The Exploitation of FDD (Foreign Denominated Debts) & FCD (Foreign Currency Derivatives) for hedging against foreign exchange rate fluctuations through Malaysian Corporations

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Abstract

This investigation examined the use of Foreign Currency Derivatives (FCD) and Foreign Denominated Debts (FDD) by Malaysian non-financial firms for external hedging against the exposure of foreign exchange rate fluctuations during the period of five years (2005-2009). Through the three steps model, the study clarifies that although exploitation of two strategies separately and together can reduce the risk of the exposure generally, the use of them are not significant in the case of Malaysia for the selected period of time. So, it seems that the governmental interventions through some techniques and monetary policies have influenced in this situation. Hence, the exploiting of Direct Currency Intervention (DCI), Open Market Operation (OMO), and Statutory Reserve Requirement (SRR) by the Bank Negara Malaysia (BNM), could be mentioned as the more probable reasons for why the usages of FCD and FDD by the companies have been insignificant. Moreover, the empirical findings specified that the two aforementioned strategies (FCD and FDD) could be used as complementary to each other in Malaysia.

1. Introduction

The Value of corporations that involve in international business operations are affected by unexpected volatilities of foreign exchange rate. Since, when the exchange rate changes during the specific period of time, it can in turn influence on the cash flows that have created by the companies during the same period, and finally can lead to changes in value of the firms as well. Hence, many corporations have used FCD and FDD as the two external strategies for hedging against the risk of exchange rate exposure, and many empirical researches advocated to this subject obviously. Moreover, some scholars investigated whether these two techniques used as substitutes or complements. Some investigations only focused on foreign exchange rate fluctuations and subsequent exposure that are mainly mentiond as the earlier studies, while others proceeded to both of two subjects; the exposure and the ways of hedging.

2. Literature Review

Dennis E. Logue and George S. Oldfield (1977) concerned about the necessity of the belief that “wherever a currency of account has fluctuations relative to the local currency, the market value of the firm will change”. Adler M. and Dumas B.(1984) explained that the concept of exchange rate exposure is not separate from the market risk exposure and these two items
could be measured by the same way, and the average exposure of a portfolio to volatility of exchange rates can be measured “by a regressing its total dollar value on a vector of exchange rates”.

By introducing the concept of the risk and the exposure as the sensitivity of the value of corporation to exchange rate randomness, Phillip Jorion (1990) presented an empirical model for estimating the exposure that has been used by many researchers afterwards. The positive and reliable correlation between the exposure and the degree of foreign involvement has realized through the investigation.

Tufano (1996) found the positive relationship between hedging and the value of the companies. He declared that the companies that had used hedging during their risk management activities, not only increased the value of them, but also provide the condition for their managers to be more utilitarian. Robert C.W.Fok, Carolyn Carroll and Ming C.M. Chiou (1997) investigation showed that hedging activities could rise the value of the firm via decreasing the financial distress that supposed to be more probable, and they may push the value of the company upward “by reducing the agency cost of debt and some agency cost of equity”. In addition, the study supported that companies with higher values are more eager to use hedging techniques and they may use as substitutes for each other. Through an investigation, Jia He and Lilian K.Ng (1998) introduced the level of foreign activities (at least 10%) and the hedging policy of the companies as suitable indices for assessing the exposure. The magnitude of leverage has known as an effective factor for arousing companies to use hedging policies as well. Marshal, Andrew P. (2000), specified the approach of different parts of the world to the exposure are not the same necessarily. Moreover, transaction risk has had more dignity compare to translation risk. Furthermore, netting and matching advocated the suitable internal methods for managing transaction risk while hedging through the balance sheet was widespread for translation one. Forward contracts as an example of FCD presented for hedging against both kinds of exposures externally. Allayannis G. and Ofek E. (2001) showed the use of FCD and FDD can protect the value of the firms from the risk of the exposure. Besides, the positive linkage between exchange rate exposure and the proportion of foreign sales has supported.

The research of Elliott, William B., Stephen P. Huffman, and Stephen D. Makar (2003) revealed that the usages of FCD and FDD could reduce the risk of the exposure, while the two techniques themselves could be considered as substitutes to one another. Gordon M. Bondar and M.H.Franco Wong (2003) advocated the return on market portfolio in the models could be an effective and significant factor for estimating the exposure. In addition, the stretching the time horizon creates the condition for increasing the exposure and the magnitude of this factor must be notified with sample size coincidentally. Nguyen, Hoa, and Robert Eaff (2003) showed the FCD could reduced the short term exposure efficiently. Jong.A.D., Ligterink.J., Macrae.V.(2006) measured the determination of the exposure, and the size of the firms and the magnitude of their foreign operations through foreign sales have been realized as two main effective factors providing the exposure. Carter, David A., Rogers, Daniel A., Simkins, Betty J. (2006) found a positive relationship between external hedging activities and firms value. Mansor H. Ibrahim (2008) measured the exchange rate exposure in different eight sectors of industries and services in Malaysia. The significant exposure for the majority of eight different sectors has supported through the investigation.

Chien, Jeng and Yu (2008) research that has used as the main article for this study, announced that the volatility of exchange rate could affect firm’s value significantly, if there would be a huge discount rate. It showed that the use of two external strategies (FCD and FDD) could be effective for reducing the risk of the exposure. Besides, contradicted some previous studies, it specified that two strategies could be mentioned as complementary techniques.
The two external hedging strategies (FCD and FDD) usages by Malaysian non-financial firms during the latest five years period (by using monthly data from 2005 to 2009), have investigated through a three steps model in this research. In fact, after finding the exposure of foreign exchange rate for all 91 securities of the sample through the Jorion model (1990) in the first step, the absolute value of the exposures have used as independent variable in three cross-sectional regression equations of the second step that the proxy of FCD and FDD have used as dummy variables within the equations as well. The result shows that although both these two strategies could reduce the exposure in appearance (as their coefficient’s signs were being negative), the exploiting of them for hedging by the companies in this situation are not significant. Hence, the impacts of using monetary policies through (DCI) Direct Currency Intervention, (OMO) Open Market Operation, and (SRR) Statutory Reserve Requirement by the BNM (Bank Negara Malaysia) during the same period of time has been realized as the most probable reasons for justification of the outcome. Moreover, there are many investigations that advocated about governmental and central bank intervention in the foreign exchange rate fluctuations especially within the emerging markets; Roberto G. in 2004, advocated that in the case of Mexico and Turkey the intervention had been effective. Piti D. and Gabriele G.(2007) investigation specified the intervention of (CNB) Czech National Bank (CNB) on the koruna/euro exchange rate during the years 2001 to 2002 caused the appreciation of Koruna was being accelerated. Muhammad K. A. S., Zulfiqar H., and Muhammad K. P. (2009) clarified the intervention by the Pakistan State Bank has been very effective on exchange rate levels and related volatilities.

Finally, via the implementation of two other cross-sectional regression models in the third step, the outcome clarified that FCD and FDD can be used as complement hedging instruments to each other. The rest of the article describes data, empirical framework, results, and the conclusion of the study in turns.

3. Data

Malaysian non-financial listed companies that have had considerable interaction with outsiders during the period of time (2005-2009) have selected for the study. The proportion of at least 10% foreign sales that has considered by International Standards of Accounting (ISA), GAAP (Generally Accepted Accounting Principles) and many previous scholar researches as the minimum amount of notable foreign involvement, has used for sampling. The final sample of 91 companies has selected by the mentioned criterion without having any missing data during all five years period. The data of control variables in all equations; returns on common stock \( R_{it} \), returns on market portfolio \( R_{mt} \), exchange rate returns \( R_{t} \), FS/TS, Size and Debt ratio have found from the Bloomberg network, Data stream, and financial statements. Moreover, the Information of using two strategies by corporations (FCD and FDD) have extracted via two Yes/No questions that have sent to their e-mail addresses and asked them directly through telephone conversations.

4. Empirical Framework and Results

The framework of the study includes three steps:

4.1 First Step

The exchange rate exposure \( R^{e}_{2t} \) have estimated by using the model of Jorion P.(1990);
\[ R_{tc} = \beta_{0t} + \beta_{1t} R_{mkt} + \beta_{2t} R_{t2} + \epsilon_{it} \]

Which $R_{tc}$ is the return on common stock of the company $t$ during the period $t$, $R_{mkt}$ is the return on market portfolio in period $t$, and $R_{t2}$ considered as the percentage changes of exchange rate within the period of $t$. After finding the exchange rate exposures for all events, the absolute value of them (Euclidean norm of related coefficients: $|\beta_{2t}|$) have used as independent variable in the three Cross-sectional regression equations of second step for finding the relationship between FCD and FDD usages and the risk of the exposure. The proxy of FCD and FDD have used as Dummy variables in these equations as well.

### 4.2 Second Step

Cross-Sectional Regressions for finding the linkage between two strategies (FCD and FDD) and the exchange rate volatilities;

\[ |\beta_{2t}| = \theta_0 + \theta_{1t}(FS/TS)_t + \theta_{2t}(FCD)_t + \theta_{3t}(Size)_t + \epsilon_t \]

\[ |\beta_{2t}| = \theta_0 - \theta_{1t}(FS/TS)_t + \theta_{2t}(FCD)_t + \theta_{3t}(Size)_t + \epsilon_t \]

\[ |\beta_{2t}| = \theta_0 + \theta_{1t}(FS/TS)_t + \theta_{2t}(FCD)_t + \theta_{3t}(FDD)_t + \theta_{4t}(Size)_t + \epsilon_t \]

Where $|\beta_{2t}|$ considered as the absolute value of the exchange rate exposure, FS/TS is the ratio of foreign sales to total sales, FCD and FDD are Dummy variables that has the value of 0 or 1, and the Size has estimated by the exponential Log of total asset (LN (TA)) for each security.

Table 1 presents the result of running all three equation models through the Ordinary Least Squared method (OLS) for second step. Because of the fact that the signs of the both coefficient for FCD and FDD were being negative we can interpret the the usages of both strategies (FCD and FDD) as hedging could reduce the risk of the exposure generally, but as the p-value of them are more than 0.05 or even 0.1, the outcome shows that the usages of these techniques for external hedging are not significant in this situation. So, governmental interventions through three dominant financial instruments (DCI, OMO, and SRR) have been considered as the most probable reasons of insignificant usages of two strategies for hedging in this situation.

Although from July 2005 the Ringgit has been floated, the intervention has become greater in magnitude as well as become more symmetrical. Since July 2005 to September 2010, the amount of 210.8 billion RM has spent to weaken and about RM184.2 billion used for strengthen the currency, so there is a net increase of about RM26.6 billion over these five years. Moreover, the foreign currency reserve (based on USD) of BNM has been increased gradually during the last decade, that these actions could be mentioned as direct currency intervention. As a case in point for open market operation, BNM usually uses its own bills with alternative maturities from one month to one year for controlling and balancing the supply and demand of the money that can lead to stable money price. For Statutory Reserve Requirement, the BNM can inject and withdraw the liquidity from the banks when they realize there is a considerable lack or overload of the money in the market. In fact, All the banks and monetary institutions that licensed under the Banking and Financial Institutions Act 1989 and Islamic banks licensed under Section 3(4) of the Islamic Banking Act 1983, required to balance the specific proportion of their eligible liabilities (consists of ringgit
denominated deposits and non-deposit liabilities, net of interbank assets and placements with BNM) to their Statutory Reserve Accounts (SRA) in BNM.

<table>
<thead>
<tr>
<th>Equation Component &amp; Step2.1(First Regression)</th>
<th>Step2.2(Second Regression)</th>
<th>Step2.3(Third Regression)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.775793</td>
<td>-1.22200</td>
</tr>
<tr>
<td>FS/TS</td>
<td>0.001980</td>
<td>0.002695</td>
</tr>
<tr>
<td>Size</td>
<td>0.094403</td>
<td>0.110767</td>
</tr>
<tr>
<td>FCD</td>
<td>-0.050601</td>
<td>-0.025651</td>
</tr>
<tr>
<td>FDD</td>
<td></td>
<td>-0.154607</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.014634</td>
<td>0.015977</td>
</tr>
<tr>
<td>F-value</td>
<td>0.430681</td>
<td>0.470866</td>
</tr>
</tbody>
</table>

4.3 Third Step

Two other regression models presented for investigating about the relationship of two external hedging strategies (FCD and FDD) exploitation in this step.

\[
(FCD)_i = \theta_0 + \theta_1(FDD)_i + \theta_2(FS/TS)_i + \theta_3(Debt)_i + \theta_4(\text{Size})_i + \epsilon_i
\]

\[
(FDD)_i = \theta_0 + \theta_1(FCD)_i + \theta_2(FS/TS)_i + \theta_3(Debt)_i + \theta_4(\text{Size})_i + \epsilon_i
\]

The definition of the variables in these equations are the same as previous steps, and Debt indicates the ratio of total debts to total assets of the companies.

As the Table 2 has shown, the outcome of the running of third step’s model, the coefficient of both FCD and FDD are being positive; so, we can conclude that these two strategies can be implemented as complement to each other. Furthermore, as the P-value of them are both below than 5%, it means that the complementary effect of using these two techniques for hedging to the exchange rate exposure are significant. The negative coefficient of the other control variables in the first regression of this step (FS/TS, Debt, and Size) can interpreted as the oposit linkage of these items with the usages of FCD apparently and could be meant that when these items increase, the inclination of using FCD will decrease and vic versa. The positive sign of the variables in the second step however, advocated that the exploiting of FDD are in the same direction with the items that specified as IV’s, and we can deduce that by increasing the volume of foreign sales, total debts and the size of the companies as well, the tendency of using FDD as an effective external hedging strategy can go up.

<table>
<thead>
<tr>
<th>DV</th>
<th>Intercept</th>
<th>FCD</th>
<th>FDD</th>
<th>FS/TS</th>
<th>Debt</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCD</td>
<td>4.017455</td>
<td>1.660244**</td>
<td>-0.010860</td>
<td>-0.252785</td>
<td>-0.208580</td>
<td></td>
</tr>
<tr>
<td>FDD</td>
<td>-20.18420</td>
<td>1.954311**</td>
<td>0.037126</td>
<td>3.131784</td>
<td>0.752689</td>
<td></td>
</tr>
</tbody>
</table>

Note: * P < 0.1, ** P < 0.05
5. Conclusion

Although some previous investigations showed that the usages of two strategies (FCD and FDD) sometimes could be effective for hedging the risk of the exposure to the foreign currency volatilities significantly, under the condition of Malaysia this study clarified that the exploitation of FCD and FDD by non-financial firms can reduce the mentioned risk generally, but insignificantly in this situation. So, the result inducts the influences of the governmental intervention for stabilizing the condition, and three prominent financial instruments (Direct Currency Interventions, Open Market Operations, and Statutory Reserve Requirements) have found to be more probable causes for the outcome. Moreover, this research clarifies that FCD and FDD can be used as complement hedging strategies to each other significantly, though to the fact that other related researches advocated sometimes they have used as substituites and sometimes as complements. Therefore, we can conclude that although FCD and FDD have known as the two effective external hedging strategies, under different conditions (mainly different time period and different condition of each country itself) the result of the similar investigation could be different frequently.

Footnotes

1 39 companies have specified to use FCD and 15 for using FDD during the selected period.
2 Calculated for each month from January 2005 to December 2009 separately.
3 Extracted for each month separately from Kuala Lumpur Composite Indices (KLCI).
4 This percentage estimated based on exchange rate of domestic currency Malaysia Ringgit. (MYR) to USD for 60 month of 5 years period (by using this formula; Ln (I_t)/Ln(I_{t-1})).
5 Any other references and additional informations could be replied by the Author.

References


