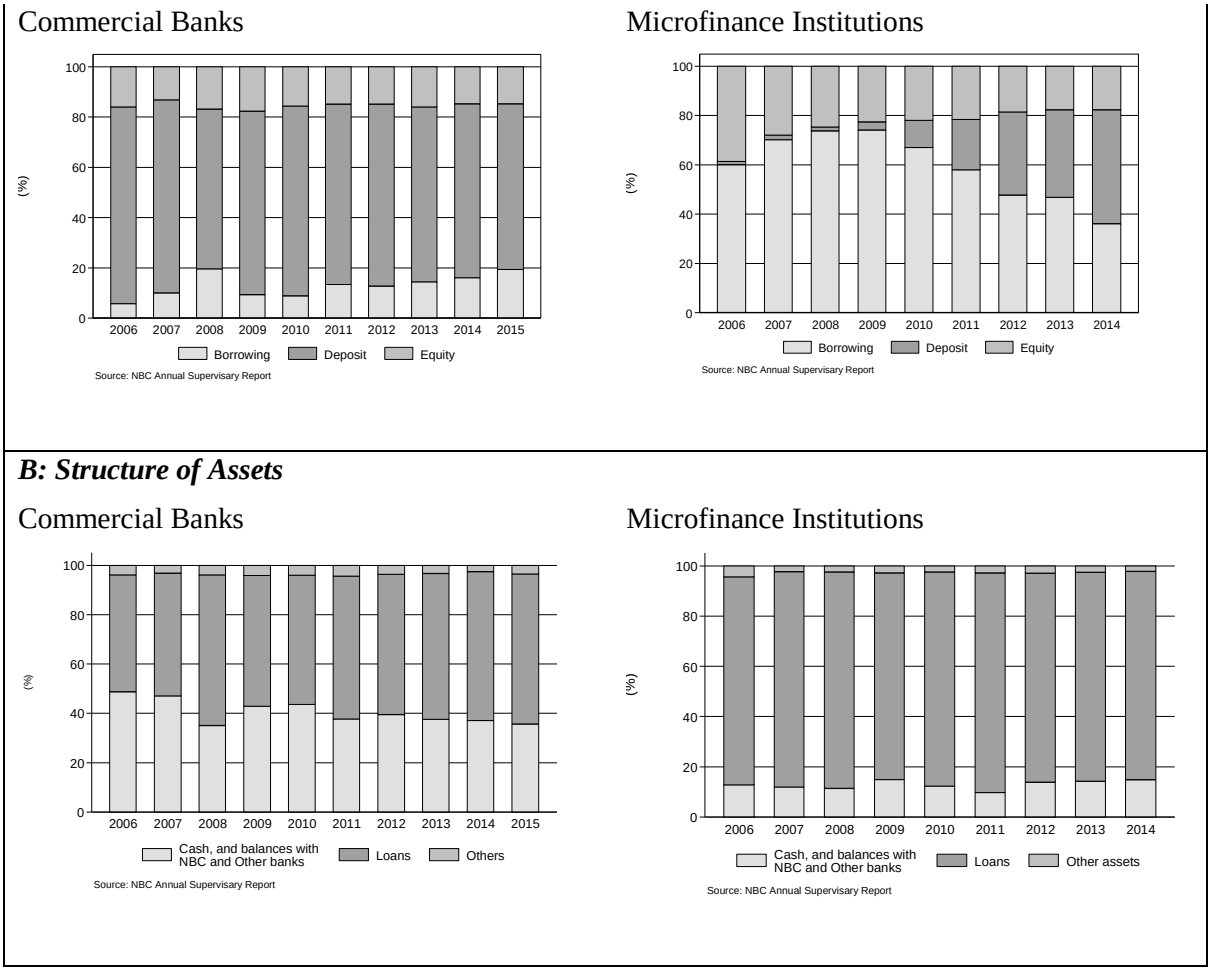
In addition, there are differences in the composition of assets between CBs and MDIs. CBs have high liquidity in their asset sides, which fluctuates from 35 to 50 percent over the period studied, while MDIs consistently keep liquidity assets of less than 20 percent over the period. Compared to MDIs, CBs are risk-averse and tend to keep massive liquidity in their assets. There are a lot of possible causes for this high liquidity in CBs, such as the absence of deposit insurance. However, it might also be because dollarization incurs additional risks on the operation of banks, as Deléchat et al. (2012) show through cross-country evidence. Since the lenders of last resort are unlikely to work under the dollarized economy, banks have to prepare for the entirety of liquidity shocks on their own. In addition, the low liquidity of MDIs might imply that MDIs are likely to take a risk when extending loans, as their goals are rather to extend loans to the poor, who are typically risky borrowers for banks because of large information asymmetry.

Previous studies have argued that the recent dollarization in Cambodia is not explained by currency substitution, since local currency deposits have been growing at the same pace as foreign currency deposits (Menon, 2008; Duma, 2011; Khou, 2012). This is currently still the case. The amounts and year-on-year growth rates of aggregated bank deposits by currencies are shown in Figure 5.2. Panel C reveals that the local currency deposits have been increasing rapidly along with foreign currency deposits, although the growth rates of local currency deposits are much more volatile than foreign currency deposits. Therefore, the current expansion of dollarization is not the consequence of distrust in the local currency, but is instead caused by the massive inflow of foreign currency.

Figure 5.17: Recent Trends in Structures of Assets and Liabilities

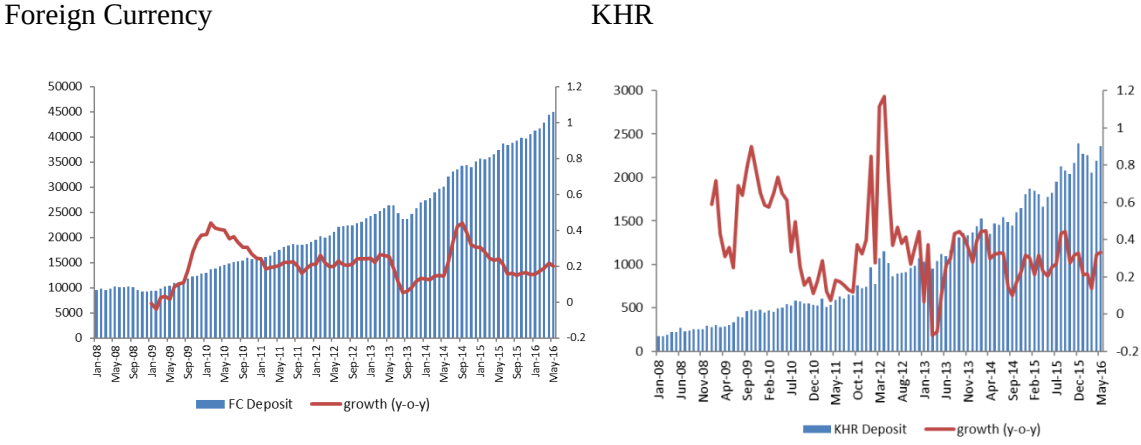
A: Structure of funding source

[16] In this chapter, we only examine MDIs.



Source: Data provided by National Bank of Cambodia, and Authors' calculation.

Figure 5.2: Amounts and Growth of Deposits by Currencies



Source: Data provided by National Bank of Cambodia, and Authors' calculation.

4. Survey Design and Data Description

To understand the behavior of economic agents (banks and MDIs) in a dollarized market, we conducted a survey to collect financial statements both at the bank- and MDI-levels and at the branch-

level in selected commercial banks and MDIs. We conducted a survey of 10 commercial banks and 5 microfinance deposit-taking institutions in April, 2015. Since it was difficult to collect data from all extant banks and MDIs in Cambodia due to the limitations on our resources for the survey, we selected the top 10 commercial banks and 5 MDIs in terms of both asset sizes and the number of branches. The managers of banks filled out and submitted two types of data entry formats: (1) consolidated financial statements, and (2) branch-level financial statements from the period from 2009 to 2013. Both types of data cover information of currencies in most of items of income statements and balance sheets.[17]

In addition to examining financial statements, we also conducted face-to-face interviews to ask about the perceptions of bank managers relating to actual usages and perspectives of local and foreign currency in their banks.

4.1. Consolidate Balance sheet

We collected the consolidated financial statements from 10 CBs and 5 MDIs. However, some banks did not provide us with consolidated financial statements. Eventually, there were statements from 7 CBs and 4 MDIs from 2009 to 2013 available to analyze their behaviors in FX currency lending and collecting FX currency deposits. We present the final sample used for our analysis in Table 5. 10.

Table 5. 10: Final Sample of consolidated financial statements

Name	Period of observations
ACLEDA Bank Plc	2009-2013
ANZ Royal Bank (Cambodia) Ltd	2009-2013
Advanced Bank of Asia Limited	N.A.
Bank for Investment and Development of	2009-2013
Cambodia Public Bank	N.A.
Canadia Bank Plc	2009-2013
Foreign Trade Bank	2009-2013
Maybank (Cambodia) Plc	2009-2013
RHB Indochina Bank Limited	N.A.
Union Commercial Bank Plc	2009-2013
Amret	N.A.
AMK Microfinance Institution Plc	2009-2013
HATHA KAKSEKAR Limited	2009-2013
PRASAC Microfinance Institution	2009-2013
SATHAPANA Limited	2009-2013

4.2. Branch-level Balance sheet

In addition to the consolidated financial statements at the bank- and MDI-levels, we also collected branch-level financial statements from branches of banks. We prepared the same format for all financial institutions surveyed in our project, and asked the same 15 banks and MDIs to fill out our branch-level financial statements. Although some banks provided us data of all of their branches, others only provided us with data from selected branches because of data availability.[18] We found that there were some errors in reported branch-level financial statements, possibly because the forms of financial statements used in their operations are different from a bank to a bank. To analyze the banks' behaviors in lending and collecting deposits at the branch level, we selected samples that correctly reported at least the amounts of loans and deposits.

[17] The entry form of bank- and branch-level financial data used in the survey is available upon request.

[18] Some of banks categorize their branch network into several levels, and aggregated branch-level financial records for branches below a certain level.

There are several cautions relating to sample selection biases. Firstly, we lack headquarters' financial statement, since headquarters only reported the consolidated financial statements at the bank-level. Secondly, we excluded several banks due to frequent errors and missing values. For example, since there were a lot of errors and missing values in the loan and deposit data of Canadia bank, we excluded Canadia bank. Likewise, we excluded ABA from our analysis of loan currencies since only 2 percent of ABA branches reported the currency composition of loans.[19] Since UCB only provided us with data for the consolidated financial statements of all branches, we also excluded UCB. Thirdly, we excluded some branches that reported no loans or no deposits. Table 5.11 shows the final sample which we used in the analysis of bank loans, and Table 5.12 shows the final samples for deposits.[20] Finally, since we did not collect the financial statements from all branches, the results of branch-level analyses could be different from the results of analysis on the consolidated financial statements. However, we expect that the branch-level analysis will not produce huge differences, since we collected a large sample of branch-level financial statements.

Table 5.11: Sample size for Analysis on Loans

Note: This table shows the number of branches of each bank used in analysis during the period from 2009-2013. Since there were a lot of errors in loan and deposit data from Canadia bank, we excluded Canadia bank. Since UCB only provided us with data from the headquarters, we also excluded UCB. Because some banks did not provide headquarters' data, we only included branches.

	Phnom Penh	Siem Reap	North-West Area	North-East Area	Central Area	South-West Area	South-East Area	Total
ACLEDA	64	24	22	15	91	41	70	327
ABA	0	5	0	0	5	5	0	15
BIDC	0	4	0	0	3	0	0	7
Campu	45	5	5	0	10	13	9	87
FTB	5	2	0	0	0	4	0	11
Maybank	37	5	1	0	3	7	0	53
RHB	21	4	0	0	4	6	0	35
AMK	9	5	15	20	31	16	25	121
AMRET	12	5	3	1	59	9	53	142
HKT	10	14	23	3	42	19	36	147
PRASAC	12	8	20	16	61	36	57	210
SATHAPANA	13	10	5	7	53	17	30	135
Total	228	91	94	62	362	173	280	1,290

Table 5.12: Sample size for Analysis on Deposits

Note: This table shows the number of branches of each bank used in analysis during the period from 2009-2013. Since there were a lot of errors in loan and deposit data from Canadia bank, we excluded Canadia bank. Since UCB only provided us with data from the headquarters, we also excluded UBC. Because some banks did not provide headquarters' data, we only included branches.

[19] We retained ABA in the analysis on loans.

[20] The sample sizes are shown by regions. In the analysis section, we investigate the regional difference of dollarization, and we divided the sample by regions. For the sake of simplicity, we categorized samples into 7 regions according to the geographical characteristics and types of main economic activities.

	Phnom Penh	Siem Reap	North-west Area	North-East Area	Central Area	South-West Area	South-East Area	Total
ACLEDA	64	24	22	15	91	41	70	327
ABA	0	5	0	0	5	5	0	15
BIDC	0	4	0	0	0	0	0	4
Campu	46	5	5	0	10	13	9	88
FTB	5	0	0	0	0	4	0	9
Maybank	41	5	1	0	3	9	0	59
RHB	25	4	0	0	4	8	0	41
AMK	10	5	15	20	31	16	25	122
AMRET	12	5	3	1	59	9	53	142
HKT	10	14	23	3	42	19	36	147
PRASAC	13	8	20	16	64	36	57	214
SATHAPANA	13	10	5	7	53	17	29	134
Total	239	89	94	62	362	177	279	1,302

4.3. Perception Questions to Bank Managers

We also conducted face-to-face interviews with bank managers from 575 branches in 2015. Table 5.4 shows the number of interviews we conducted by financial institution. The perception survey was separately conducted, apart from the survey on financial statements, and branches are not necessarily the same as the sample of surveys of financial statements. We employed enumerators to interview the bank managers of each branch, and asked them about their perceptions of the currency usage of their customers and their branches. The interviews were also conducted in provincial areas, as shown in Table 5.5.

Table 5.4: Sample size for analysis on perceptions of bank managers

Bank Name	Freq.	Percent
ACLEDA	193	34%
ABA	20	3%
ANZ	17	3%
BIDC	3	1%
Campu	25	4%
Canadia	50	9%
FTB	6	1%
Maybank	17	3%
RHB	10	2%
UCB	5	1%
AMK	50	9%
AMRET	42	7%
PRASAC	66	11%
HKT	37	6%
SATHAPANA	34	6%
Total	575	

Table 5.5: Sample size by areas

Area	Freq.	Percent
Phnom Penh	118	21%
Siem Reap	34	6%
North-West Area	42	7%
North-East Area	27	5%
Central Area	159	28%
South-West Area	74	13%
South-East Area	121	21%
Total	575	

5. Empirical Analysis

5.1. Trend of dollarization by types of financial institutions

First of all, using the consolidated financial statement by banks, we investigate the currency used in total loans, deposits, and borrowings by types of financial institutions. Figure 5.3 shows the amounts of loans, deposits, and borrowings by currencies. On the whole, we found that growth rates of deposits, loans, and borrowings were high both for CBs and MFIs during the time period. More specifically, we found that growth in loans, deposits, and borrowings were higher in MFIs than CBs, showing the recent flourishing of the Cambodian MDI sector. Meanwhile, the total amount of loans and deposits is still much higher in CBs than in MDIs. In CBs, the growth of loans and deposits was higher in FX currency than in local currency.

Figure shows the currency composition of assets and liabilities. In addition to loans, deposits, and borrowings, we collected information on cash holdings and balances in other banks by currencies. On the whole, we found that MDIs have more KHR currency in their balance sheets than CBs do. For example, MDIs keep around 20 percent of total loans, deposits, and borrowings denominated in KHR as of 2013, while CBs kept less than 10 percent in KHR.

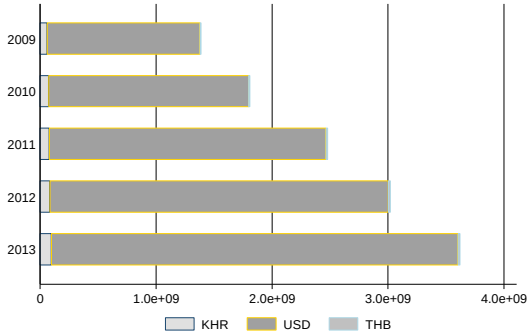
We also found that shares of FX currency in MDI loans have been increasing over the period, suggesting that MDIs have shifted toward providing more FX currency loans and away from providing local currency loans over the period. Presumably, this could be the consequence of commercialization in MDIs. Specifically, MDIs might start to provide FX currency to make more profits.

In line with the figure illustrated by aggregated data in section 3, despite the recent rapid growth in deposits, KHR deposits as a share of total deposits have been stable both in CBs and MDIs. As we discussed earlier, this suggests that demands for local currency deposits have also increased at the same rate as FX currency deposits have in this period.

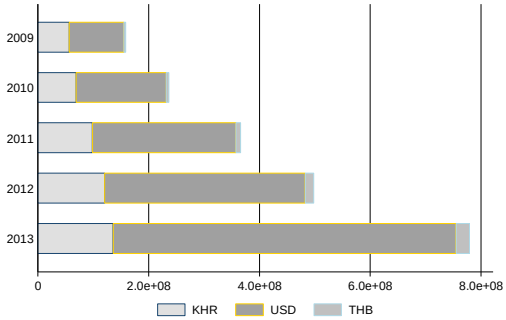
However, shares of FX currency in loans from MDIs fell from around 40 percent in 2009 to 20 percent in 2013, reaching almost the same level as shares of FX currency in deposits and borrowings. It can be interpreted that MDIs changed their attitude toward the risk of currency mismatch on their balance sheets, and as a result started to decrease the risks by matching the composition of loans to those of deposits and borrowings.

Figure 5.3: Changes in Currency Compositions and Amounts of Loans, Deposits, and Borrowings

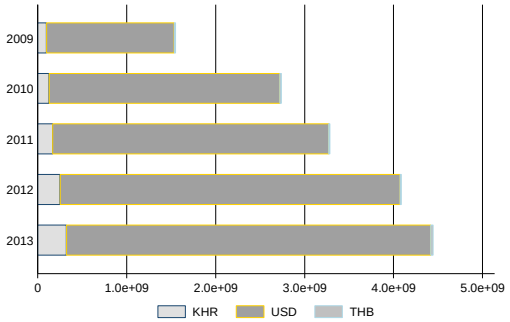
Panel A: Aggregated Amounts of Loans (CBs)



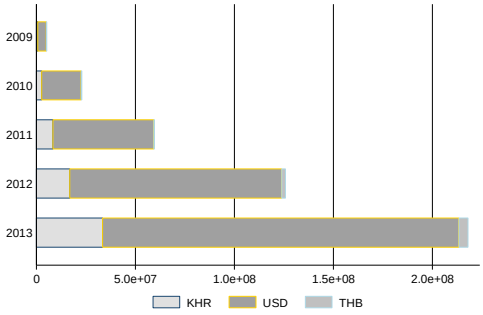
Panel B: Aggregated Amounts of Loans (MFIs)



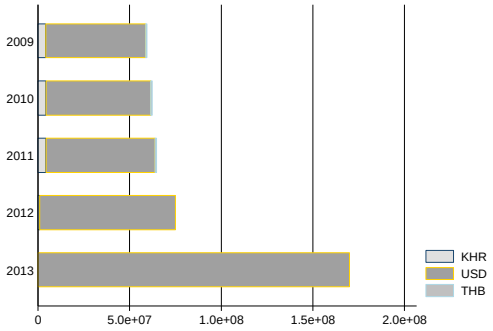
Panel B: Aggregated Amounts of Deposits (CBs)



Panel B: Aggregated Amounts of Deposits (MFIs)



Panel A: Aggregated Amounts of Borrowings (CBs)



Panel B: Aggregated Amounts of Borrowings (MFIs)

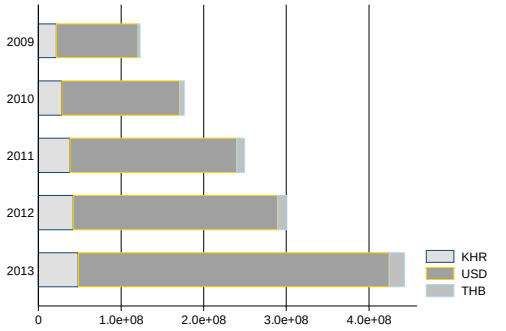
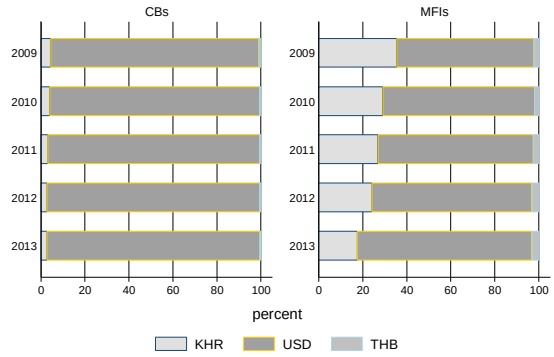
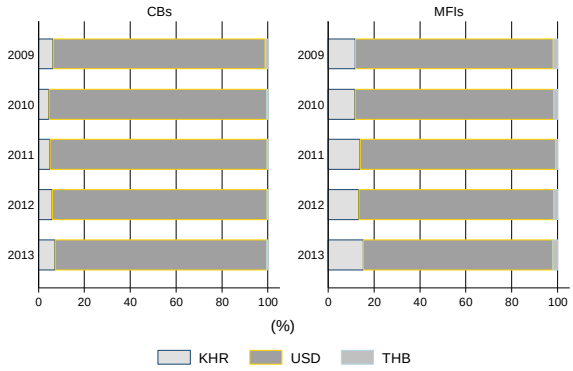


Figure 5.4: Currency Compositions of Assets and Liabilities

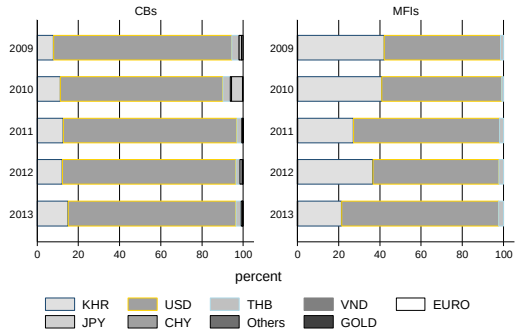
Loans



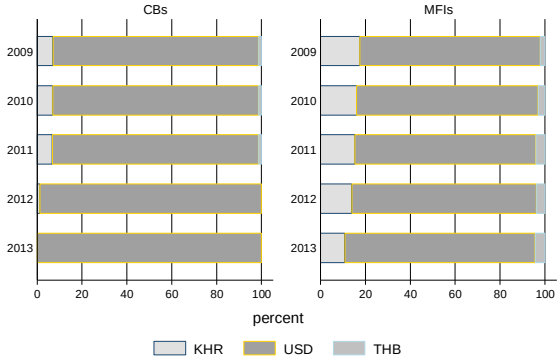
Deposits



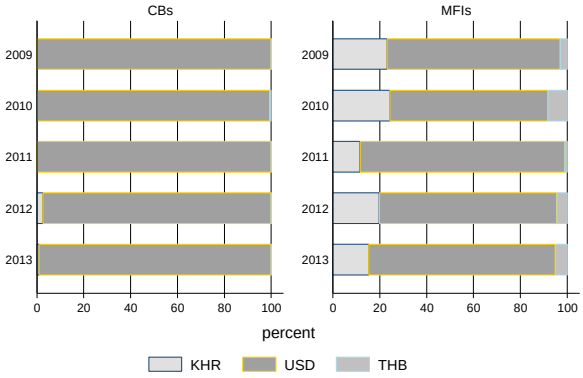
Cash Holdings



Borrowings



Balances in Other Banks



5.2. Branch-level Analysis on Financial Dollarization

5.2.1. Regional Differences and Bank Behaviors in Deposits and Loans

In this section, we analyze branch-level financial data to investigate the regional differences in the dollarization of banks' and MDIs' deposits and loans. As argued by Duma (2011), there may be differences in industrial structures between urban and rural areas. The urban economy is expected to be US dollar-based; a lot of companies make profits from services relating to tourism, and there are massive capital inflows through foreign direct investments and aid. Furthermore, the garments sector flourishes in urban areas, contributing through exports to the recent rapid growth. On the other hand, the rural areas, where the agricultural sector largely contributes to the regional growth, are expected to

be a riel-based economy. Accordingly, there are possibly differences in the extent of dollarization between urban and rural areas.

First of all, it is useful to show the general trend of lending and deposits. Recent empirical studies found that nation-wide banks are likely to reallocate the funds over the country (Morgan et al., 2004; Imai and Takarabe, 2011; Cremer et al., 2011). We investigated how the Cambodian banks reallocate funds over the country. In , we present the average of total amounts of loans and deposits per branch by regions. To investigate the regional difference in dollarization, we divided sample into seven regions: (1) Phnom Penh, (2) Siem Reap, (3) North-East Area, (4) North-West Area, (5) Central Area, (6) South-West Area, and (7) South-East Area.

Interestingly, we found that there was a clear tendency in fund allocations in both CBs and MDIs. We found that, in urban areas, the amounts of loans were smaller than those of deposits, while the opposite was true in rural areas. For example, the amounts of loans were smaller than that of deposits in Phnom Penh, while amounts of loans were larger than those of deposits in other areas. Although the difference in amounts between deposits and loans in the Phnom Penh area does not completely compensate for the total difference in other rural areas, the difference is due to the exclusion of the headquarters' financial data from the analysis. It suggests that banks collect funds mostly in urban areas, where wealthier people more likely live, and banks mobilize the rest of funds to rural areas, where firms are mostly small- and medium-sized and face shortages of funds. It may also imply that the investment opportunity is currently higher in rural areas than urban areas in Cambodia. Furthermore, it is noteworthy that the results seem specific to the Cambodian banking sector, compared to other neighboring countries. For example, in the Philippines, the financial institutions tend to collect funds in rural areas and extend loans mainly in urban areas, due to the low business opportunities in rural areas.

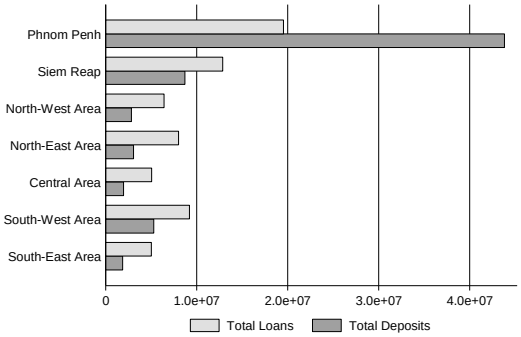
Next, we looked into trends of loan provision and deposits by currencies. Panel C and Panel D of Figure 5.4 represent the amounts of loans and deposits per branch in each region by KHR and FX currencies. We found that distributions of USD loans and deposits per branch show the same trends as those of gross loans and deposits, while the distributions of KHR loans and deposits per branch show different results. This is particularly true for CBs, which collect KHR deposits in Phnom Penh, but don't allocate excess KHR funds to rural areas. Furthermore, in some areas, the amounts of KHR loans are less than the amounts of KHR deposits, and even though the amounts of KHR loans in other areas exceed the amounts of KHR deposits, the differences are small. The results suggest that CBs are not active in providing KHR loans, and they do not internally allocate the excess KHR funds to rural areas. In the meantime, the amounts of KHR loans from MDIs are more than amounts of KHR deposits, and the difference between the amounts of loans and deposits are large. Thus, the results suggest that MDIs actively collect KHR funds in developed areas, and allocate those funds to rural areas.

Figure 5.4: Trends of Loans and Deposits

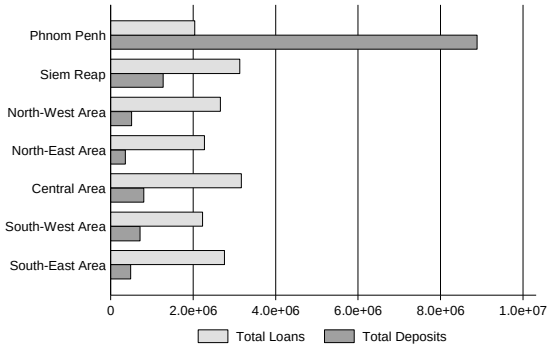
Note: figures show the average amounts of loans and deposits per branches by regions, as of 2013. We calculated the averages by types of financial institutions: CBs and MDIs.

Amounts of Loans and Deposits by Areas

A: Commercial Banks (CBs)

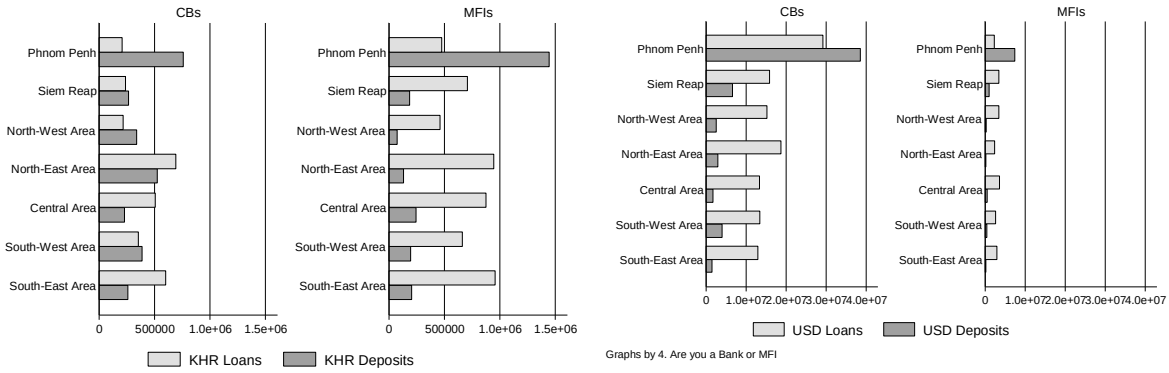


B: Microfinance Deposit-taking Institutions (MDIs)



C: Amounts of KHR Loans and KHR Deposits

D: Amounts of USD Loans and USD Deposits

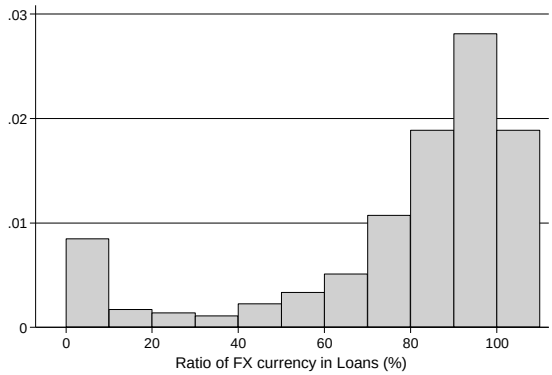


Next, we investigate the distribution of shares of FX currency in deposits and loans by areas (Figure 5.5). We find that the distributions of FX currency shares are biased and concentrated on 100 percent both in deposits and loans, suggesting that most branches mainly deal with FX currencies rather than the local currency (Panel A and Panel B). However, it can be observed that the distribution of FX currency shares in loans also concentrated around 0 percent, suggesting that some branches extended loans largely in the local currency (Panel A), while it cannot be observed in deposits. Therefore, even though the Cambodian banking sector is highly dollarized when looking at the aggregated measure, such as the ratio of FCD to M2 and the ratio of FCD to total deposits, some branches of Cambodian banks mainly extend local currency loans. The difference in the shape of distribution between loans and deposits might be explained by the fact that in the rural areas most of MDIs aims to extend loans rather than collect deposits. In other words, MDIs as well as CBs tend to collect deposits in urban areas.

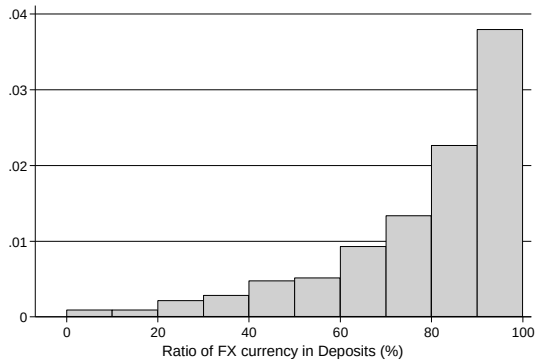
In Panel C and Panel D, we further investigated the geographical differences in deposit and loan dollarization by regions. We divided the sample into seven regions according to geographical location and main economic activities. We find that there were differences in the shape of distributions between regions. Although statistical significance is not clear here, the distributions of the FX currency share both in loans and deposits in the Phnom Penh area seems to concentrate around 100 percent, while in the other areas the distributions are more flat both in deposits and loans, and there is also the concentration around 0 percent. The results might imply that there are high riel demands in rural areas relative to the Phnom Penh area.

Figure 5.5: Distributions of Ratio of FX currency in Loans and Deposits

A: Distribution of Ratio of FX currency in Loans

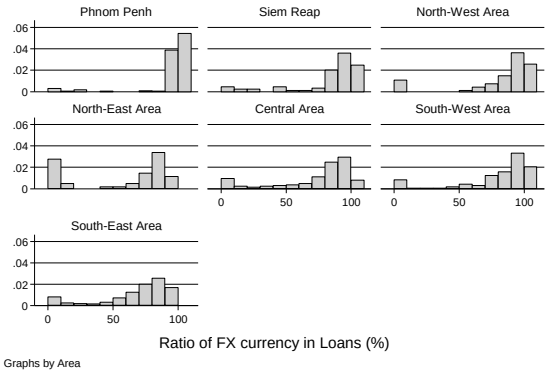


B: Distribution of Ratio of FX currency in Deposits

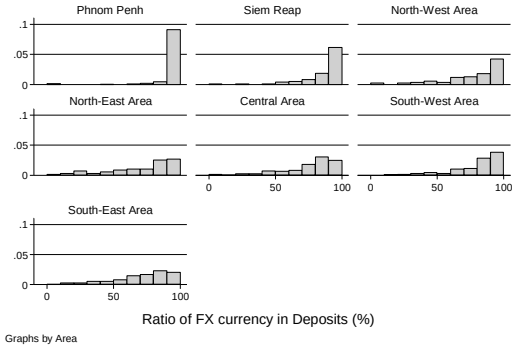


By geographical divisions

C: Loans



D: Deposits



In Figure 5.6, we present the historical changes in regional dollarization in deposits and loans between 2010 and 2013 by types of banks. The small circles represent the ratios of FX currency in total deposits per branch in 2010, and the head of the arrows represent those in 2013. We find that the recent changes in the shares of FX currency in deposits and loans differed between CBs and MDIs, especially on the deposit side. For CBs, shares of FX currency in both deposits and loans have increased from 2010 to 2013. It might suggest that, for CBs, dollarization in deposits and loans have constantly increased both in rural and urban areas. In the meantime, for MDIs, shares of FX currency in deposits have decreased, while those of loans have steadily increased as loan shares of CBs did.

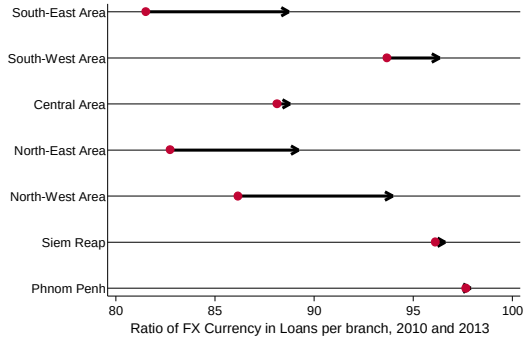
The results depicted in Figure 5.6 may reflect the recent commercialization of MDIs. As was discussed in an earlier section, in recent years MDIs started to collect deposits from the public, and have developed a nationwide network in Cambodia. Therefore, increases in financial inclusion might facilitate local currency deposits in rural areas. In other words, people in rural areas, who did not have access to bank deposits due to their geographic distance from banks, might in recent years have gained access to bank deposits.

However, the shares of FX currency in MDIs' loans have increased except for in Phnom Penh. This might suggest that commercialization has a negative impact on local currency loans, in contrast to deposits. The dollarization of deposits has increased its share of total MDIs' deposits as we have already seen, even though local currency loans by MDIs have increased in rural areas. Finally, the Cambodian financial institutions may reallocate excess funds from urban areas to rural areas.

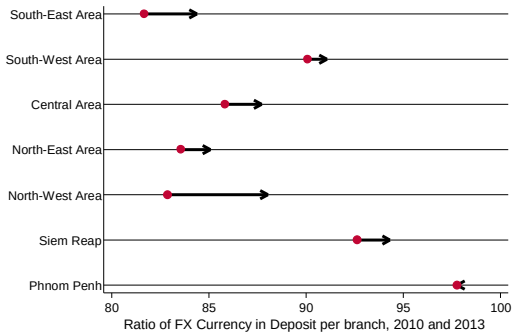
Figure 5.6: Trend of Dollarization in 2010 and 2013

Note: Figures below show the changes in shares of FX currency between 2010 and 2013. The small circles represent the ratios of FX currency in total deposits per branch in 2010, and the heads of arrows represent those in 2013.

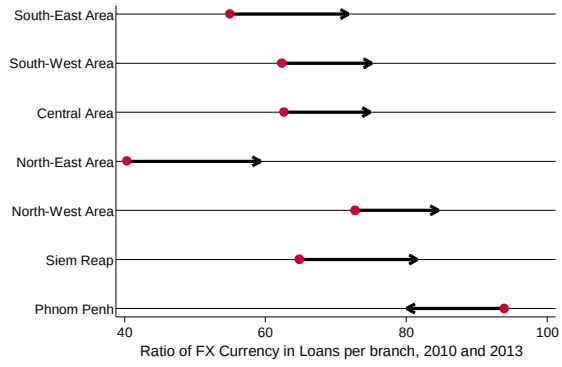
A: Average Ratio of FX currency in Loans (CBs)



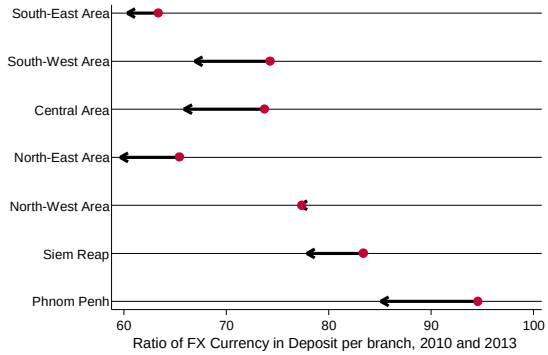
B: Average Ratio of FX currency in Deposits (CBs)



C: Average Ratio of FX currency in Loans (MFIs)



D: Average Ratio of FX currency in Deposits (MFIs)



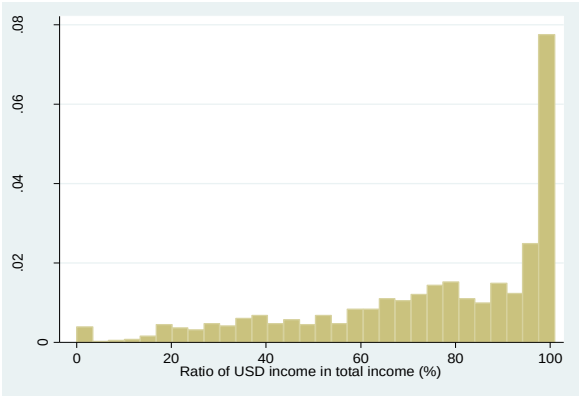
5.2.2. Currency Compositions of Revenues and Expenditures

We investigated the currency composition of revenues and expenditures using branch-level income statements from CBs and MDIs. Although currency compositions of interest incomes are proportionate to the currency composition of loans, revenues of banks include non-interest income, such as commission fees and profits from exchange rate business. Expenditures also include the personnel or other operational costs, apart from interest expenses on deposits. Therefore, the currency usage of revenues and expenditures could show different figures from what was revealed by the balance sheet data. In Figure 5.7, we present a ratio of FX currency generated on the income statement.

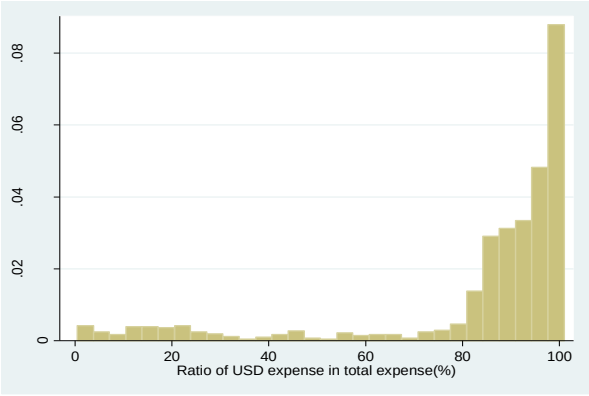
Figure 5.7 shows the distributions of ratios of FX currency in revenues and expenditures of branches in the observed period from 2009 to 2013. In panel A of Figure 5.7, the distributions of ratios of FX income concentrated at 100 percent, in line with the results of analysis on balance sheets. Probably because they generate more income in FX currency, they also expend more in FX. The distributions of ratios of FX expenditures concentrated on the right-hand side, reflecting that they spent mostly in FX currency.

Figure 5.7: Distribution of ratio of FX currency in income

A: Distribution of Ratio of FX in Income



B: Distribution of Ratio of USD in Expense

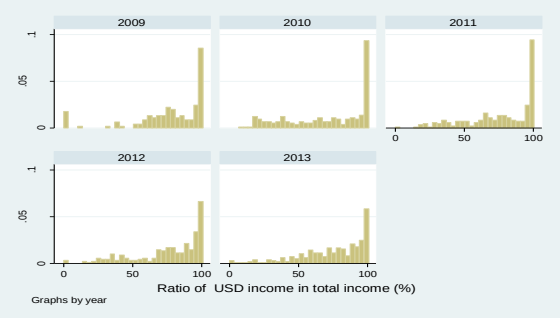


We further investigated revenues and expenditures from various aspects. Figures 5.8 and 5.9 show the distributions of the ratios of FX currency by areas, years, and types of financial institutions. When the distribution was divided by areas, most of the ratio of FX revenues concentrated on the right-hand side, in particular in Phnom Penh and Siem Reap, while the distributions are lower and flat in other areas, especially in the Southeast Area (Panel A). Furthermore, we found that CBs tended to generate more income in FX than MDIs (Panel C and Panel D of Figure 5.9).

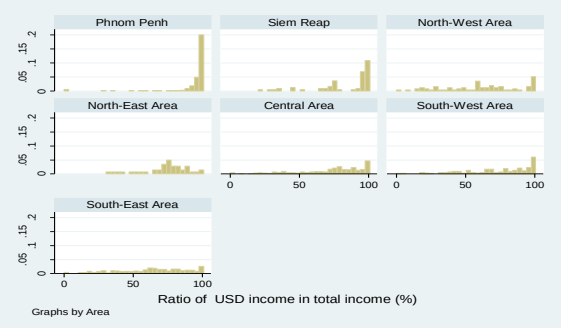
Figure 5.10 shows the distributions of the ratios of FX in expenditure of branches by areas, years, and types of financial institutions. It revealed that CBs used more FX in their expenditures than MDIs did (Panel C and Panel D in Figure 5.10).

Figure 5.8: Distribution of ratio of FX currency in income

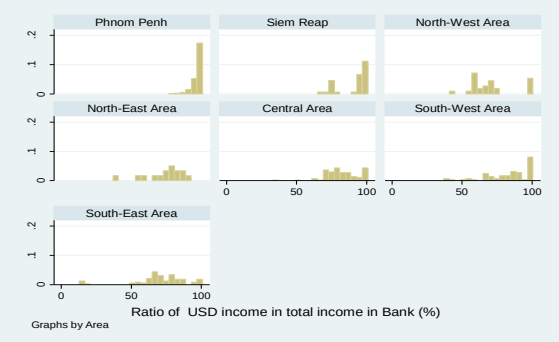
A: Distribution of Ratio of FX in Income (by year)



B: Distribution of Ratio of FX in Income (by areas)



C: Distribution of Ratio of FX in Income of CB



D: Distribution of Ratio of USD in Income of MDIs

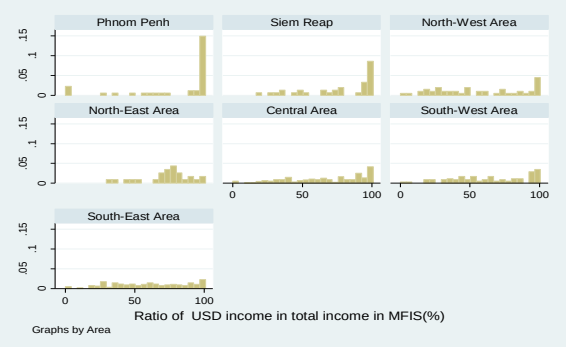
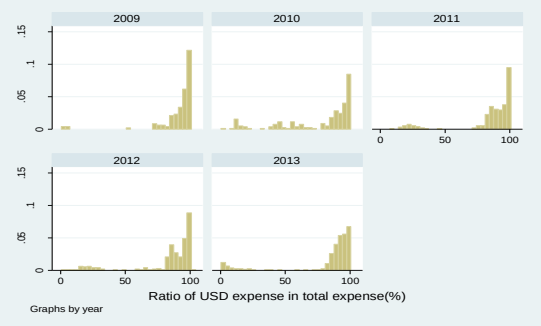
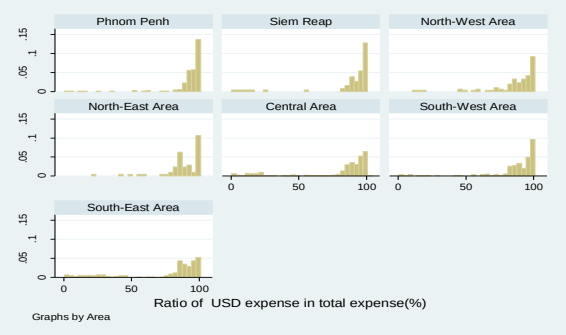


Figure 5.9: Distribution of ratio of FX currency in expense

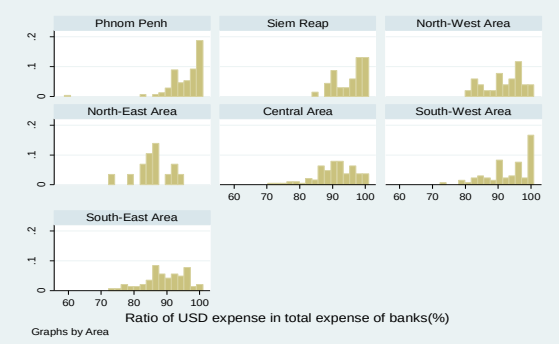
B: Distribution of Ratio of USD in Expense (by year)



C: Distribution of Ratio of USD in expense (by area)



D: Distribution of Ratio of USD in expense of Banks (by area)



E: Distribution of Ratio of USD in Income of MDIs (by area

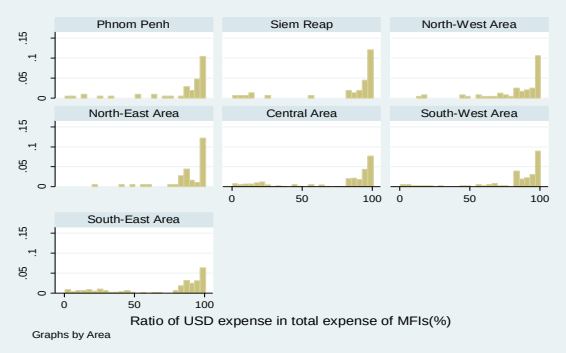
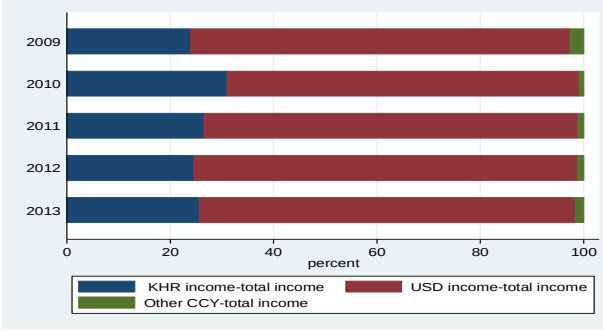


Figure 5.11 presents the average currency compositions in revenues and expenditures per branch. Panel A and Panel B show the historical changes in currency compositions of CBs and MDIs. It was revealed that Cambodian financial institutions were likely to spend more in FX than they generated (Panel A and Panel B).

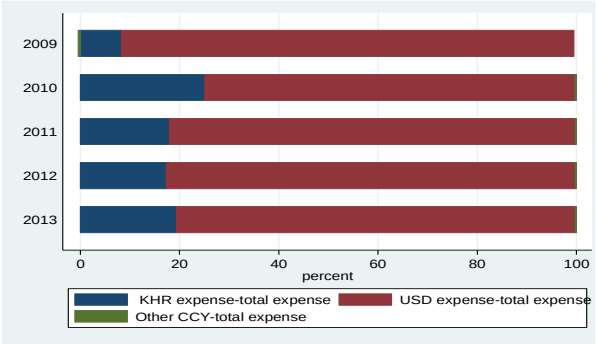
Panel C and Panel D of Figure 5.11 show the geographical differences in currency composition of revenues and expenditures. Phnom Penh shows high dollarization, while the South-East Area shows a lower level of dollarization in their revenues and expenditures. Interestingly, we found that branches in the North-West and South-West Areas generated income in the local currency THB, and VND. Also of interest, CB branches in the North-East and South-East Areas generated more income in KHR compared to other areas. On the expenditure side, bank branches used USD almost 95 percent of the time (Panel B). In addition, the usages of other foreign currencies are smaller in expenditures than in revenues. The results reveal that banks do not use THB and VND in expenditures, even if they receive those currencies.

Figure 5.10: Currency composition of income and expense

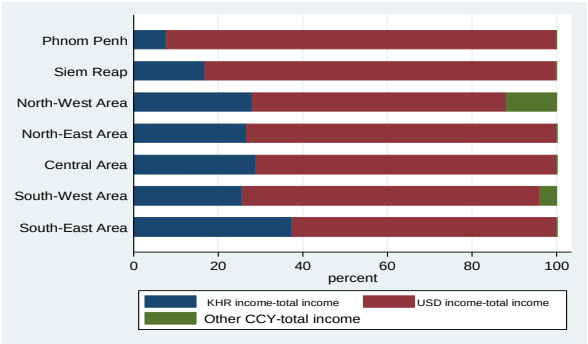
A: currency compostion of income

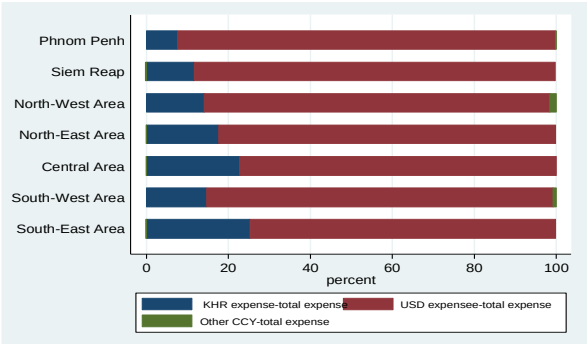


B: currency composition of expense



By Geographical area





We next investigated the differences in currency compositions of revenues and expenditures per branch between CBs and MDIs. Figure 5.11 shows the results for CBs and Figure 5.12 for MDIs. In Panel A and Panel B, we found that there was a clear trend in the historical changes of currency compositions of revenues and expenditures. KHR shares in revenues and expenditures have decreased over the observed period. Panel C and Panel D of Figure 5.11 depict the currency compositions of aggregated income of CBs and confirm that CBs have increased their income in USD and are highly dollarized in Phnom Penh and Siem Reap.

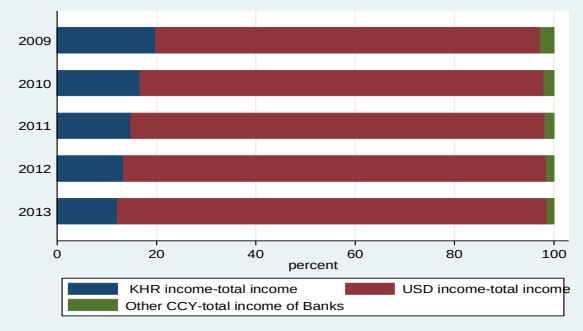
Figure 5.12 shows currency composition in aggregate revenues and expenditures of MDIs. The result showed that 30 to 40 percent of income is generated in KHR, especially in the South-East Area. It revealed that MDIs rely more on KHR in their operations. In contrast to CBs, there are no clear trends

in the historical changes of average currency composition of revenues and expenditures for MDIs. In 2010, the ratios of KHR currency were high, while they were low in the other periods.

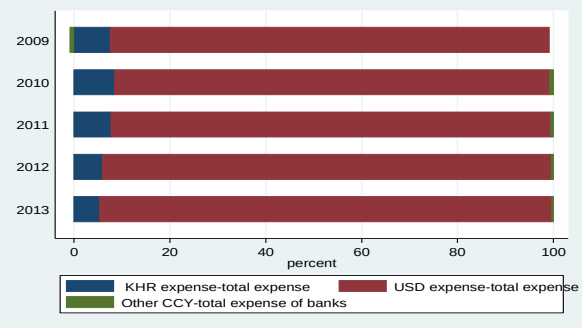
Similar to CBs, MDI branches in the North-West and South-West Areas generated revenues in other currencies, such as THB or VND (Panel A). On the whole, the expenditure sides are more dollarized than the revenue sides in both CBs and MDIs.

Figure 5.11: Currency composition of income and expense of CBs

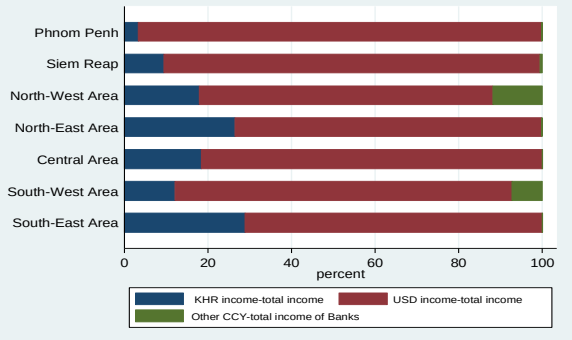
A: currency compostion of income of Banks



B: currency compostion of expense of Banks



by Geographical area



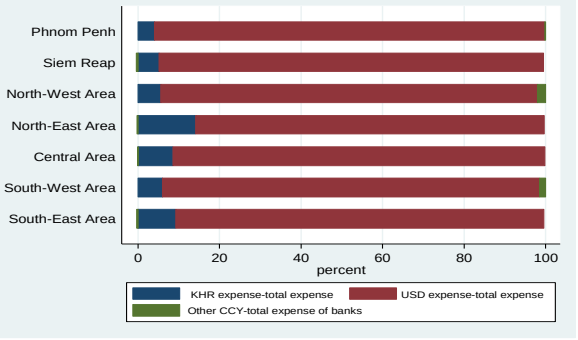
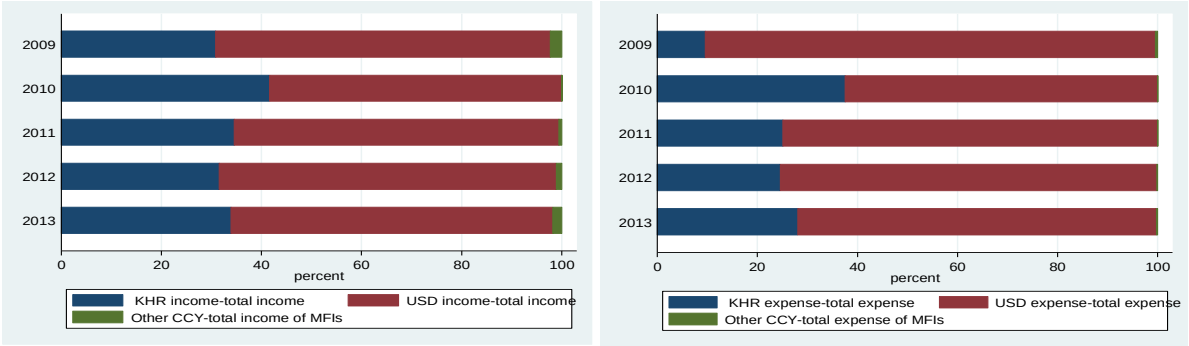
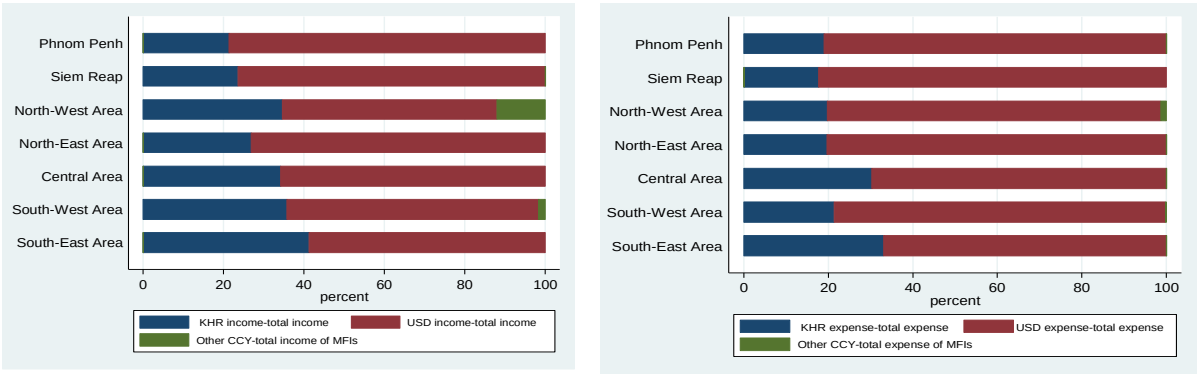


Figure 5.12: Currency composition of income and expense of MDIs

A: currency compostion of income of MFIs B: currency compostion of Expense of MDIs



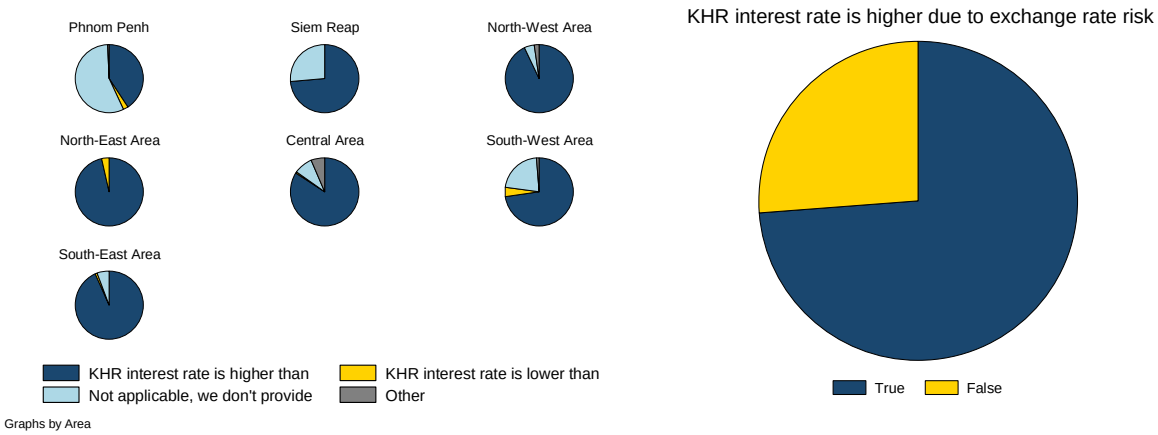
by Geographical area



5.3. Perceptions of Bank Managers

To understand bank behavior in lending, we conducted face-to-face interviews with bank managers in 575 branches. Branch managers were asked whether interest rates for KHR loans are higher or lower than USD loans and what the reasons are behind that difference. We received answers from 549 managers, 74 percent of whom explained that KHR loans charge higher rates because of exchange rate risks (Figure 5.13).

Figure 5.13: Interest rate of KHR loan and its reason



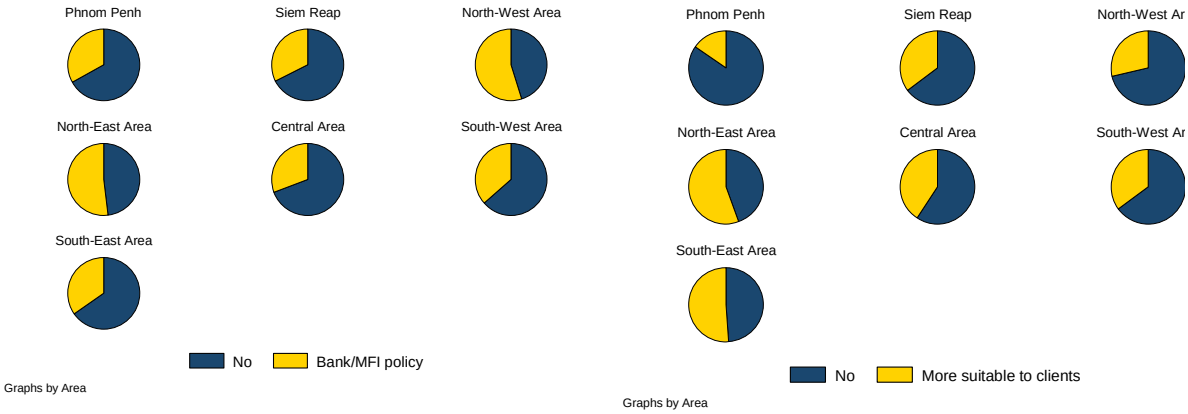
We also asked whether the CBs/MDIs encourage customers to borrow in KHR. The majority of respondents (shown in Table 5.6) replied that they encourage people to borrow in KHR, except managers in Phnom Penh branches. When we asked about the reasons for this encouragement, no clear trends emerged from the overall sample. However, we learned that branches in the North-East and North-West Area encourage customers to borrow in KHR due to bank policy. For branch managers in the North-East and the South-East Areas responded that they encourage customers to take out KHR loans because they are more suitable to customers' needs (Figure 5.14).

Table 5.6: Number of respondent on bank's encouragement to borrow in KHR

	Freq.	Percent
Yes	382	66%
No	193	34%
Total	575	

Note: We asked the question "Do you encourage people who want to borrow money to borrow in KHR?"

Figure 5.14: Bank encourage its customer to borrow in KHR



To understand customer behavior in applying for USD loan, bankers were asked about reasons that customers request USD loans. Figure 5.15 shows customers apply for USD loans because of (1) business activities, (2) suppliers they work with, and (3) lower interest rates for USD loans. In addition to these reasons, managers stated that customers in Phnom Penh are likely to reflect on exchange rate risks.

Figure 5.15: Reasons that customers request USD loans

Branch managers were asked whether they have a strategy to increase KHR usage within banks and their customers. We summarized the results in Table 5.7. We found that 74 percent of 575 managers replied that they have a strategy to increase KHR usage.

Table 5.7: Number of respondent on bank's strategy to increase KHR usage

	Freq.	Percent
Yes	425	74%
No	150	26%
Total	575	

Note: We asked the question "Does your branch have a strategy to increase KHR usage within the banks and customer?"

Figure 5.16 shows the sources of KHR currency which are used by CBs/MDIs. Most branches obtain the KHR from (1) money changers across the border, (2) client deposits/ exchanges, (3) other branches within the same institution, and (4) from the head office.

Figure 5.16: Source of KHR currency

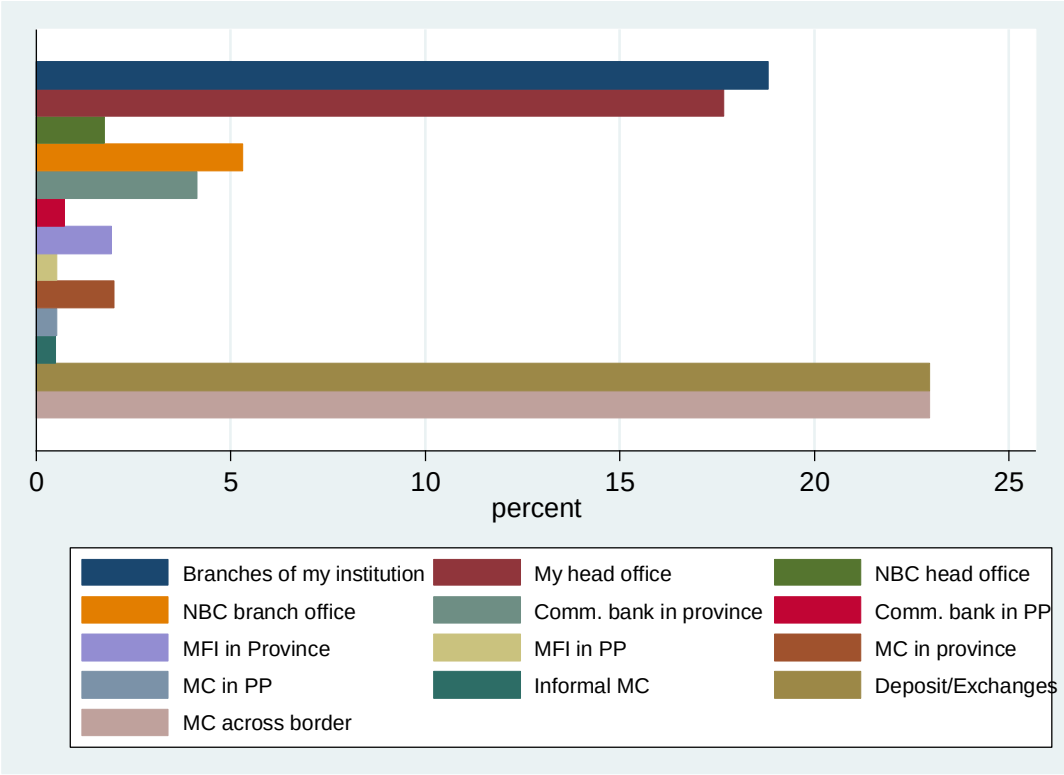
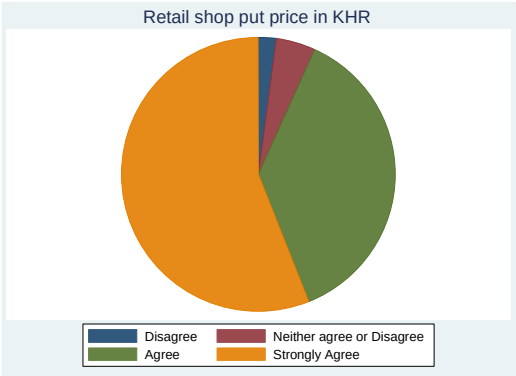
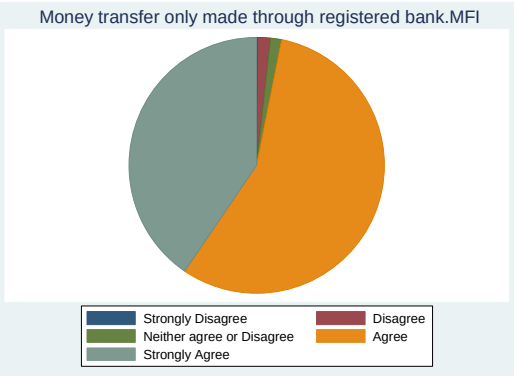
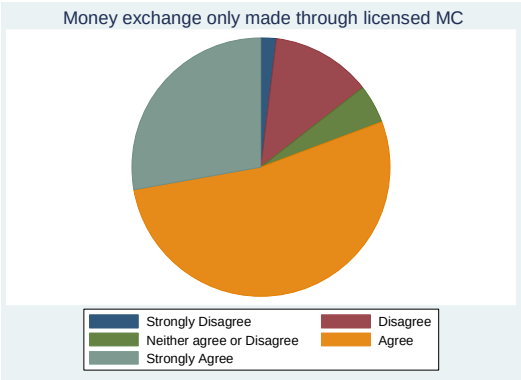


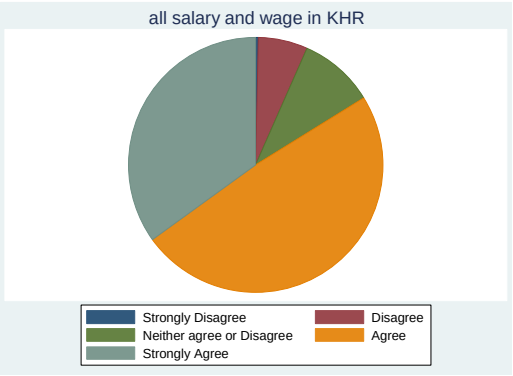
Figure 5.17 shows the perceptions of government policies. The majority of interviewees from CBs and MDIs responded that they would be happy if (1) retail shops were required to set the price in KHR only, (2) money transfers could be made only through a registered financial institution, or (3) money conversions could be made only through registered/licensed money changers. Many respondents also answered that they would be happy if (4) all salaries and wages were paid in KHR, (5) only registered business could have USD accounts, or (6) all business transactions less than 500 USD must be in KHR. Furthermore, they agreed that bank policies were designed to increase the minimum balance.

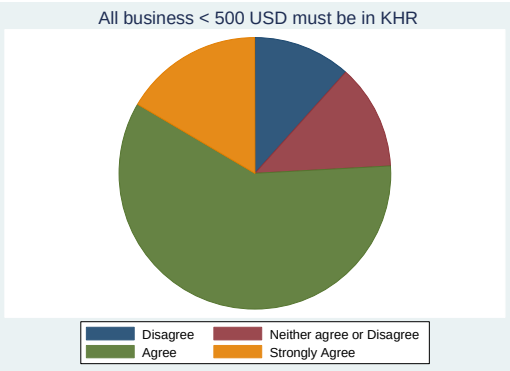
Figure 5.17: Banks' feelings on policy recommendations

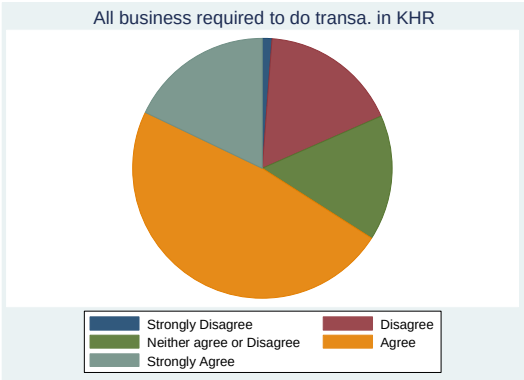


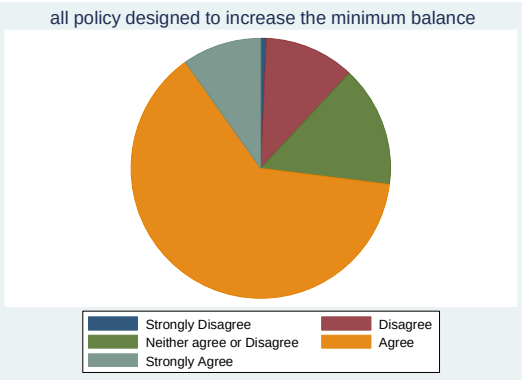












6. Conclusion and Policy Implications

The dollarization of the Cambodian financial sector has been referred to as extreme, with about 95 percent of foreign currency deposits (loans) in total deposits (loans) in the entire banking sector, and 85 percent of foreign currency deposits to M2 as of 2013. Although there have been several previous studies which investigated dollarization and which argued the advantages and disadvantages of the dollarization in Cambodia, there have been no studies that employed individual-bank-level data for Cambodian dollarization. As a result, the actual situation across sectors and regions has been unclear. As the previous literature points out, there might be heterogeneity in banks' behaviors, and also differences in economic activities among regions.

The key to better understanding of dollarization is to collect comprehensive data on a sector basis. In order to develop our understanding of the Cambodian dollarization, we conducted a survey of financial institutions in Cambodia. In the survey, we collected financial data from branches of financial institutions, which allowed us to ascertain the exact amounts of financial assets and debts by currency in the financial institutions both at bank- and branch-levels. We collected unique data from 15 financial institutions spanning the period from 2009-2013. Our study is the first study to reveal the actual situation of Cambodian financial dollarization. We believe that our findings can be useful for making policies to achieve de-dollarization, and the stabilization and facilitation of financial development.

Our main findings are as follows. First, we found that CBs rely much more on FX currencies in their operations than MDIs do. However, the shares of the local currency in deposits have been stable in the period from 2009 to 2013, despite recent rapid growth in the amounts of total deposits. Second, we found that financial institutions were likely to allocate excess funds (deposit amounts minus loan amounts) to branches that were short of funds. Meanwhile, commercial banks did not allocate KHR funds, although they had a large excess of KHR funds in Phnom Penh. Third, in rural areas, shares of FX currency in loans and deposits were lower than in Phnom Penh, although there were indications that shares of FX currency in loans have been increasing in rural areas in the period. Forth, shares of FX currency in MDI deposits have decreased in both rural and urban areas. It might be because recent improvements in financial inclusion have allowed people in rural areas, who mainly use KHR in their daily transactions, to have access to bank deposits. Furthermore, from the perception survey, we found the possibility that financial institutions pass the exchange rate risks onto their borrowers.

These findings can lead to several important implications for policy-making regarding de-dollarization and financial stability. Firstly, the government should facilitate the allocation of KHR funds for commercial banks (CBs), to promote KHR loan provisions. We found that financial institutions have larger amounts of deposits than loans in Phnom Penh, and smaller amounts of deposits than loans in other areas, reflecting that financial institutions collect funds in developed areas and allocate excess funds to rural areas. However, we found that, even though they have excess KHR deposits in Phnom Penh, the amounts of KHR deposits are larger than or the same as KHR loans in rural areas for CBs. This suggests that CBs are not actively engaged in the fund allocation of KHR. In the meantime, MDIs are actively engaged in both KHR and FX fund allocation across the country. For some reason, CBs are reluctant to extend excess KHR funds from urban areas to rural areas. According to Khou & Odajima in Chapter 3), and Ranareth and Aiba in Chapter 4), KHR is commonly used especially in rural areas, and there seems high demand for KHR. Thus, it is effective to promote KHR loans by facilitating the transfer of excess KHR funds from urban areas to rural areas.

Secondly, financial inclusion also help promote KHR deposits. In line with recent arguments by Menon (2008) and Duma (2011), local currency deposits have increased at the same pace as FX deposits, while the growth of local currency deposits is higher in rural areas, and KHR loans and deposits are more common in rural areas. Especially for MDIs, the ratio of KHR deposits have increased across the regions over the period, probably because their branch network penetrated even in rural areas, and recent progress in financial inclusion allowed the poor to access deposits. Therefore, in order to achieve de-dollarization via market mechanisms, facilitating the fund collection of financial institutions in rural areas can be a feasible strategy, which would likely lead to an increase in the KHR shares in deposits and facilitate the provision of local currency loans. For example, by facilitating financial

institutions to expand their branch networks, the government can promote the provision of deposit services to rural areas, which may increase KHR deposits.

Thirdly, introducing hedging instruments against the currency mismatch risks for CBs and MDIs is urgent to stop the recent rapid increase in the provision of FX loans. Even though the shares of KHR deposits out of total deposits has been increasing rapidly over the period, the provisions of FX loans and the shares of FX loans out of total loans have risen in CBs and MDIs. In particular, the increase in shares of FX loans are notable in MDIs. This might reflect that MDIs became risk-averse after starting to collect commercial funding sources, and have been trying to reduce the risks of currency mismatch by increasing shares of FX currency in loans to the shares of FX currency in deposits. As of 2009, shares of KHR in MDI loans exceeded the shares of FX currency in MDI deposits and borrowings, and afterward the gap between shares of KHR of MDI loans and MDI deposits has decreased over the period (Figure 5.5). This might imply that MDIs tended to extend KHR loans in response to the local demand for KHR loans. However, it is a natural response for risk-averse MDIs to reduce currency risks against the large shares of FX deposits because they need to improve their resilience to collect deposits from the public. Accordingly, it is expected that MDIs will continue to increase the provision of FX loans over the next few years at the same pace, although it may be beneficial in terms of resilience of bank managements. Thus, if policy measures are to be taken to reduce FX loans, some financial instruments would be required to offset the currency mismatch risks on MDIs' balance sheets. Given the large branch networks of MDIs and the recent expansion of the entire microfinance sector, the MDIs can be the good drivers to promote the local currency loans and deposits to rural areas.

Fourthly, CBs and MDIs pass the exchange rate risks onto borrowers. In the perception survey, we found that 74 percent of bank managers responded that banks set higher interest rates on KHR loans because of exchange rate risks (Figure 5.13). This suggests that they attract their customers by offering lower interest rates on FX currencies in order to adjust the currency composition of loans with those of liabilities to reduce the currency mismatch risks. The results may suggest that customers with incomes in the local currency are likely to be exposed to exchange rate risks since there is no hedging instruments against risks of exchange rates in the Cambodian financial sector. Developing financial instruments against those risks may be effective to protect customers. The result also suggests the possibility that customers are too sensitive to interest rate differentials between local and FX currencies, rather than exchange rate risks. Therefore, banks can induce them to borrow the preferred currency for banks by setting the interest rates. Thus, another possible strategy might be to educate the customers and encourage customers to be aware of exchange rate risks.

However, there are limitations on our study. In the data we used, there are errors in deposits and loans which possibly stem from the data collection process. Since the format to collect data was different across some of CBs and MDIs, some financial institutions failed to complete the survey correctly. Our sample of financial institutions was reduced to 11 for consolidated financial statements and 12 for branch-level financial statements. In the future study, collecting data from more financial institutions and increasing the quality of data by reducing errors will be required for better understanding of dollarization.

Moreover, investigating a causal relationship of financial dollarization is still one of the main challenges of our study. Whether regional demand or banks drive FX currency deposits/loans is still unclear, and the results could be a mixture of both effects. Further investigation is also needed into the determinants of the growth of local currency deposits and loans using econometric models.

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Chapter VI: The Role of Money Changers in Dollarization: Evidence from the survey

Leng Soklong

Daiju Aiba

1. Introduction

Before analyzing the results of the survey in this section, one question should be answered - Why are money changers included in this study? There are three possible reasons for this: first, money changers largely dominate foreign exchange business in Cambodia; second, money changers play a significant role in exchange rate transmission through active foreign exchange transactions that have an impact as price determinants; and third, money changers play a crucial role in the circulation of currencies (both local and foreign) due to their country-wide presence and networks. Hence, it is vitally important to include money changers in the study of dollarization, especially in a highly dollarized country like Cambodia, as their behaviors can directly and indirectly impact or distort central bank exchange rate policy, the operating costs of enterprises and households, and on the widespread uses of local and foreign currencies within the nation.

What are Money Changers? Money Changers, by NBC regulation, are defined as those who are dealing with money exchange operations,[21] and their transactions are officially limited to buying and selling bank notes and the buying of traveler's checks. Legally, there are two types of money changers operating in Cambodia's foreign exchange business: the licensed money changer (LMCH), and the authorized/registered money changers (RMCH). However, there are a large number of non-registered money changers (NRMCH) that also play a role in the market. Based on NBC regulations, the two formal groups are classified by their capital deposits with the NBC, the annual fee they pay to the NBC, and the right to become involved in NBC auctions. Licensed money changers are required to permanently deposit paid up capital of KHR 80 million and have right to participate in currency auctions (PrMCHLA 2009) of the NBC, while registered money changers are not obliged to deposit money with the NBC; yet, they are not allowed to take part in the auction. Moreover, LMCHs are required to pay annual authorization and application fees that are higher than that of the RMCHs. Hence, it is naturally assumed that LMCH's are bigger than RMCH's in term of size and operational turnover, while NRMCHs are considered to be relatively small compared to RMCHs.

The rest of this chapter is organized as follows: in the next Section we briefly generalize the economic theory of money changers. The following section describes the data obtained in the NBC-JICA joint survey on this aspect of dollarization, and the survey design used. Following this, we present the results of our analysis of the role of money changers in a dollarized economy. Finally, we present our conclusions and the policy implications of promoting the use of the Riel (KHR).

[21] Referring to operations of buying and selling domestic currency or buying and selling a foreign currency in exchange for others (Prakas on Money Changer License or Authorization--PrMCHLA).

2. Theories of the Money Changer's Business

Before discussing our empirical findings from the survey, it is helpful to look at theories that have attempted to understand the money changing business. Borrowing from industrial organization theories, we attempt to formulate an idea of what the money changer business is, what the costs and benefits of this business are, and how money changers are supposed to decide selling and buying rates. We provide a brief introduction to these concepts in this section of the chapter.

Competitiveness in the market: First, we attempt to construct a theory of the determinants of the buying and selling rates offered by money changers. One of the main determinants is competition among individual money changers. As basic economic theory suggests, the strong competition in this area forces money changers to lower their margins between selling and buying rates.

In the meantime, road infrastructure and public transportation is still underdeveloped in Cambodia. Therefore, since market integration remains low and markets may be segmented by regions, it is expected that competitiveness varies across regions. Furthermore, demands for KHR and USD are supposed to vary across regions due to differences in industrial structures and income levels. Thus, it is likely that exchange rates and margins will differ among regions.

Market Barriers: The money exchange business is assumed to be a competitive market as many players are in the game. New entrants can take part in the business easily, while the existing ones can just as easily exit from the market. However, if we look closely into the large amount of money exchange segment, it seems that this market is rather an oligopoly one, where few large money changers dominate. The long existence of those large money changers have built strong business network with many large companies and enterprises in terms of supplying of KHR, especially during the tax paying periods. Where economies of scale exist, they can offer better exchange rate by set lower margin; this seems to be a barrier to new entries in the-large-scale-money-exchange segment, especially for banks and MFI institutions.

Operational costs: In a similar way to other types of business, money changers are supposed to determine the margin at the point where their marginal returns match with their marginal operational costs. The concept of operational costs can vary widely though, covering various types of costs, such as costs for security, the wages of workers, rent for land and buildings or other outlets, and funding costs. Funding costs are more important here. In general, funding costs are dependent on sources of funding and types of currencies. Since funding costs of USD are usually lower in Cambodia, money changers are expected to put a weight on selling USD by funding USD currency from their sources, rather than selling KHR currency. If economies of scale exist in the money changing business, large money changers would set lower margins than small money changers do, although the evidence is still scarce.

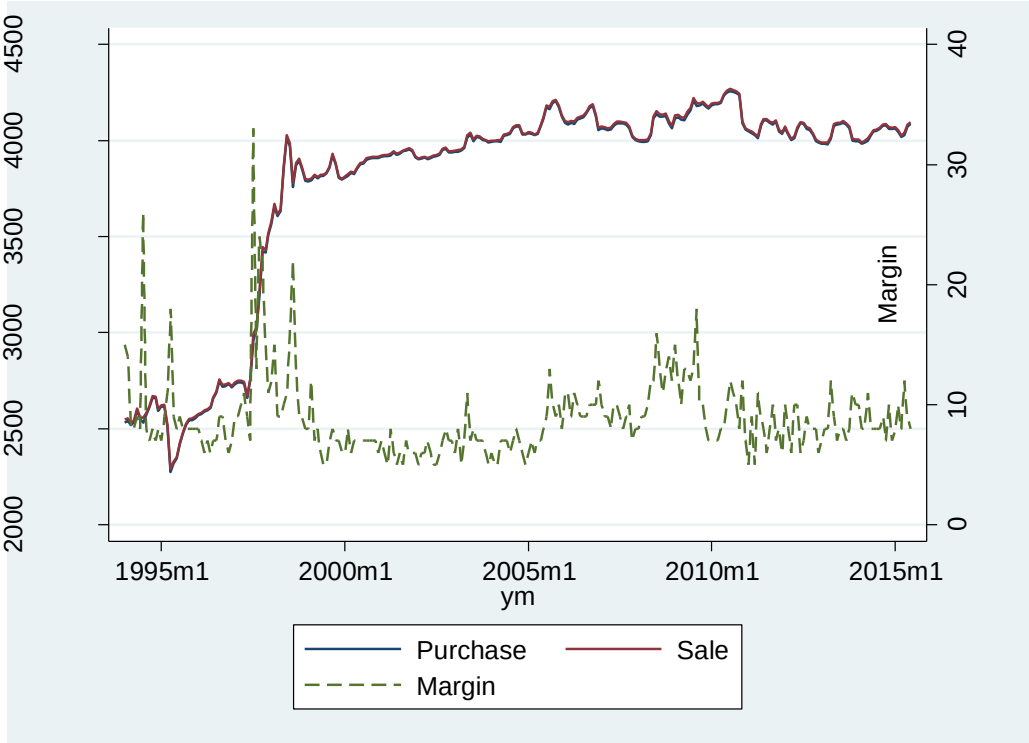
It is expected that there is a difference in marginal operational costs for the various types of money changers, resulting from the quality of their operations. Since it is likely that licensed money changers are more disciplined by the NBC, they are expected to improve efficiency in their operations. Furthermore, and typically, the licensed money changers and registered money changers are larger operations. Therefore, economies of scale would lower their marginal operational costs.

The opportunity costs of keeping excess liquidity: For money changers, keeping more cash in a certain currency than customers demand is an opportunity cost, as they may miss other

investment opportunities. Since there hardly exist of short term financial investment products available in Cambodia, running other business at the same time, such as selling jewelry and precious stones, as well as money transfer or/and lending is very common for money changers in Cambodia. In doing so, they can tap more sources of currency and better manage their excess liquidity.

Fluctuations in exchange rates: Apart from the intensive competitiveness in money changing markets, the recent stability in the exchange rate of KHR to USD can also explain the low margins. The money changing business requires the skill to deal with risks of exchange rate fluctuations. Recent low margin also reflects the enduring stable exchange rates of KHR against USD. As seen in Figure 6.1, margins between selling and buying rates expanded while market exchange rates were unstable in the late 1990s, and also in 2008 and 2009. Since then the exchange rate of KHR to USD has been stable for a considerable period. In this situation, money changers may assume that exchange rates will continue to be stable in the future, and they can therefore set low margins. If the exchange rate fluctuates and becomes difficult to predict, it is expected that money changers would suffer losses, and adjust their margins accordingly.

Figure 6.1: Monthly Exchange Rates and the Margins of Buying and Selling rates



Source: National Bank of Cambodia, calculated by the authors.

Note: the figure gives the selling rates (sale) and the buying rates (purchase) of USD in the parallel markets. Those rates are averaged on a monthly basis. The margin represents the difference between the selling rates and the buying rates.

3. Data Description and Methodology

To investigate the activities of money changers, we conducted a survey of money changers from October 2014 to January 2015. The survey was carried out as a part of the joint project of NBC and JICA for promoting the usage of the Riel. In this survey, we interviewed 86 money changers, selected from24 provinces (except Kep). For sampling purposes, we randomly selected 3-6 money changers from the capital city of each province. We employed enumerators to interview the money changers, and to ask them about their financial condition relating to money exchange services, and the other services they are engaged in. In Table 6.13, we present the distribution of the sample by regions and types of money changers.

Table 6.13: Number of samples by provinces and by types

Provinces	Freq.	*Types*	Freq.
Banteay Meanchey	5	Liciensed	15
Battambang	5	Registered	63
Kampong Cham	3	Non-register	8
Kampong Chhnang	3		
Kampong Speu	3	Total	86
Kampong Thom	3		
Kampot	4		
Kandal	3		
Koh Kong	3		
Kratie	3		
Mondul Kiri	3		
Otdar Meanchey	3		
Pailin	3		
Phnom Penh	6		
Preah Sihanouk	5		
Preah Vihear	3		
Prey Veng	3		
Pursat	3		
Ratanak Kiri	3		
Siem Reap	5		
Stung Treng	3		
Svay Rieng	5		
Takeo	3		
Tbong Khmum	3		
Total	86		

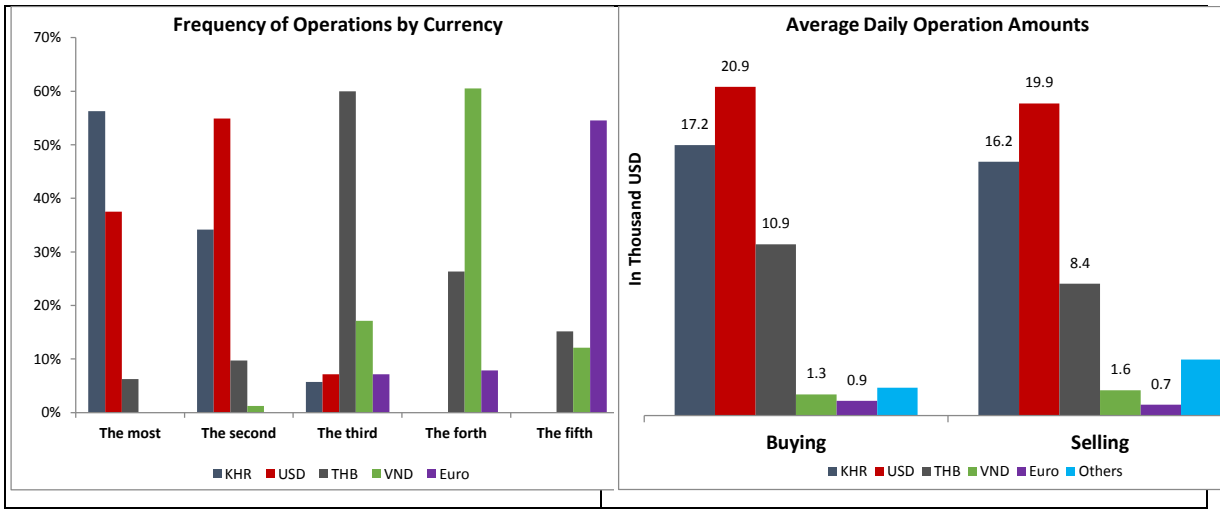
4. Survey Results

4.1 The Daily Operations of Money Changers

Foreign currencies have been freely circulated and used within Cambodia for some time. Based on this survey, we found that money changers actively deal with multi-currency exchange operations in various areas in Cambodia, in line with the finding of previous studies (Khou 2012). Figure 6.2 shows the frequency of daily operations by types of currencies. The results indicate that, overall, the Khmer Riel (KHR) is the most popular or the most transacted currency in the foreign exchange business, at a rate of 56% of the total sample transactions. The US Dollar is reported to be the second most popular (55%), followed by the Thai Baht (THB) (60%), Vietnamese Dong (VND) (61%), and Euro (55%). While the Japanese Yen and Chinese Yuan also exist; yet, the amounts transacted are relatively small. In terms of total amounts exchanged, the transactions in USD are bigger, while KHR stands second, with

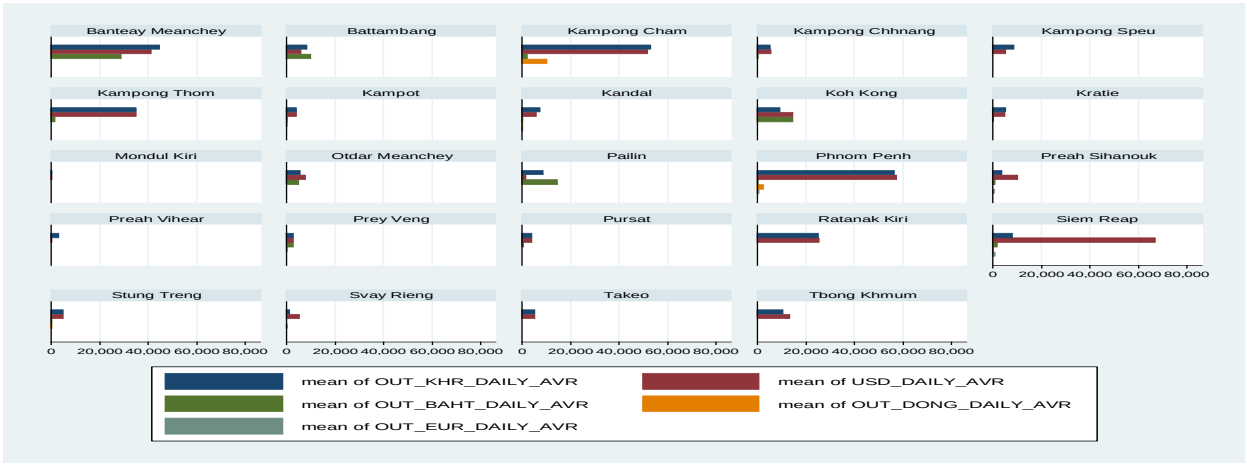
average daily transactions equivalent to around USD 20,400 and USD 16,700 respectively. This reflects the reality that KHR exchanges involve smaller transactions compared to that of USD.

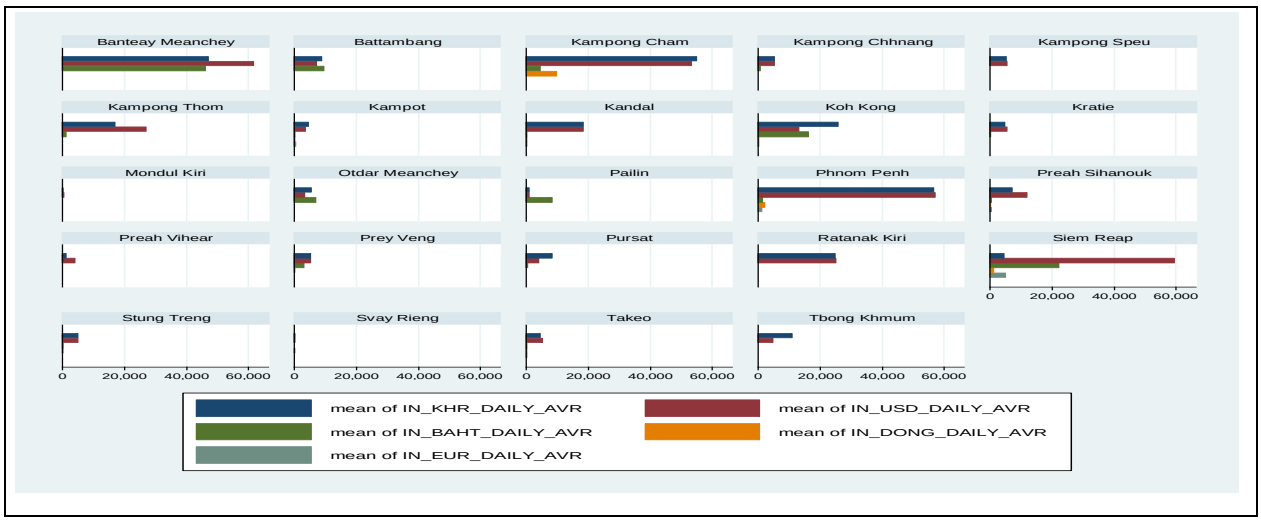
Figure 6.2: Frequency and Daily Operation by Currency and Amount of Operations



The average daily amounts of buying and selling statistics show that money changers conduct net buying in KHR, USD, THB and Euro, while they are net sellers in VND (Figure 6.3). We found that money changers buy and sell the same currencies at the same locations. The bilateral transactions of USD and KHR verify that customer demands exist for both USD and KHR within regions. The statistics illustrate that KHR and USD co-exist countrywide, while the THB, VND, and Euro are not transacted in some provinces. THB exchange transactions are prevalent in the border with Thailand especially: in the areas of Banteay Meanchey, Koh Kong, Battambang, Pailin, and Ortdar Meanchey, as suggested by Khou (2010). More surprisingly, we confirmed that THB also circulated in other areas, specifically next to the Vietnamese border (Kampong Cham) and in the middle areas of Cambodia and the main tourist destination, Siem Reap (Panel 2, Figure 6.3). For VND, exchange transactions take place largely in Kampong Cham, followed by Phnom Penh and Siem Reap, but another 8 provinces have also dealt with buying and selling VND. The widespread use of THB and VND in various regions of Cambodia is possibly a result of trade (Thai and Vietnamese middlemen commonly come to buy Cambodia's agricultural products, such as rice, cassava, and so on), and/or worker remittances and tourist. Figure 6.3 also demonstrates that, aside from Phnom Penh, the operations of buying and selling KHR and USD are quite active and large in agricultural provinces, mainly in Banteay Meanchey, Kampong Cham, Ratanakiri and Kampong Thom.

Figure 6.3: Daily Buying and Selling Operations by Currency by Province





4.2 The Network Structure and Sources of Currency Supplies

The survey also investigated the network structure of money changers in terms of their business relationships with other money changers within the operational areas or with other regions in Cambodia. Relationships among money changers involve two important businesses; one is the sharing of exchange rate information or referent rate, and another is the support of liquidity (Figure 6.4). In practice, district level money changers (usually small) would seek exchange rate information or the supply of currencies from province-level money changers, or directly from money changers in Phnom Penh, if they have business relationships with each other. Furthermore, province-level money changers practice similar routines, and they contact other money changers (usually the big ones), to update exchange rate status or sometimes to ask for a supply of the currencies they need.

Figure 6.4: The Directions of Relationships among Money Changers

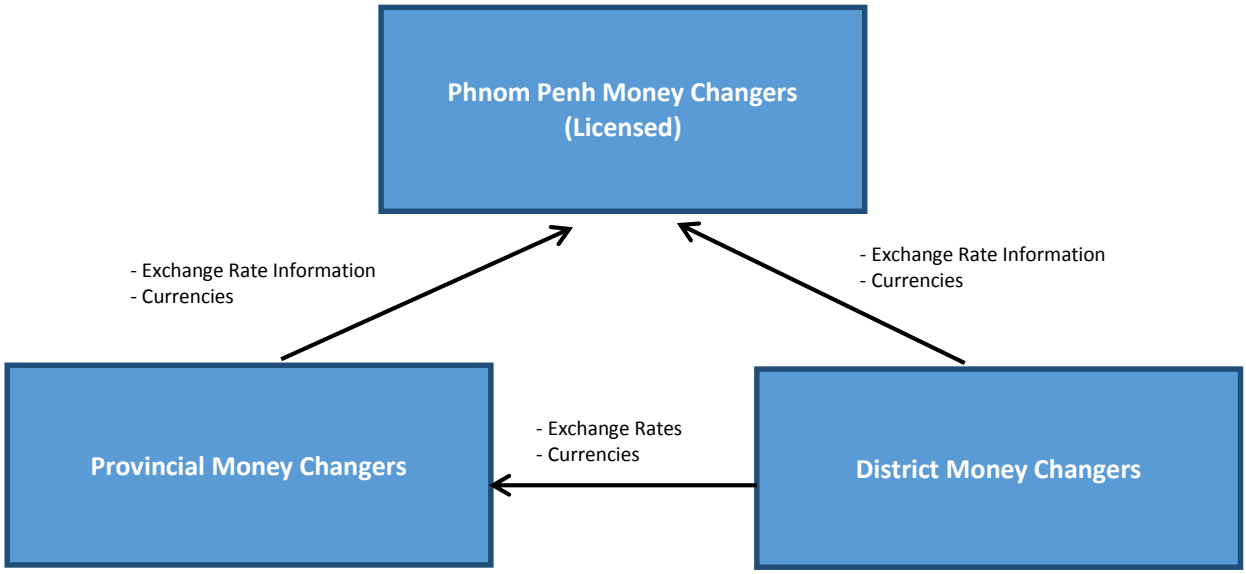
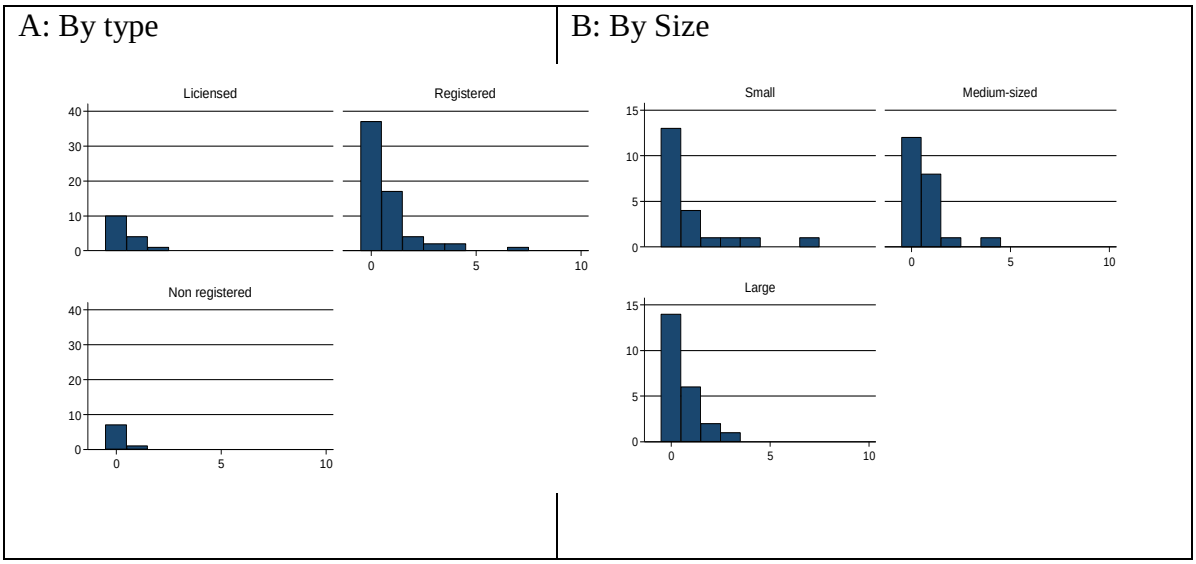
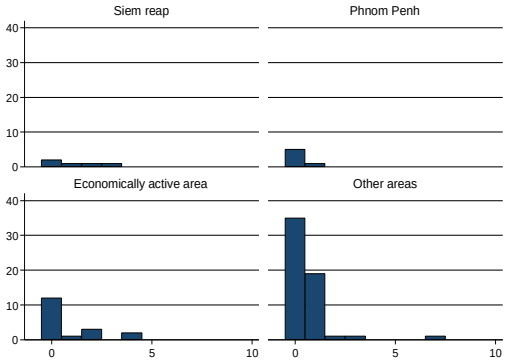


Figure 6.5 gives the distribution of the extent of business relationships by types of money changers. We also summarize the average number of business relationships by types, sizes, and regions in Panel D of Figure 6.5. First, we found that the average number of relationships is low overall, meaning that individual money changers are unlikely to have explicit relations with other money changers (Panel D). However, the average number of relationship of licensed and registered money changers are higher than those of non-registered ones. It is likely then that most of non-registered money changers operate independently, while larger ones may see benefits from networking. Furthermore, in respect of the size of money changers, where networks exist among small money changers, these are likely to be with other small money changers rather than with larger money changers. Regarding the areal distribution of networks, we found that money changers in Phnom Penh areas have relatively low numbers of relationships.

Figure 6.5: The number of Business Relations with other money changers



C: By Area

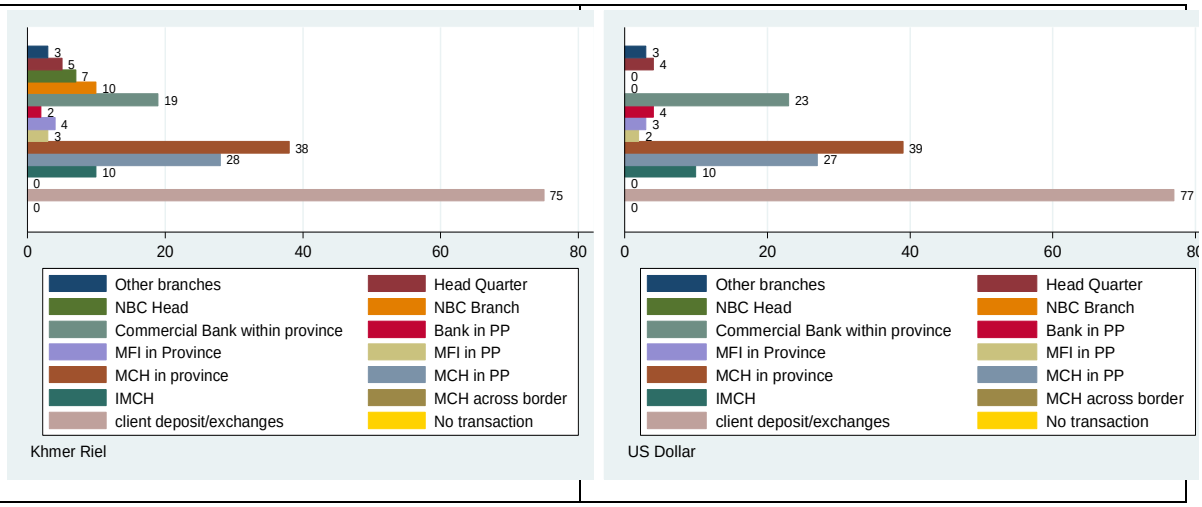


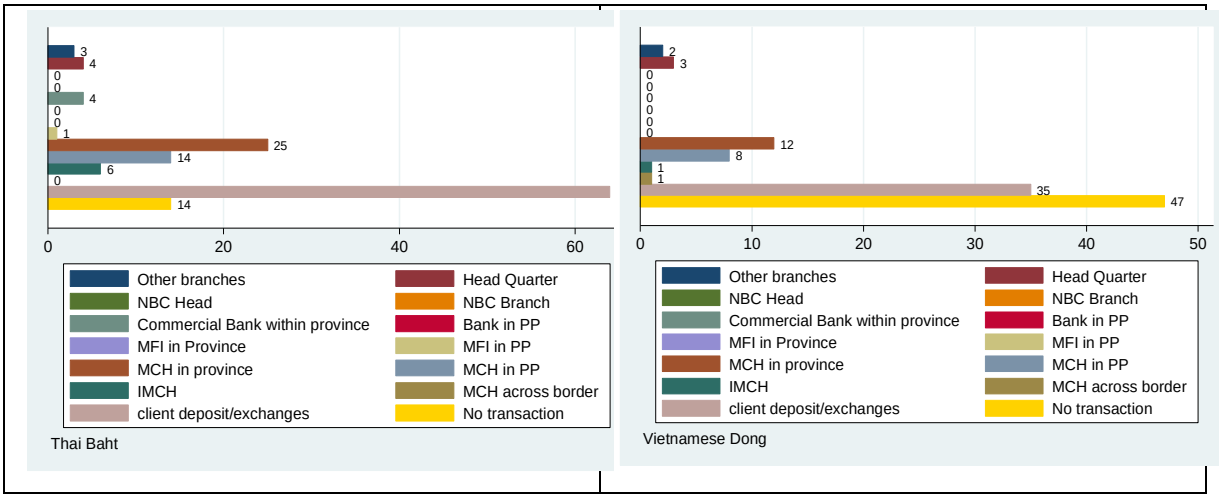
D: Average numbers of Business Relations

	Obs.	Mean
ːiensed	15	0.40
ˈgistered	63	0.73
ɔn-registered	8	0.13
ɣes		
ɲall	21	0.95
ɛdium-sized	22	0.64
rge	23	0.57
ea		
ɛm reap	5	1.20
nom Penh	6	0.17
her Active Economic Area	18	0.83
Other provinces	57	0.54

In this section, we also asked money changers where they can source currencies once they have a need in their daily transactions. Figure 6.6 summarizes the answers to this question. Overall, their daily exchange operation is the main source of currency supply, followed by money changers in the province of their respective operations, followed by money changers in Phnom Penh, and with commercial banks in their operational area. The detailed results show that 87% of money changers in the sample obtained their KHR from their daily exchange operations. In case of a shortage of KHR, 44% of them reported having to get support from money changers in the province, 33% from money changers in Phnom Penh, and 22% from commercial banks in their operating area. It is noticeable that only 20% of the sample reported their source of supply of KHR was from the NBC (10 at branch level and 7 with head office). This, to some extent, suggests that the role of the central bank in supplying KHR liquidity is still quite limited. Any shortage of USD liquidity is reported to have been provided by other money changers and the commercial banks in the respective provinces (45% and 27% respectively), and money changers in Phnom Penh (31%). For THB and VND supplies, commonly, the sources are money changers in the provinces and in Phnom Penh, while banks tend to be reluctant to provide these two currencies (Figure 6.6).

Figure 6.6: Sources of Supply of Currencies in the Money Exchange Business

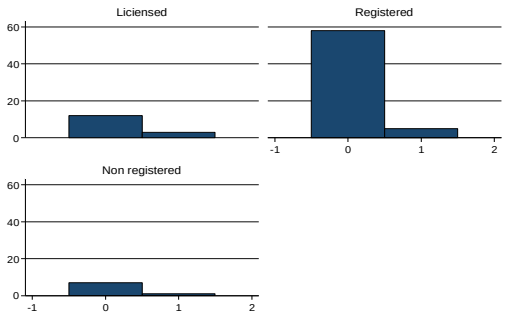




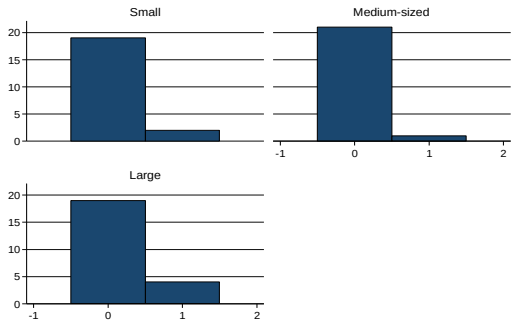
Next, we calculated the number of branches they have in other provinces. Figure 6.7 gives the results of our calculation. The mean values of number of branches are low in every category show that most money changers have no branches in provinces outside their own.

Figure 6.7: The Number of Branches

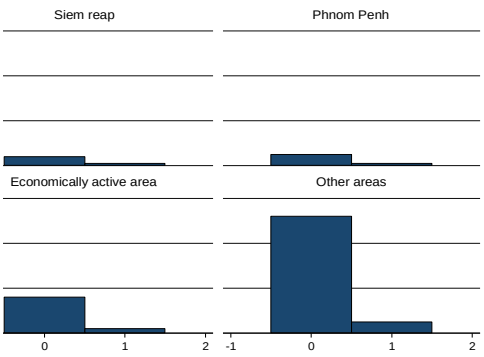
A: By Type



B: By Size



C: By Area



D: Average numbers of Business Relations

	Obs.	Mean
Liciensed	15	0.20
Registered	63	0.08
registered	8	0.13
Sizes		
Small	21	0.10
Medium-sized	22	0.05
Large	23	0.17
Area		
Siem reap	5	0.20
Phnom Penh	6	0.17
Economically active area	18	0.11
Other areas	57	0.09

We next investigate borrowing behaviors of money changers. In the survey, the respondents were asked about the questions "have you ever borrowed a loan to finance your money exchanging activities?" The results reveal that 52% respondents answered "Yes", out of the total sample.

The number of money changers having experience of borrowing are high, given the results of Chapter 4 that incidence of borrowing by enterprises was only around 20%. It might suggest that money changers are dependent on the external funding.

The respondents were also asked about the lender and currency types when they borrowed. We summarized the results in Table 6.3. We found that the USD is the most common to borrow (41 answers in total). Regarding lenders, commercial bank is most common. Money changers are likely to finance USD shortage or borrow in USD due to lower interest rates.

Table 6.3: Currency and Source of borrowings

	Currency				
Lender	KHR	USD	KHR & USD	Don't Know	Total
Bank	0	18	2	1	21
MFIs	1	0	0	0	1
Friends/ Family	3	7	1	2	13
Other Money Changers	0	0	12	1	13
Others	0	0	1	0	1
Total	4	25	16	4	49

4.3 Exchange Rate Margins

We next compared the selling rates and buying rates that each money changer offered at the end of October 2014. Interestingly, the survey results pointed out that exchange rates were being set differently by types of money changers, as well as by operating area. Figure 6.8 demonstrates that, on average, LMCHs had smaller exchange rate margins, followed by registered and non-registered money changers, with an average margin of about KHR 7.5, KHR 10, and KHR 14.4 per USD, respectively. We also confirmed the statistical significance of these results (Panel A in Figure 6.8). The results show that the difference between LMCHs and NRMCHs, and between RMCHs and NRMCHs are statistically significant at 5%. These findings seem to confirm the real practices in the foreign exchange business. Moreover, Figure 6.8 also shows the different margins within regions. The results imply that money changers independently set their bid and ask offers with respect to exchange rates. Exchange rate margins are seen to be small in Phnom Penh, Siem Reap and economically-active areas,[22]while bigger in other areas.[23]In general, remote and low economic activity provinces tend to have larger exchange rate margins, especially in Mondul Kiri, Mondulkiri, Preah Vihea, and Kampong Chhnang, where the cost of currency is relatively high.

In addition to economic factors, there might be other patterns within exchange rate dynamics. Figure 6.9 visualizes the geographical distributions of selling rates and buying rates of USD for KHR. We found that there are clear patterns in the distribution of exchange rates (buying and selling). Both selling and buying rates are high in the central part of Cambodia, while they are low in the Southwest and Northeast regions. This suggests that there are differences in exchange rates among regions, and the differences seem to be geographically correlated, rather than random. Furthermore, these results are in line with the findings reported in Chapter 4. Aiba and Ranareth found that enterprises in the Southwest and Northeast areas

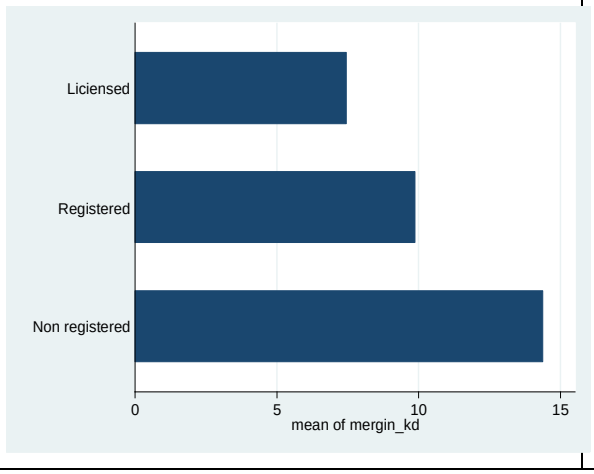
[22] Including Battambang, Kampong Cham, Sihanoukville, Banteay Meanchey (Poitpet) and Svay Riem (Bavet)

[23] All cities and provinces, excluding Phnom Penh, Siem Reap and economically active areas

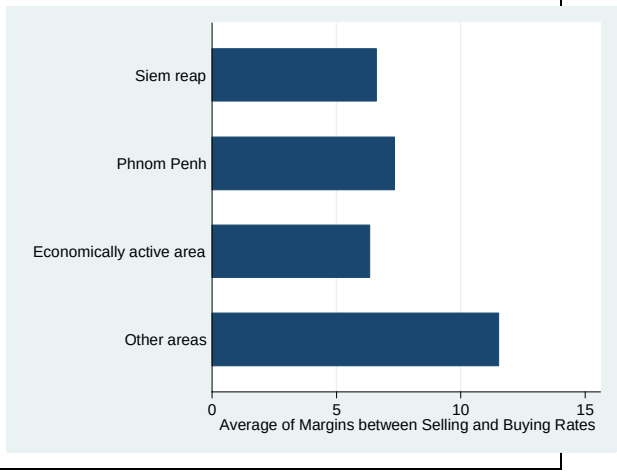
of Cambodia were likely to experience a mismatch in currency composition between their revenues and expenditures. Specifically, they had larger shares of USD on the revenue side, and they expended larger shares of KHR on the expenditure side. Therefore, there is likely to be high demand for exchanging KHR with USD, and regional money changer exchange rates might therefore reflect the preference of economic agents in these regions.

Figure 6.8: Margins between Selling and Buying Rate by Type of Money Changer and by Location

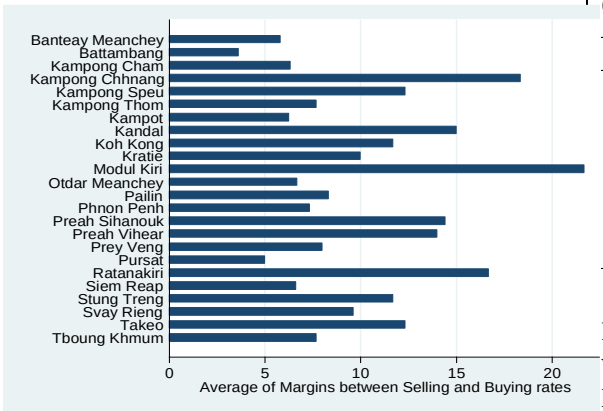
A: By types of money changers



B: By Regions



C: By Provinces



D: Table: T-test between types of money changers

	Licenced	Registered	Non-Registered
Licenced	.		
Registered	2.91	.	
	(1.97)		
Non-Registered	6.91*	4.50*	.
	(3.20)	(2.59)	

Note: Each cell presents differences between mean values of groups, and standard errors are shown in parentheses. Stars represent that the differences are statistically significant at 5%.

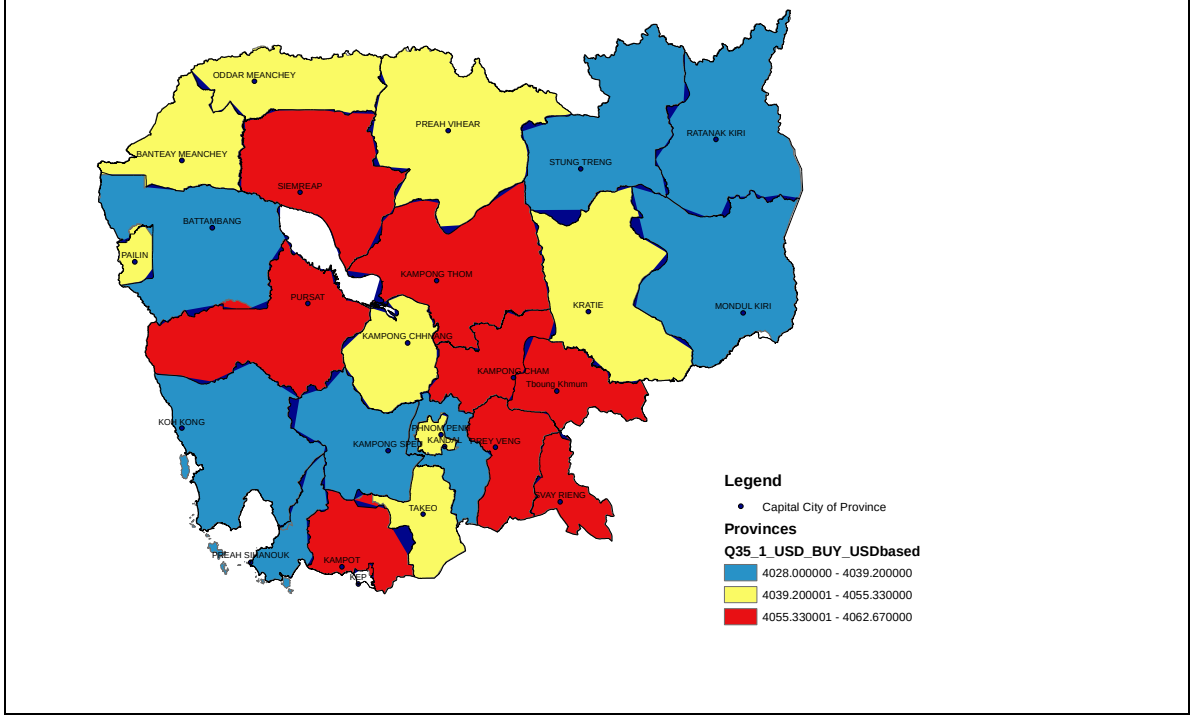
How do they decide on exchange rate settings then? To answer this question, we asked money changers about the information sources that they base their decisions on (Table 6.3). The most frequent answer was "Other money changers in Phnom Penh." Even if we divided our sample into types of money changers, the results did not change for LMCHs and RMCHs, while NRMCHs answered that they preferred to use commercial banks and the internet. Presumably, those differences in sources of information might affect the determination of exchange rates.

Table 6.3: Information sources for deciding exchange rates

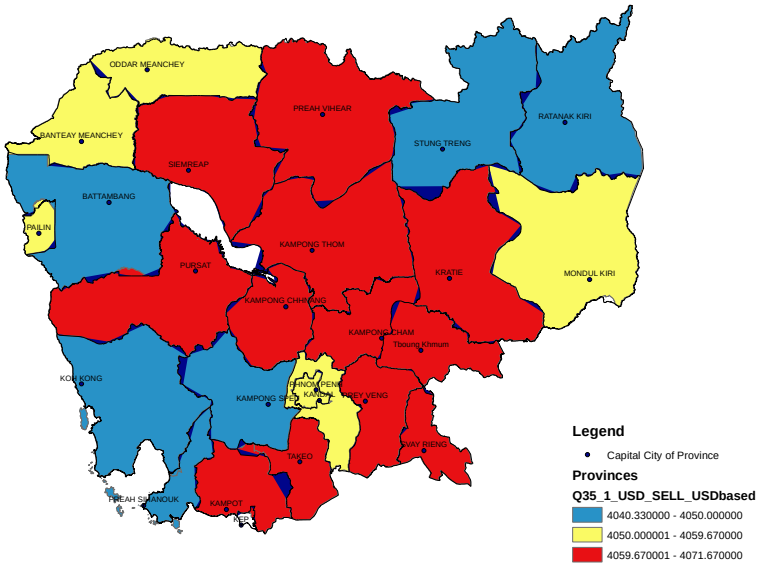
	All	Licenced	Registered	Non-Registered
National Bank of Cambodia	5	4	1	0
Commercial Bank	36	4	28	4
MFIs	2	0	1	1
MCs: Main town of provice city center	13	0	13	0
MCs: Phom Penh	57	11	43	3
MCs: Other Provinces	11	1	8	2
Foreign Partner	8	0	8	0
Foreign Individual	0	0	0	0
Newspaper	0	0	0	0
TV	2	1	1	0
Internet	17	4	12	1
International sources: e.g. Bloomberg	24	1	19	4
Other	0	2	0	0

Figure 6.9: The Geographical distribution of exchange rates

Panel A: Buying Rates of USD



Panel B: Selling Rates of USD

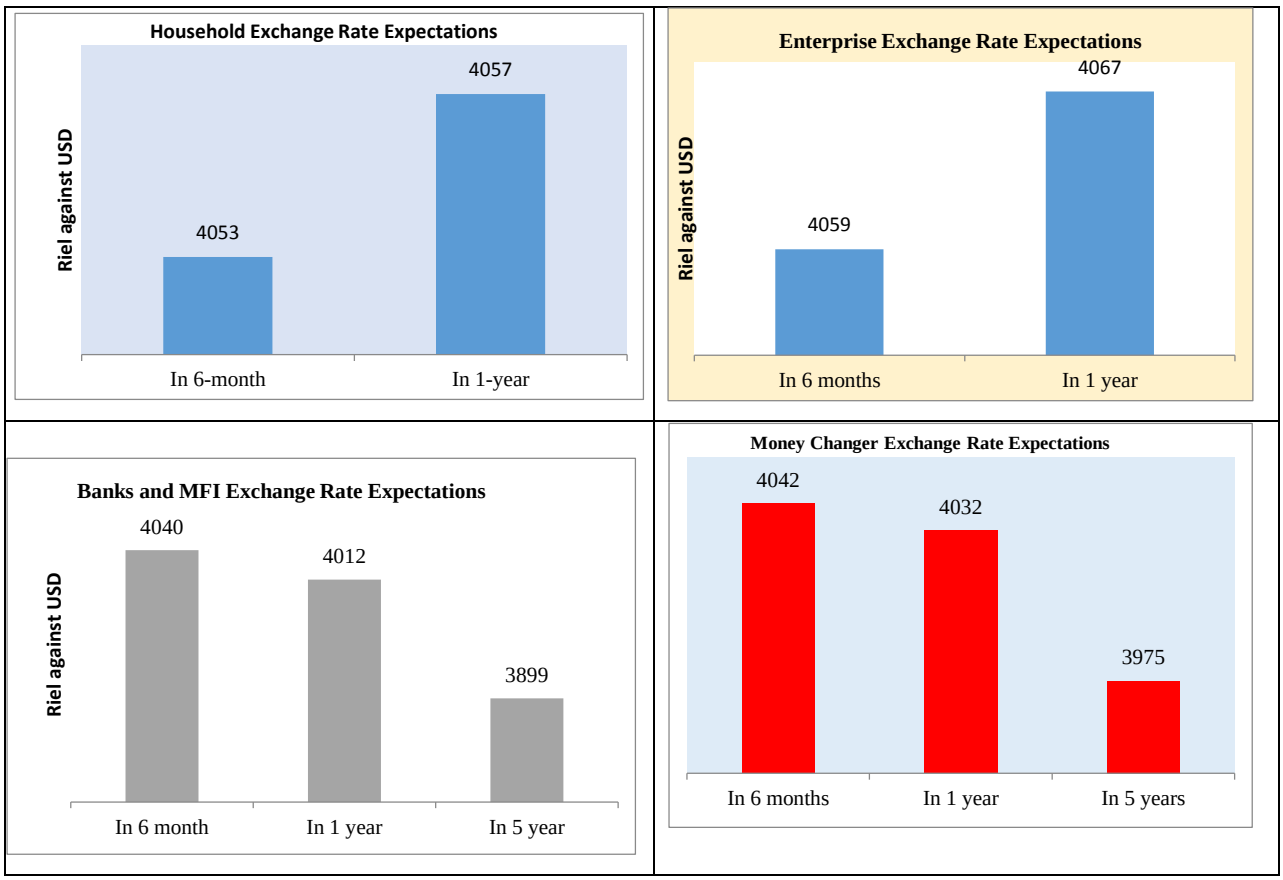


4.4. Exchange Rate Expectations

Figure 6.10 outlines the exchange rate expectations of the economic agents. The survey found that money changers, and banking and financial institutions (supply side), tend to have the same trend of exchange rate expectation. They expect that in the future, the KHR will be appreciated against the USD. Banks and financial institutions that source their funds and loans in USD face no currency mismatch, and therefore the appreciation or depreciation of the KHR would mean nothing to them. However, for others who have some sources of funds in the local currency, especially some microfinance institutions, would to some extent find that this affects their lending behavior. Theoretically, if those microfinance institutions expect the appreciation of KHR in the short and medium term, they would lend in KHR so that they can avoid currency mismatch, and gain from the appreciation of the currency. This implies that loan dollarization should have decreased in the microfinance sector. However, due to the increasing sourcing of funds in dollars, loan dollarization tends to keep rising.

Figure 6.10 also indicates that, in the short run, Households and Enterprises (demand side) seem to have divergent exchange rate expectations compared to that of the supply side. Both economic agents tend to believe that KHR will be depreciated over 6 and 12 Month periods. This can be interpreted as holding KHR will result in a loss in the future. Hence, this would affect their currency choices relating to saving or asset acquisition in the future. They would prefer to save or keep their assets in USD.

Figure 6.10: The Exchange Rate Expectations of Economic Agents



4.5. Other Business Activities of the Money Changers

We found that most of money changers are engaged in businesses other than their currency converting business. Table 6.4 shows that only 13 money changers said that they did not have other activities. Out of 73 money changers that have other activities, half of them are engaged in selling gold and other precious metals, as well as money transfer activities. Next, we further investigated currency usage in their other activities. It seems that they are likely to use both USD and KHR in other business activities (Table 6.5).

Table 6.4: Other business activities

	Yes	No	Don't Know
Lending activities	24	61	1
Gold, Precious metal, Jewlry, and stones	48	38	0
Money transfer	42	34	0
Other business activities	26	60	0
No other activities	13		

Table 6.5: Currency usage in other business activities

	Lending activities	*Money Transfer*	*Gold, Precious metal, Jewlry, and stones*	*Other activities*
KHR	18	18	39	21
USD	21	18	44	24
THB	4	0	13	1
VND	0	0	2	1
Others	0	0	0	1
Don't Know		21		

5. Conclusions and Policy implications

Study of money changers' structure, behavior and money exchange business characteristic is essential for the promotion of local currency, especially in the highly dollarized economy, where banking and financial institutions do not adequately play role in the FX market.. In Cambodia, the FX market, for the small and medium transaction segments, tends to be a competitive playing field. Yet, for large transactions, it is more like an oligopoly, where several large money changers dominate. The behaviors of money changers directly and indirectly influence the central bank's exchange rate policies, the operating costs of other economic agents such as enterprises and households, and the widespread use of local and foreign currencies across the country. From our survey results, the policy implications can be drawn as follows: enhancing the FX market, supervising large money changers, and reducing the costs of obtaining local currency are important measures to promote the use of local currency policy of the government.

The development of a wholesale foreign exchange market: the development of this market is crucially important in facilitating and promoting the use of local currencies. Now days, banks and MFIs tend to be inactive in relation to playing a role in the FX business. To reduce their market power, as well as to prevent the speculative or colluding behaviors of large money changers, the roles of banks and MFIs in the FX market needs to be further encouraged. For instance, the central banking authority should involve banks and MFIs in FX auctions, allow them to open FX counters in their respective branches, and especially encourage them to play a role as the formal FX dealer-broker, rather than leave this to the money changers. Participation of the banks in the foreign exchange market could also facilitate the development of a forward exchange market, since banks are the only financial institutions able to withstand the risks. Furthermore, financial instruments denominated in riels should be further promoted.

Supervising large money changers: even though the money exchange business is a highly competitive market, a few large money changers tend to dominate, especially in the large transaction segments. We identified the possibility that there might exist economies of scale in the money changing business. Hence, they may have adequate power to influence exchange rate determination, and this implies that large money changers can make a profit in the currency they prefer by setting buying and selling rates on their own. Furthermore, as we discussed in the section on sources of information, the most common sources of currencies for exchange were other money changers in the main city. Since those money changers are basically large-scale, small money changers are likely to follow them when seeking to set exchange rates. Therefore, the decisions of large money changers will spillover from one region to another through the medium of small money changers.

Facilitating and reducing the cost of obtaining local currency: as we found in the survey, money changers in various provinces across the country set exchange rate of KHR against USD differently. This is partly due to the differences in the cost of obtaining local currency from one region to another. To facilitate and possibly reduce the cost of obtaining local currency so as to further promote the use of the Riel, there are three other measures could be considered: 1) invite more participants to take part in KHR auction/purchasing, such as banking and financial institutions, as well as registered money changers; 2) allow KHR auction/purchasing in all provinces. By doing so, the costs of cash transportation and the size of the margins made by large money changers would be reduced; and, 3) facilitate/provide Riel liquidity to banking and financial institutions. This would help them to play a proper role as dealer-brokers in FX market, in addition to increasing their ability to provide more KHR loans to the public.

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Chapter VII: Policy Implications

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According to our survey results, the degree of dollarization is not homogeneous across the regions in the Kingdom. Dollarization is concentrated mainly in urban areas, where economic activities are more dynamic and exposed to foreign currency flows, especially in Phnom Penh, the capital city. In the rural and central areas, the KHR dominates in payments, price quotations and even as a store of value. Within these patterns, the US dollar is generally used for large transactions and imported goods, or in modern markets, while the KHR is essentially used in small payment transactions such as those for foodstuffs, or in traditional markets, and in some large transactions in the agricultural sector. In the border areas, neighboring currencies are also used along with the KHR and USD. The Thai Baht is frequently used in the areas close to the Cambodia-Thailand border in the exchange of goods and services, but also in financial transactions such as the deposits and credits provided by formal financial institutions. At the Vietnam-Cambodian border the Vietnamese Dong is also used for the exchange of goods, but to a very limited extent, and not in financial transactions.

The degree of dollarization in the activities of an enterprise is not necessarily dependent on its size; other factors such as geographic spread and sources of incomes and borrowings are also important. In other words, there is no clear trend in the use of foreign currency in regard to enterprise size. Most enterprises, and in particular the foreign ones, declare that they use USD as an essential part of their activities; they receive revenues in USD and pay in USD, except for tax payments, and they also largely borrow in USD. There are a few enterprises using THB in their activities and also borrowing in THB in the Cambodia-Thailand border areas. Naturally, it is quite convenient for these firms to use foreign currency, depending on their income and borrowing needs, as they can avoid exchange rate losses and transaction costs when using different currencies in their activities. For some enterprises, mostly in the retail trade sector, KHR is the main currency used in their financial operations. We also observed that some large enterprises in the Agro-industrial and utilities sectors, for example, are operating using multiple currencies. Here, large rice millers pay farmers or even middle men in KHR, or to a lesser extent THB in the border areas, but pay workers in KHR. If these were to export or sell to retailers, they would receive incomes in foreign currency or KHR. The state-owned enterprises that provide utilities, such as water and electricity, receive their income totally in KHR, but they have to convert the KHR to USD to pay their suppliers. These currency mismatches potentially expose them to exchange rate losses and risks.

Because of this use of multiple currencies, the currencies used in income and expenditure could be different, not only for households but also for enterprises. This situation is favorable to the development of currency exchange activities. As a result, there are many money changers, especially those of micro and small sizes, operating the currency exchange business in Cambodia, and they render this market as perfect competition. The money changers facilitate the use of foreign currency by minimizing the costs of holding it. We frequently observed that both foreign and local currency is often exchanged at non-currency exchange shops; the shop agrees to exchange because they need it for their operation; for example, to pay their wholesalers (normally in USD). Currency exchange helps these sellers reduce costs of exchange at the money changers or banks, and also to get some profits in addition to their main business activities.

The financial sector is more dollarized compared to the real estate sector, as around 90% of financial transactions in this area operate in USD. This pattern results from the way that currency mismatch risk is managed by the financial institutions whose source of funds is foreign currency. However, MFIs use more KHR in their operations than commercial banks, especially in providing credits to the poor and SMEs. Nevertheless, the recent trend of KHR operations in the microfinance sector during the survey period (2009-2013) has this decreasing. One pertinent explanation is that the

MFIs are trying to reduce their currency mismatch risks by providing credits in the same currency as their source of funds (deposits and borrowing). This behavior of MFI means that they are transferring risk of currency mismatch on shoulder of borrowers. In this context, it is also justified the promotion of usage of KHR for loans.

So far the good economic performance of Cambodia has demonstrated that dollarization is not an obstacle to growth and financial sector development. In contrast, it has facilitated and promoted economic activities and integration into global markets. Nevertheless, dollarization could expose the country to risks, and thus make the economy vulnerable to external and internal shocks alike. Dollarization imposes constraints on monetary policy implementation and effectiveness, and potentially limits central bank actions as a lender of last resort.. In addition, further financial development may result in reduction of cash based transaction while increasing the level of credit expansion in the economy. This means that the risk associated with lack of function of the lender of last resort will be increased. The level of damage with financial turmoil may be more serious than before the financial development.

Dollarization in Cambodia has persisted for a long time though, and does not seem to decrease if there is no concerted effort to promote the local currency. One recent World Bank report also mentioned that dollarization is likely to stay unless addressed (World Bank 2015). It is noted that macroeconomic stability is a prerequisite for the promotion of riel, but the stability itself may not result in expansion of usage of KHR. In the context where Cambodia's economy has grown robustly, with both macroeconomic and financial stability being well-preserved, but in a situation where the global and regional economy is facing growing uncertainty, it is in fact indispensable. However, it is time for Cambodia to impose effective monetary policies to protect the country from shocks so as to support the economy that it may grow sustainably. This may be best achieved by considering our survey results, which indicate that the following policies or measures to promote the use of KHR would contribute significantly to government policy formulation during this time of uncertainty.

Enhance confidence in the Riel

To further enhance confidence in riel is indispensable to sustain the momentum of increasing trend of KHR use. To meet this end, the purchasing power of the Riel should be preserved. To do this, inflation should be maintained at a manageable level, and the KHR should not be largely depreciated. So far, the stability of the exchange rate between KHR and USD has been serving as an anchor of price stability, and has promoted public confidence in the Riel. However, in the medium-to-long term, a more flexible exchange rate in accordance with economic fundamentals, and in particular a bias towards KHR appreciation, seems appropriate.

In this context, inflation targeting could a good option in relation to the development of a future monetary regime that can maintain price stability and at the same time leave the exchange rate more flexible after attaining significant level of usage of KHR. The flexibility of the exchange rate could for example signal the market about the risks of holding USD when the latter fluctuates. Notwithstanding the need for flexibility, the stability of the exchange rate should be maintained until confidence in the Riel is strong enough. Then, the exchange rate could be allowed to float in a gradual and careful manner.

Promote price quotations and payments of goods and services in Riels

Salary and wages are the most dollarized type of income compared to other sources of dollarization, followed by that from business activities. The latter may be a result of payments to employees in foreign currency by firms/companies whose revenues are in foreign currency, such as garment factories, foreign companies, supermarkets, and so on. Households then use this foreign currency to buy goods and services from enterprises and sellers. However, it is worth highlighting that, in the garment sector, even though employees receive their salaries in USD, only a small proportion of their expenditures are in USD (in particular on telephone services and rental housing). Apart from this, their spending is in KHR. According to our survey, nearly half of worker's salaries were transferred in USD to their parents/relatives in their home town through a money transfer service. In the majority of cases, their parents/relatives withdrew the transferred money in KHR, or exchanged it to KHR quite

quickly. Our survey also reaffirmed that households exchange USD to KHR quite frequently, because they need KHR for their spending.

Therefore, if salaries and wages were increasingly (gradually) paid in KHR, households would not suffer losses in exchange operations, especially as the prices of goods and services would be quoted in KHR. Business firms and other companies could also use one single currency in their operations when KHR is used for payments of salaries, as currently they have at least spent KHR on taxes and utilities. In this regard, the government should gradually encourage firms and sellers to quote the price and payments of goods and services in KHR, and promote the payments of salaries and wages in KHR. These measures should gradually begin in both the public and private sectors.

Promote the opening of bank accounts in Riels

Though financial inclusion has increased during the past two decades, the majority of the Cambodian adult population has not had a bank account yet, and even fewer have had a bank account in KHR. Few banks have yet provided financial services (deposits/credits) in KHR, and most firms/companies have not opened bank accounts for their employees. Increasing the number of bank accounts opening in KHR would encourage the payment of salaries in KHR, and the overall usage of KHR. It would reduce cash holdings and its associated risks, as well as facilitate the use of KHR through different types of payment instruments. It could also address the complaints about the inconvenience of holding too much KHR in order to make large payments, or the ones about too many zeroes on the KHR notes. To achieve this end, the government, financial institutions, and companies should encourage the use of bank accounts denominated in Riels.

Improve the payment system and financial instruments in Riels

The payments system is a crucial part of the infrastructure of the financial system that could reduce cash based transactions. In addition, it promotes the greater use of KHR if the system is designed in favor of KHR. Recently, an electronic retail payment system in local currency has been introduced. This should further promote KHR transactions. In addition, a greater variety of KHR notes should be made available in ATM machines as well as increasing the numbers of the ATM machines available in major cities. This will offer the possibility of using KHR more widely, as currently only few banks put Riel notes in their ATM machines, and there are as yet very limited KHR denominations that are suitable for this. Most ATMs contain only one denomination of KHR notes (10,000 Riels), with very few making two denominations (the 10,000 Riel and 20,000 Riel notes) available.

According to our survey, only a small percentage of the population uses the two largest KHR denomination notes. Therefore, it is important to promote the use of the largest note (100,000 Riels, equivalent to around 25$). In addition, the NBC should also consider issuing larger denominations (for example 500,000 Riels - equivalent to around 125$) to raise the value of the KHR notes in circulation. The issuing of larger denomination banknotes would correspond to the demand for higher value of notes as the value of economic and financial transactions becomes greater. Alternatively, it is worth considering the reissue of current riel notes by removing two zeroes from each of them.

Finally, money transfer or remittances should also be carried out within formal financial institutions or through the use of agents to reduce the direct use of foreign currencies. Informal transfers have favored the use of foreign currency as the beneficiary who received it could then use it outside the formal banking system. By forcing this change, formal financial institutions could keep track of the flow of foreign exchange, and control its value relationship with the KHR, so that the foreign currency is well captured by the banking system. Further study may be needed to promote formalization of transfer through banking system.

Promote financial intermediation in Riels on a gradual basis

According to our survey, banks continue to operate almost entirely in USD, but MFIs operate in KHR as they provide more financial services to the poor than the formal banking system. During the survey period (2009-2013), the trend of KHR credits provided by MFIs decreased from 40% to 20% of total credits. This is a worrying trend, as MFIs are forced into trying to manage their currency mismatch risks when their sources of funds are in a foreign currency. Therefore, measures should be taken to

encourage banks, and in particular MFIs, to expand their financial intermediation in KHR. The possible measures are as follows:

- In some dollarized countries, financial institutions are required to increase the proportion of their operations in local currency on a gradual basis. Thus, the central bank should consider encouraging and requiring banks and financial institutions to operate in KHR at a certain level. It would be ideal if this could begin on gradual basis;
- Develop hedging instruments for financial institutions that allow banks and financial institutions to obtain KHR liquidity when their sources of funds are in foreign currency;
- Gradually widen the reserve requirement rate on KHR deposits and USD deposits, so that KHR is more available to financial institutions for the provision of credits;
- Promote deposit savings in KHR, giving priority to the poor and those living in rural areas. In general, households save money in terms of cash holding in their residences rather than keeping their cash in bank deposit accounts. This cash is effectively outside the financial system of the country. Though the amount of saving in foreign currencies is higher than that of KHR, in rural areas households save more KHR compared to those in urban areas. Also, the poor hold more KHR cash for their savings compared to the rich. Targeting that segment of households, the authorities should introduce deposit schemes favorable to the promotion of deposits in KHR. This type of scheme may have better preferential interest rates than the market rate, and could, in turn, be structured so that those who save using such a scheme over a longer period may enjoy preferential borrowing in KHR

Improve foreign exchange markets

An effective and formal wholesale foreign exchange market is essential to absorb foreign currency inflows, and also to provide foreign currency when the market needs it, such as in responding to the demands of importers, or for other transfers abroad. As the foreign exchange market in Cambodia is rather more a retail market, and not basically formal, the inflow of foreign currency can be used outside the banking system. Thus, their transactions are mainly in cash. This favors the persistence of dollarization. Therefore, the foreign exchange market should be further developed toward a wholesale and formal market in which banks play a central role in responding to the demand for Riels, and to efficiently absorb foreign currency inflows to the economy.

Further developing interbank and money markets

The existence of an Interbank and a more formal money market would allow banks and financial institutions to better manage KHR liquidity, and encourage them to use KHR in their operations. Currently, the formal interbank market is underdeveloped. Among certain major banks, there are established relationships through credits and deposits, but these are very limited and at the same time, the market is lacking in several important instruments. Up to now, the National Bank of Cambodia has paid great attention to the development of the market through the introduction of a new tradable debt instrument, the Negotiable Certificate of Deposit (NCD). Despite its gradual promotion, the NCD has yet to be used in the interbank operation; in other words, there is no secondary market for NCD at this time. Recently, the launch of liquidity-providing collateralized operations (LPCO) aims at providing KHR liquidity to financial institutions using NCD as collateral. These operations may contribute to the development of the interbank and money market in Cambodia. Furthermore, there is a need to continuously develop an active interbank and money market in favor of the KHR instruments, which will depend on the availability of instruments. In this context, short-term debt instruments, specifically Treasury Bills in KHR, should be created to support the demand for KHR.

Further develop securities markets

A Securities market was launched at the end of 2012, and there are now four listed companies. Quotations in this market are solely in KHR. Though trade volume is still limited, the establishment of a securities market demonstrates to the public the government's strong commitment to the support of KHR, and will mobilize funds in KHR that will further create supply and demand for the domestic currency. In the future, when the government requires sustainable financing, it should not see these funds as necessarily coming from concessional loans from abroad; instead, it should seek options for

long-term debt financing from domestic sources, such as issuing government bonds in KHR to finance its long-term investment plans. This domestic debt financing will contribute to reducing dependence on foreign debt and currencies, and will reduce risks associated with exchange rate fluctuations such as those the government is currently facing.

Fiscal support for the Riel

The fiscal system is one of the key arenas for encouraging the use of local currency, because willingness and positive attitudes from the government are prerequisites for public recognition and understanding of commitment to change. Through its roles, the government earns revenues both from tax and non-tax sources and also spends on consumption, wages and investment. In this regard, the government could play a major role to create demand and supply in local currency through fiscal measures.

So far, public sector revenues from taxes and non-taxes are mostly in Riels. However, there are still some revenues collected in foreign currency, such as entrance fees to tourism sites, airport taxes, visa fees, rents, and so on. On the expenditure front, though all public wages are in Riels, some public consumption and most public investments are paid in foreign currencies. Therefore, if all revenue collection and all payments for consumption and investment are in Riels, the government would increase the demand for, and raise the supply of Riels in the economy. It may also consider expenditure associated with donor assisted projects or NGO projects should be made in Riels. In addition to this, if the possibility is allowed, the government should consider imposing taxes on revenues, profit, and any other form of tax on operations in Riels at a lower rate than the operations carried out in foreign currencies to provide incentives for economic agents to conduct their operations in the domestic currency.

Promote public awareness and participation

Using USD has become deep rooted in the mindset of the people, such that it has become a Cambodian habit to think and pay in USD. Thus, the policy on promoting the use of national currency cannot be realized in a subjective manner without changing the public mindset. In this connection, the public has to be aware of the roles and usefulness of the national currency and the policies of the government, and take part in the process of promoting the preferential use of the national currency. Mainstreaming and encouraging participation can be done through various actions, including broadcasting, training, and/or at discussion forums between the authorities and the public or though the education system, and so on.

Enhance cooperation for implementation of effective measures

Finally, promoting the use of the Riel is a macroeconomic issue that requires collaborative efforts in the preparation and implementation of consistent policy, as well as actual measures. Meanwhile, the framework of cooperation must cover inputs from all of the key relevant parties in both the public and private sectors. Thus, a National Policies to promote the use of riel is needed to promote the participation of all stakeholders.