# Leveraging financial market development to promote Riel

The development of securities market as a driver of the usage of Riel

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## Abstract



This paper is to examine the extent that security market development can promote the usage of riel. The purpose is to understand how the dollarized country makes use of security market to de-dollarize and to draw some lessons from other countries. Based on international experience, the securities market promoted the use of domestic currency when it is well developed through diversifying bank funding or reducing exchange rate volatility. However for Cambodia, security market does not play an important role in promoting the usage of riel given the current situation since it is in early stage and has limited activities. Even though security market is aimed to promote Riel, development of this market itself also depends on a rising need for a Riel. Once the KHR is demanded and important for commerce- such as demand for Riel which would be solely used in ATM, Deposits, Loans, Change for transactions, etc.,; and investment and stock and bond markets are well developed- more domestic instruments is cultivate, then locals might need a securities market and domestic currency deposits and securities transactions will increase. However, the extension of security market is also a compliment factor for encouraging the de-dollarized once the trend of de-dollarization is increase.

Keywords: Dollarization, De-dollarization, Cambodia Stock Exchange, Riel.

## 1. Introduction

In general, there are two causes to dollarization. The first cause is currency substitution – the use of dollars as means of exchange and unit of account. The currency substitution comes in need due to hyperinflation and political instability. Asset substitution is the second cause. This results from risk and return considerations between domestic and foreign assets. Price instability and prolonged depressions have prompted the use of foreign-denominated assets as a store of value (Duma, 2011).

For case of Cambodia, the banking system and the central bank were established in 1954 after the closure of the Bank of Indochina. During the Khmer Rouge regime (1975–1979), all money, banking system, and the central bank were destroyed, but were reintroduced in 1980 in the form of mono-banking system – the central bank played a function as the monetary authority; the cashier of the government in the form of the National Treasury; and the provider of banking services including credit, deposits, and payment system. The 1991 Paris Peace Accord transformed the Cambodia's economic regime from a planned economy to a free-market economy, leading to the fact that Cambodia adopted a two-tier banking system (Huot and Khan, 2010).

In 1993, the United Nations Transitional Authority in Cambodia (UNTAC) organized and supervised the first general elections. It was the time of massive inflow of U.S. dollars notes to Cambodia, amounted to USD 1.7 billion, accounted for two-thirds of Cambodia's 1993 GDP (Khou and Odajima, 2015). Foreign currency is increasingly present within the territory of Cambodia. In the last two decades, foreign currency to broad money rose from 60% in the 1990s to 80% in the 2000s, and then to 83% at the present day (NBC, 2015). In addition, Cambodia also experienced an annual average economic growth of 7.65% during the last decade with a relatively stable price level of 6.16%, except the period of global financial crisis 2007-2008.

Given overwhelming advantages of de-dollarization, the promotion of the usage of riel has been taken into consideration by the Royal Government of Cambodia (RGC) as indicated in the policy agenda in the Rectangular Strategy Phase III and the Financial Sector Development Strategy 2011-2020. De-dollarization may be driven by political stabilization; macroeconomic stabilization including stabilizing the exchange rate and stabilizing price; financial policy, prudential regulation and legal reforms; and securities market development (Kokenyne, Ley and Veyrune, 2010). However, de-dollarization seems difficult even though macroeconomic and political stability restores. Why? Public confidence must be taken into consideration. As long as the story of macroeconomic instability and hyperinflation entrenches for a long time in the public memory, people are willing to hold foreign-currency-denominated assets even within the periods of domestic macroeconomic and political stability (Kokenyne, Ley and Veyrune, 2010).

Due to the efforts of the RGC, the political and macroeconomic conditions have been gradually stabilizing to ensure that holding riel-denominated assets is not financially penalized, i.e., loss in value. However, the public confidence is still in question. Another driver is the big push including all deposits in riel, all riel-denominated assets, riel-denominated salary/wage, which will help promote the holding of asset-denominated in riel, yet they are still not fully implemented in the country. Cambodia securities market has been established since 2012 but with only two listed companies and a very limited trading volume. Will the development of this securities market contribute to the de-dollarization in Cambodia?

## 2. Literature Review

There are different definitions of dollarization. According to Balino (2003), dollarization is when one country's residents use another country's currency in their asset or liability. Capannelli and Gochoco-Bautista (2010) defined dollarization as multiple currencies which are used as a unit of account, medium of exchange, and a store value.

Dollarization can take many forms- such as, financial dollarization, real dollarization, and transaction dollarization or currency substitution (Armas, Ize, Levy, and Yeyati, 2006; Kokenyne, Ley, and Veyrune, 2010; Garcia-Escribano, 2010;Hout and Khan, 2010; and Khou and Odajima, 2015).

Garsia-Escribano (2010) did a research on factors driving bank de-dollarization in Peru. He used cross-section data on deposit dollarization of 23 countries and VAR approach to estimate with the minimum variance portfolio (MVP) model which implies that if real exchange depreciation is less volatile that inflation then consumer would prefer the dollar deposit as it is less risky. The model also includes macroeconomic stability, introduction of prudential policy, and the development of the capital market in domestic currency. The development of the local capital market is measured by domestic public debt market and private debt market. Capital market is initially introduced to reduce share of public debt in foreign currency. He assessed domestic public debt market which consisted of two types, fixed coupon bond (Tasa Fija and inflation adjusted bond (VAC), and private debt market to measure the effect of capital market on de-dollarized. Tenor of fixed coupon is 32 years and VAC has 39 years tenors. The portfolio of local pension funds denominated in dollars declined to 41 percent in 2009. The analysis showed that Macroeconomic stability had a significant impact on de-dollarization, prudential measures had an impact on banks' incentives to borrow and lend in soles. By issuing the long term bonds, the bank funding and pricing of long term credit can relax due to the extension of yield curve but the credit dollarization in economy increase. Therefore, development of the local capital market had a mixed impact on bank de-dollarization.

Chávez (2012) did an empirical model for de-dollarizing Bolivian economy. Bolivia is experiencing financial de-dollarization as a consequence of exchange rate appreciation. The appreciation trend encourages de-dollarization since the economic agents need a certain expectation in paying foreign exchange debt. Using VAR estimate with time-series data on aggregate credit dollarization and aggregated deposit dollarization, he found that bond with longer maturity can help de-dollarization by reducing the volatility of exchange rate.

Garcia and Sosa (2011) conducted an empirical approach on factors driving Financial De-dollarization in Latin America (Bolivia, Paraguay, Peru, and Uruguay). The authors used an unrestricted VAR model with explanation variables consisted of macroeconomic conditions, prudential policy measures, and development of a capital market in domestic currency. To examine financial de-dollarization, they estimated the proportion change of credit and deposit dollarization. They found there are different channels in promoting deposit and credit de-dollarization. Exchange rate appreciation and its trend are the main drivers of deposit de-dollarization while credit de-dollarization is encouraged by deposit de-dollarization, prudential management, and capital market. For development of capital market, they observe long term public bonds in domestic currency. Their study showed that the exchange rate appreciation has been a key factor explaining deposit de-dollarization and this in turn reduce credit dollarization. Moreover, the extension of yield curve of local currency public bonds has also contributed to

credit de-dollarization in Bolivia, Peru, and Uruguay, but not contribute to deposit de-dollarization.

Erasmus, Leichter, and Menkulasi (2009) did a research on the benefits and challenges of macroeconomic management in a dollarized economy and the international experience with attempts to de-dollarize to find lessons and policy options for Liberia.They studied different experiences from dollarized countries and concluded that country that used to be in period of poor macroeconomic management and economic instability would typically become a persistent dollarized economy. They suggested that developing the domestic financial market provide alternative instruments to U.S dollar deposits. Introducing domestic currency-denominated securities could help to reduce U.S. dollar denominated assets. A credible indexation system – such as, exchange rate index or inflation index, can strengthen investment in such assets if there is less confidence in local currency-denominated assets.

## 3. Contribution of Securities Market Development to De-dollarization: Data Analysis

Common indicators to assess dollarization are foreign currency deposit (FCD), foreign currency in circulation, local currency deposit, a local currency in circulation. However, FCC is the most difficult to measure and is thus left out of most measures of dollarization. (Erasmus, Leichter, and Menkulasi, 2009). According to Balino, Bennett, and Borenstain (1999) and Erasmus, Leichter, and Menkulasi, (2009), if ratio of foreign currency deposits to broad money of one economy exceeds 30 percent, it is considered as high dollarized economy.

According to figure 1 and 2, Cambodia is highly dollarized economy since the ration of FCD over the broad money (M2) is about 84 percent. The increase in foreign currency deposit (FCD) is slower than the increase in local currency deposit (LCD); however, the proportion of foreign currency is much bigger than LCD even the trend of LCD is increasing.

**Figure 1**

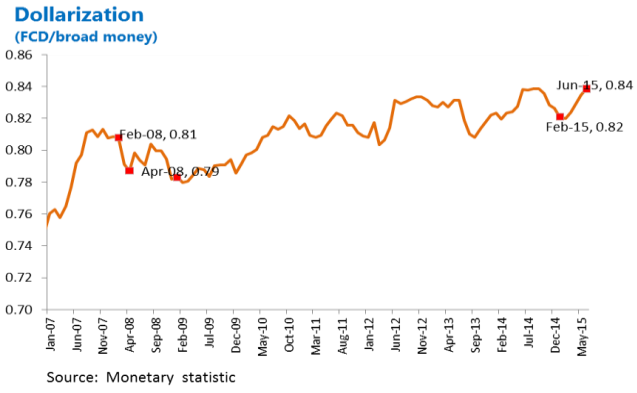



**Figure 2**

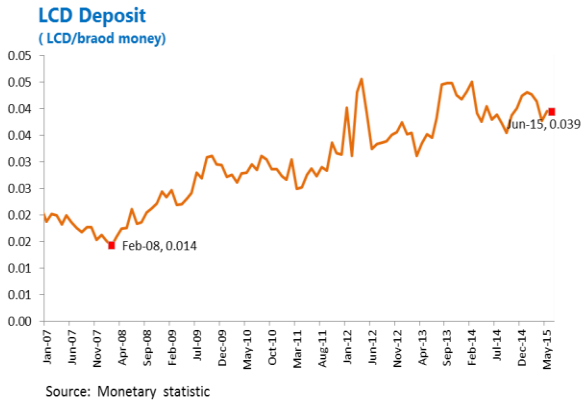
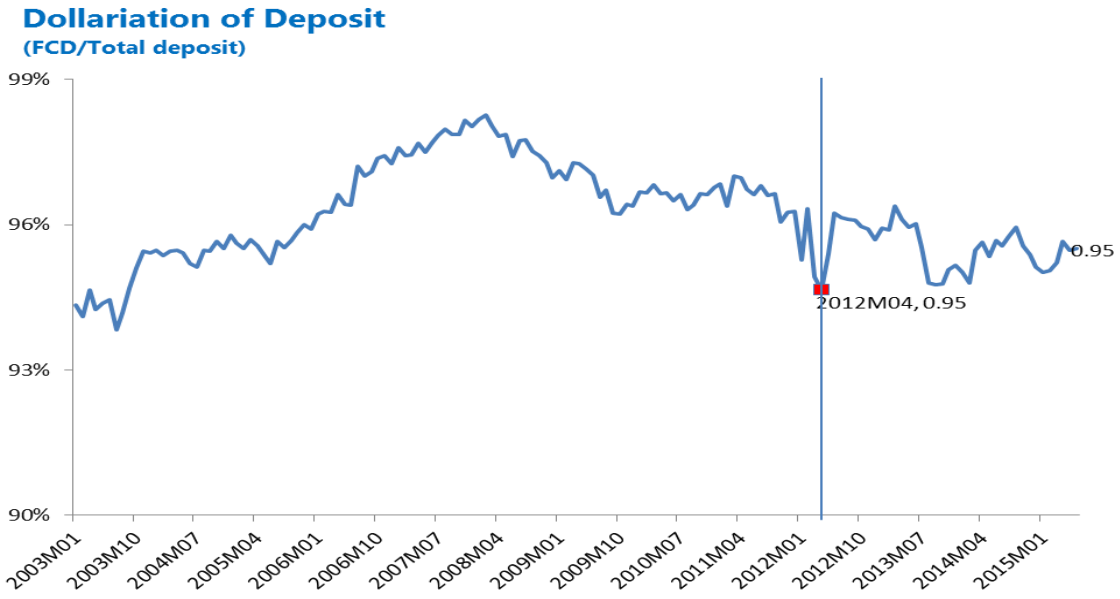


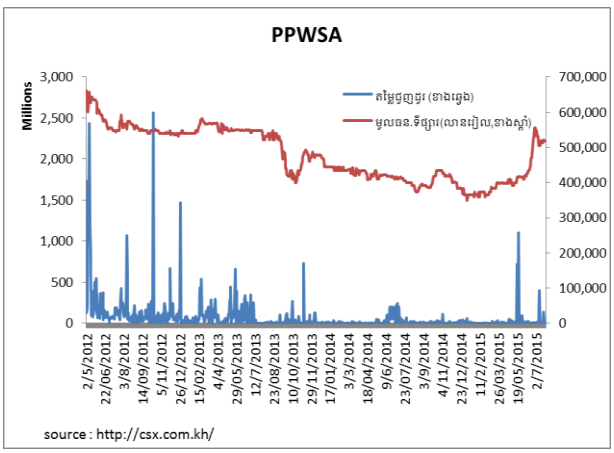
**Figure 3**

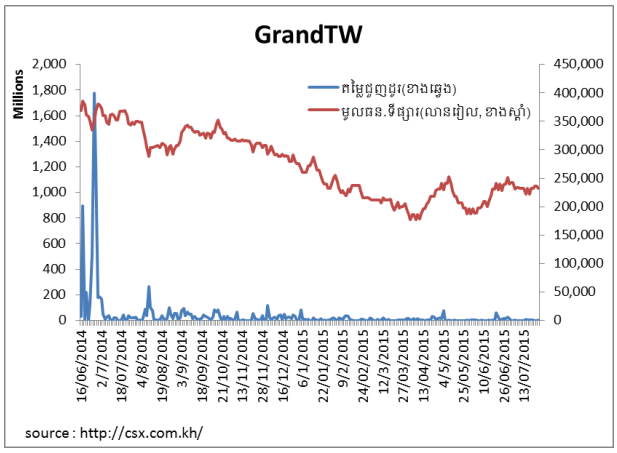


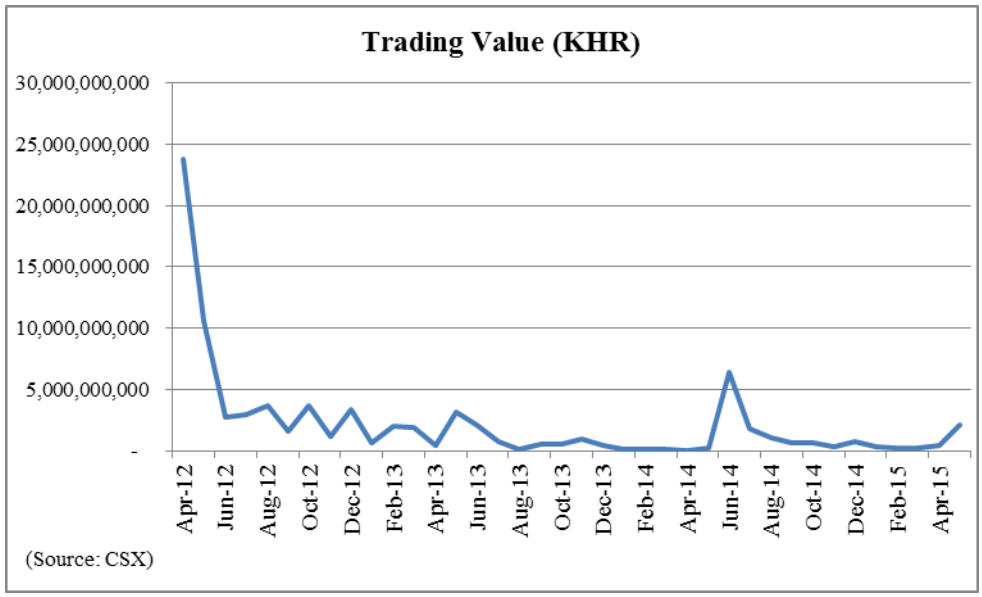

Garcia and Sosa (2010) assessed de-dollarization by checking the reduction of ratio of dollarized deposit over total deposit and dollarized credit over total credit. In case of Cambodia in the last five years, deposit dollarization has been reduced by 1.66 percent but there is an increase in credit dollarization by 2%.

| Table 1: | Dollarization | | De-dollarization |
|---|---|---|---|
| | 2010 | 2015 | 2010-2015 |
| Deposit (%) | 96.68% | 95.02% | -1.66% |
| Credit (%) | 96.6% | 98.6% | 2% |

Cambodia Securities Exchange (CSX) was officially launched in 2012. Under the Law on the Issuance and Trading of Non-Government Securities, CSX is authorized to function as market operator, clearing and settlement operator and depository operator. Currently, *Phnom Penh Water Supply Authority*, which is a state-owned enterprise and *Grand Twins International (Cambodia)*, which is a Taiwanese garment manufacturer, are listed on the CSX. Domestic and foreign investors can trade stocks on the CSX through eleven securities firms, of which seven are securities underwriters for helping companies to issue stocks. Investors may also seek advice on securities investment from two investment advisory firms. Cash settlement of all stock transactions is shared among three local banks and all transactions are done in riel currency even though investors are allowed to settle their transactions in dollar (SECC and NBC source). This means that all investors are using riel currency for making securities transactions. This shows a favorable sign for de-dollarization through the securities market. However, there is still very limited transaction in the market that currently cannot contribute much to de-dollarization.




## 4. Assessing de-dollarization: empirical model

Since there is no access to data of CSX, alternative way is proceed in order to examine whether security can promote the use of riel.

Koekenyne, Ley and Veyrune (2010) studied dedollarization using financial dollarization (credit and deposit dedollarization) of 21 and 32 countries during the period 2001 and 2009. He estimated financial dollarization with macroeconomic variable exchange rate volatility (vol), real effective exchange rate (reer). Later, he extent the model by including inflation ($\pi$) to reflect the stability of macroeconomiy, M2 as percentage of M1 to control for financial development and financial dollarization lag to deal autocorrelation and inertia process.

$$d(FD) = c + \beta\, d\big(FD(-1)\big) + vol + vol^2 + d(reer) + \frac{M2}{M1} + \pi + \varepsilon$$

Koekenyne et. al (2010) did not include the development of domestic currency financial market in his empirical research. In this paper, to examine the significance of local currency security market in promoting financial dedollarization, dummy variable is included which equal to one if the security has been implemented and zero otherwise.

$$d(FD) = c + \beta\, d\big(FD(-1)\big) + vol + vol^2 + d(Reer) + \frac{M2}{M1} + inf + dumcsx + \varepsilon \quad (1)$$

- FD: financial dollarization which consist of credit dollarization and deposit dollarization
- Inf : inflation
- $\frac{M2}{M1}$ : M2 as a percentage M1
- vol : standard deviation of percentage change of norminal exchange rate over 3 months
- $dumcsx$: is dummy variable taking value 1 if domestic security market has been implemented.

Regression result is shown in the table below (Table 1).

| Table 1 | Dependent Variable: | | | |
|---|---|---|---|---|
| | D(CREDIT_DOLLARIZATION) | D(DEPOSIT_DOLLARIZATION) | D(CREDIT_DOLLARIZATION) | D(DEPOSIT_DOLLARIZATION) |
| Explanatory variable | Coefficient<br>(Std. Error) | Coefficient<br>(Std. Error) | Coefficient<br>(Std. Error) | Coefficient<br>(Std. Error) |
| C | 0.002689*<br>(0.001601) | 0.002233**<br>(0.001111) | -0.005588***<br>(0.000805) | 0.002815**<br>(0.001255) |
| D(CREDIT_DOLLARIZATION(-1)) | -0.252136**<br>(0.122988) | -0.205057**<br>(0.096486) | -0.293124<br>(0.084872)*** | -0.209648**<br>(0.097658) |
| VOL | -0.023323<br>(0.032382) | -0.007729<br>(0.035903) | -0.017727<br>(0.018638) | -0.008564<br>(0.036655) |
| VOL^2 | -5.255991***<br>(1.086246) | -3.817476**<br>(1.660343) | -3.288142**<br>(1.528845) | -3.664569**<br>(1.717003) |
| D(REER) | 4.71E-05<br>(0.000362) | -0.000167<br>(0.000276) | -7.56E-05<br>(0.000190) | -0.000160<br>(0.000288) |
| $\frac{M2}{M1}$ | -0.000366<br>(0.000257) | -0.000322*<br>(0.000195) | 0.001203**<br>(0.000146) | -0.000463*<br>(0.000249) |
| INF | 0.044842**<br>(0.022230) | -0.013106<br>(-0.579961) | 0.043736***<br>(0.015079) | -0.009829<br>(0.022843) |
| DumCSX | | | -0.002820***<br>(0.000354) | 0.000575<br>(0.000740) |
| Variance Equation (GARCH) | | | | |
| C | 2.15E-07<br>(1.87E-07) | 2.77E-06<br>(1.94E-06) | -2.60E-08<br>(1.80E-07) | 3.16E-06<br>(2.09E-06) |
| RESID(-1)^2 | 0.873594***<br>(0.121641) | 0.180321**<br>(0.084284) | 0.938145<br>(0.124641) | 0.194362**<br>(0.088804) |
| GARCH(-1) | 0.642035***<br>(0.019533) | 0.471534*<br>(0.274159) | 0.629268<br>(0.019513) | 0.408828<br>(0.292904) |
| | | | | |
| R-squared | 0.051615 | 0.083058 | 0.041718 | 0.086765 |
| Sum squared resid | 0.011134 | 0.001292 | 0.011251 | 0.001287 |
| Log likelihood | 550.9172 | 635.3718 | 559.4338 | 635.5732 |
| Durbin-Watson stat | 1.978945 | 1.956610 | 1.870809 | 1.961288 |

According to the regression result, implement domestic security is significant in promoting credit de-dollarizaiton, but not significant to deposit de-dollarization. But, the data in

the last five years shows credit dollarization increase 2 %, which is contrast in the empirical model. This may be cause from the limited data that is used in the model. Currently, limited transaction in the security market may be not helpful in promote demand of riel. However, it is a good sign since investor prefer to use riel in settlement even though USD is allowed.

## 5. International Experience

Financial de-dollarization in Peru has been supported by macroeconomic stability, introduction of prudential policies to better reflect currency risk, the development of the capital market. His study claims that improving the yield curve of government bond, developing repo market and fixed floating swap curve would help to promote long term fund and price for de-dollarization. After implementing domestic debt instrument, the portfolio of local pension funds denominated in dollars declined from 50 percent in 2000 to 41 percent in 2009. The deteriorated dollarization of credit and deposit has enlarged within the context of macroeconomic stability and institutional credibility, especially, decline in commercial credit and time and saving deposits (Garcia-Escribano, 2010).

During the last decade, financial dollarization has gradually declined in Bolivia, Paraguay Peru and Uruguay. Exchange rate appreciation is the main driver in deposit de-dollarization while de-dollarization deposit, prudential measure and capital market encourage credit de-dollarization. Development of capital market helps to reduce credit dollarization in Bolivia, Peru and Uruguay through the extension of the domestic yield curve. By issuing bond with more than 10 years maturity, the longer term of yield curve has facilitated bank funding and pricing of long term loan in domestic currency. Using variance decompose, on average, shock to development of local currency bond can explain 11 percent of change in credit dollarization. However, Stability of macroeconomic environment is a pre-requirement of financial de-dollarization and prudential policy is also a compliment instrument to de-dollarize (Garcia-Escribano & Sosa, 2011; Chávez, 2012).

Chile dedollarized by using indexation. Central bank issued indexed bonds which were indexed to CPI with yearly adjustments. This indexation provided competitive instruments to facilitate funding and avoid interest rate ceiling. However, indexation required initial institutional conditions and developments which related to macroeconomic performance and specific regulations (Herrera & Valdés, 2003).

## 6. Conclusion and Policy Implication

According to international experience, de-dollarization is mainly supported by political stabilization, macroeconomic performance including exchange rate and price stability, financial policy, prudential regulation and legal reforms, and securities market development (Chávez, 2012; Garcia-Escribano, 2010; Garcia-Escribano & Sosa, 2011; Kokenyne, Ley and Veyrune, 2010). Development of securities market, such as issuing bond, can encourage financial de-dollarization through diversifying bank funding or reducing exchange rate volatility (Garcia-Escribano, 2010; Garcia-Escribano & Sosa, 2011; Chávez, 2012).

Based on the experience from other countries, the securities market promoted the use of domestic currency when it is well developed. In case of Cambodia, the securities market is underdeveloped and there is very limited transaction in the market. Limitation of security market transaction may be not helpful in de-dollarization and this limitation may cause from the demand

of riel is not high; country is not wealthy enough to encourage activities in security market trading. It is true that security market is aimed to promote Riel but development of this market itself also depends on a rising need for a Riel – the need to hold and the need to issue KHR bonds. However, the market showed a good sign in promoting the use of Khmer riel because although investors are allowed to settle their securities transactions in U.S. dollar, they still prefer to do in Khmer riel to facilitate the transactions and reduce an exchange rate risk with a bank. Unfortunately, there are still limited products and transaction on the market.

However, implementing security market is initial stage for future development of economy. Once the KHR is demanded and important for commerce- such as demand for Riel which would be solely used in ATM, Deposits, Loans, Change for transactions, etc.,; and investment and stock and bond markets are well developed- more domestic instruments is introduced, then locals might need a securities market and domestic currency deposits and securities transactions will increase. Moreover, if trend of de-dollarized increase, there would be many channel for encouraging further de-dollarization and also managing capital flight.

Finally, it is worth to note that the result in this paper would be carefully interpreted and used as preliminary assessment of current Cambodia Stock Exchange and promoting the use of riel since the data availability is limit. Further study should be conducted with various methodologies once the data are more available.

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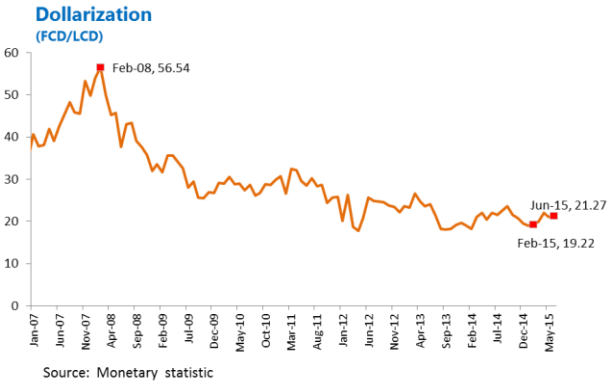
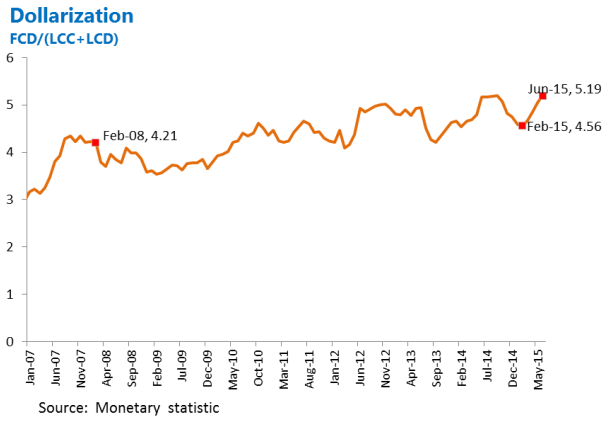
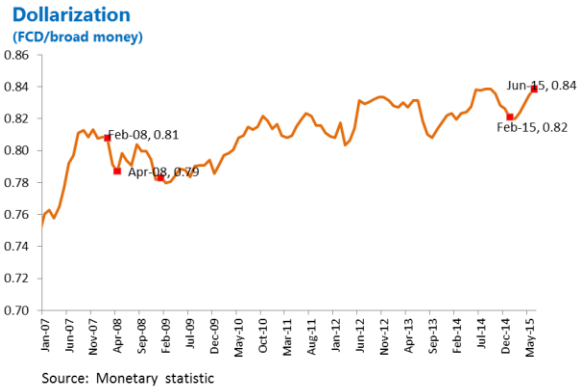
**Official websites**

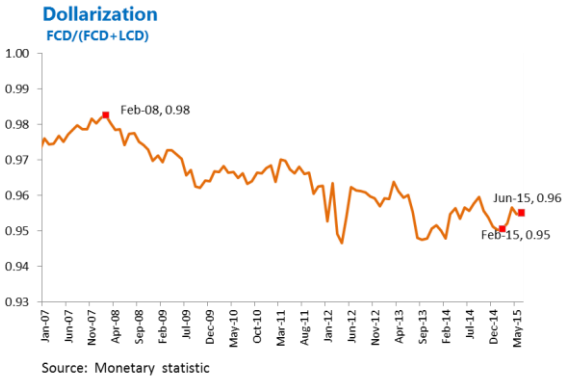
- Ministry of Economy and Finance (MEF): www.mef.gov.kh
- National Bank of Cambodia (NBC): www.nbc.org.kh
- Securities and Exchange Commission of Cambodia (SECC): www.secc.gov.kh

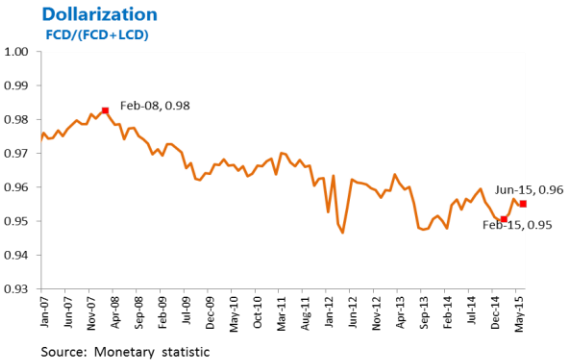
# Appendix

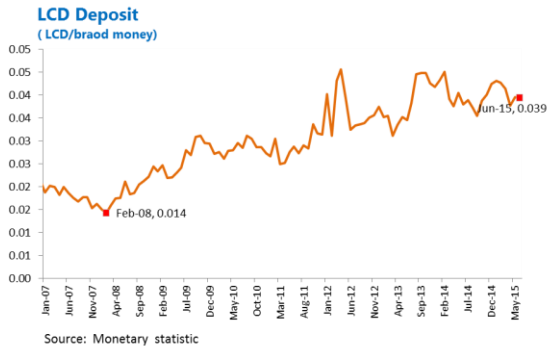

Dollarization
(FCD/LCD)
Feb-08, 56.54
Jun-15, 21.27
Feb-15, 19.22
Source: Monetary statistic

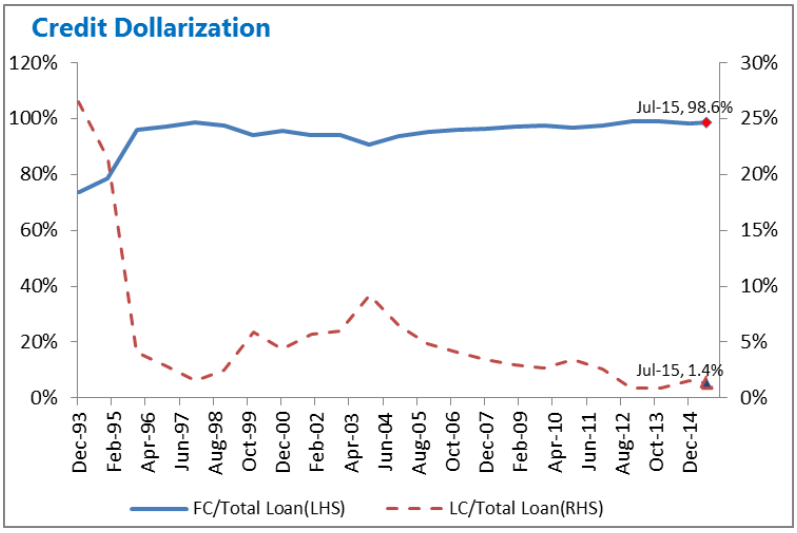

Dollarization
FCD/(LCC+LCD)
Feb-08, 4.21
Jun-15, 5.19
Feb-15, 4.56
Source: Monetary statistic


Dollarization
(FCD/broad money)
Feb-08, 0.81
Apr-08, 0.79
Jun-15, 0.84
Feb-15, 0.82
Source: Monetary statistic


Dollarization
FCD/(FCD+LCD)
Feb-08, 0.98
Jun-15, 0.96
Feb-15, 0.95
Source: Monetary statistic


Dollarization
FCD/(FCD+LCD)
Feb-08, 0.98
Jun-15, 0.96
Feb-15, 0.95
Source: Monetary statistic


LCD Deposit
( LCD/braod money)
Feb-08, 0.014
Jun-15, 0.039
Source: Monetary statistic


Credit Dollarization
120%
100%
80%
60%
40%
20%
0%
30%
25%
20%
15%
10%
5%
0%
Jul-15, 98.6%
Jul-15, 1.4%
Dec-93
Feb-95
Apr-96
Jun-97
Aug-98
Oct-99
Dec-00
Feb-02
Apr-03
Jun-04
Aug-05
Oct-06
Dec-07
Feb-09
Apr-10
Jun-11
Aug-12
Oct-13
Dec-14
FC/Total Loan(LHS)
LC/Total Loan(RHS)