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AN INTRODUCTORY EXAMINATION OF SWAPS' MODUS OPERANDI

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Abstract

Swaps provide financial institutions with the facility to manage their interest rate, foreign exchange and credit risks. Large corporations frequently use swaps in order to arrange complex and innovative financing which decrease borrowing costs and increase control over other financial variables. The paper spells out that interest rate swaps are the single largest segment in OTC derivatives markets. They accounted for 57% of the notional amount of all outstanding OTC derivatives and 59% of the total gross market value at the end of December 2016. Credit default swaps provide insurance against the risk of default by a particular company. The share of centrally cleared CDS jumped from 37% of notional amounts outstanding at the end of June 2016 to 44% at the end of December 2016. The paper also canvasses the modus operandi of currency swaps, total return swaps and swaptions.

Keywords: Swaps, hedging, interest rate risk, foreign exchange risk, credit risk, swaptions

INTRODUCTION

The modern application of and innovation in the methodologies associated with financial derivatives have revolutionized the current global financial industry. According to the Bank for International Settlements (2016) the outstanding positions in OTC derivatives markets increased in the first half of 2016. The notional amount of outstanding OTC derivatives contracts increased from $493 trillion to $544 trillion between the end of December 2015 and the end of June 2016. Nevertheless notional amounts remained well below the peak of $710 trillion reached at the end of December 2013. The gross market value of outstanding derivatives contracts also rose from $14.5 trillion to $20.7 trillion in the first half of 2016. Gross credit exposures rose from $2.9 trillion at the end of December 2015 to $3.7 trillion at the end of June 2016.

Ehsan (2012) observes that the huge losses incurred by the use of derivatives instruments have made many financial institutions very wary. The stories behind the losses emphasize the point that derivatives can be used either to reduce risk or take a risk. Most losses came about when derivatives were used inappropriately. Employees who had an implicit or explicit mandate to hedge against risks faced by their companies decided to speculate instead. The key lesson to be learnt from the losses is the importance of internal controls. Most of the episodes of losses in derivatives markets have arisen due to the lack of transparency and weak internal controls. Senior management should lay down clear and unambiguous guidelines in relation to the use of derivatives instruments (For further details, see Ehsan 2012, p. 43).

A swap is an agreement between two parties to exchange a sequence of specified cash flow over a period of time in the future (Hull 2007, p. 149). Swaps give the facility to the financial institutions to manage their interest rate, foreign exchange and credit risks. Swaps are frequently used by large corporations to arrange complex and innovative financing which decrease borrowing costs and increase control over other financial variables (Gupta 2006, p. 325). The swap market grew enormously in recent years (Saunders & Cornett 2007, p. 318).

The discourse that follows is divided up into six broad sections altogether. Section 2 discusses at length the nature and trading mechanism of interest rate swaps. Section 3 deals with the modus operandi of currency swaps. Section 4 thoroughly examines the functionality of credit default swaps. Section 5 and Section 6 go over total return swaps and swaptions respectively. Finally, Section 7 recapitulates the discussion and draws inferences therefrom.

INTEREST RATE SWAPS

Apte (2007) defines that an interest rate swap is an agreement between two parties in which each party closes a deal with the other party to make payments on particular dates in the future in same or different currencies until a predetermined termination date. One party, called ‘fixed rate payer’, agrees to make fixed rate interest payments to the other party, called ‘floating rate payer’, which, in return, agrees to make floating rate interest payments. Fixed and floating rates are multiplied by a notional principal. This notional amount is generally not exchanged between the counterparties. Instead, it is merely used for calculating the size of cash flow to be exchanged. According to the Bank for International Settlements (2017) interest rate swaps are the single largest segment in OTC derivatives markets. At the end of December 2016, they accounted for 57% of the notional amount of all outstanding OTC derivatives and 59% of the total gross market value. Yet their importance has been declining since 2014 when they accounted for close to 70% of the gross market value of all OTC derivatives.

Suppose there are two firms A and B. Firm A borrows £100 million from a bank for five years, and invests it in a certain business that yields 8.50 per cent biannually. Firm A is not a highly rated firm; it is funding its assets through a floating rate loan linked to six-month London Inter Bank Offered Rate (LIBOR) plus 50 basis points (i.e. 0.5 per cent). It means that the profitability of firm A depends upon the actual level of the floating interest rate in the future. If the fluctuation in interest rate is high the interest expense of firm A will increase and consequently its profit will decrease. On the other hand, if LIBOR exceeds 8 percent firm A will have to incur a loss because its investment yields 8.5 per cent but it has to pay more than this percentage. Another firm B also borrows £100 million for five years at a fixed rate of 6 per cent. Its investment yields LIBOR plus 75 basis points (i.e. 0.75 per cent). It means that the profitability of firm B depends upon the actual floating interest rate that is to be received on its investment. If LIBOR is less than 5.25 per cent firm B will make a loss.

In order to eliminate interest rate risk, firm A may enter into an agreement of interest rate swap with any bank. Say that 6.50 per cent is to be paid by firm A to the bank for five years with payments calculated by multiplying 6.50 per cent by some notional principal, e.g. £100 million. In return, the bank will pay the firm A six-month LIBOR over a period of five years. A summary of this process with respect to firm A is as follows:

Investment yield	8.50 per cent
Disbursement to the bank	6.50 per cent
Receipt from the bank	LIBOR
Payment of loan	LIBOR + 50 bp
Actual cost	6.50 + 0.50 = 7 per cent
Locked in spread	1.50 per cent

Similarly, firm B enters into a contract with a bank in which it agrees to pay six-month LIBOR to the bank on some notional principal, i.e. £100 million, for five years, and the bank, in return, will pay the amount based on some predetermined rate, i.e. 6.40 per cent. A summary of this process in respect of firm B is as follows:

Investment yield	LIBOR + 75 bp
Disbursement to the bank	LIBOR
Receipt from the bank	6.40 per cent
Payment of loan	6.00 per cent
Actual cost	LIBOR – 0.40 per cent
Locked in spread	0.75 + 0.40 = 1.15 per cent

In this swap deal, the interest of the bank is yet to be analyzed. It is quite obvious that, in both transactions, the risk of loss on account of interest rate fluctuations has been transferred from both firms to the bank. The bank will only be interested to enter into such a deal with firm A and firm B if it is also in beneficial position. In this contract, the position of the bank is as follows:

Receipt from firm A	6.50 per cent
Payment to firm B	6.40 per cent
Receipt from firm B	LIBOR
Payment to firm A	LIBOR
Net profit	6.50 – 6.40 = 0.10 per cent

Thus the net profit received by the bank will be equal to £100 000 biannually for the next five years on £100 million swap deal.

CURRENCY SWAPS

Apte (2007) notes that in a currency swap, two streams of payment to be exchanged are denominated in two different currencies viz. both the principal amount and the interest on a loan in one currency are swapped for the principal and the interest on a loan in another currency. The parties to a swap contract normally hail from two different countries. This allows the counterparties to borrow easily and cheaply in their home currency. Cash flow being exchanged is determined at the spot rate. Such a cash flow is supposed to remain unaffected by subsequent changes in the exchange rates (Gurusamy 2004, p. 571).

Hull (2005) cites the simple example of how currency swaps can be used to immunize or hedge against exchange rate risk. Suppose that there are two companies A and B. Company A wants to borrow £10 million at a fixed rate of interest for five years whereas company B wants to borrow $15 million at a fixed rate of interest for five years. Both companies have been offered the following rates:

	US dollar	British pound
Company A	8.00%	11.6%
Company B	10.00%	12.00%

Now company A borrows US dollars at a rate of 8.00 per cent while company B borrows the British pound at a rate of 12.00 per cent. Through some financial intermediary, currency swap provides company A with the pound interest rate of 11.00 per cent per annum and company B with the dollar interest rate of 9.4 per cent per annum. This strategy brings about 0.6 per cent concession for both companies. The financial intermediary will gain 1.4 per cent per annum on

its dollar cash flow and lose 1.00 per cent per annum on its pound cash flow. However, it makes a net profit of 0.4 per cent per annum. A currency swap requires a principal amount to be specified in each of two currencies. In this example, principal amounts may be £10 million and $15 million which would be exchanged at the beginning and at the end of swap agreement. Primarily, company A will pay $15 million and receive £10 million. Each year, company A will receive $1.20 million (8 per cent of $15 million) and disburse £1.10 million (11 per cent of £10 million). At the end of the swap contract, company A will pay a principal of £10 million and receive a principal of $15 million.

CREDIT DEFAULT SWAPS

Hull (2007) asserts that the most exciting developments in derivatives markets since the 1990's have been in the credit derivatives area. In credit derivatives, the pay-off depends on the creditworthiness of one or more companies or countries. These derivatives enable banks and other financial institutions to manage their credit risk. They can be used to transfer credit risk from one company to another. The most popular credit derivative is a credit default swap (CDS). This is a contract that provides insurance against the risk of default by a particular company. The company is known as the reference entity, and a default by the company is known as the credit event. The buyer of the insurance obtains the right to sell bonds issued by the company for their face value when a credit event occurs; the seller of the insurance agrees to buy the bonds for their face value when a credit event comes about. The face value of a bond is the amount of money that the issuer will repay at maturity if it does not default. The total face value of the bonds that can be sold is known as the credit default swap's notional principal. The buyer of the CDS makes periodic payments to the seller until the life of the CDS ends or the credit event occurs. According to the Bank for International Settlements (2017) the share of centrally cleared credit default swaps (CDS) jumped from 37% of notional amounts outstanding at the end of June 2016 to 44% at the end of December 2016.

Suppose that two parties enter into a 5-year credit default swap on 1 March 2004. The notional principal is $100 million; the buyer agrees to pay 90 basis points (i.e. 0.9 per cent) annually for protection against default by the reference entity. If the reference entity does not default (i.e. there is no credit event) the buyer will receive no pay-off, and pay $900 000 on every 1st of March of five years to come. If there is a credit event a substantial pay-off is likely. Say the buyer apprises the seller of the credit event on 1 June 2007. If the contract specifies physical settlement the buyer will have the right to sell bonds issued by the reference entity with a face value of $100 million for $100 million. If the contract requires cash settlement and the

bond is worth $35 per $100 the cash pay-off would be $65 million (See Gupta 2006, pp 539-541).

TOTAL RETURN SWAPS

A total return swap is a type of credit derivatives. Hull (2007) defines that it is an agreement to exchange the total return on a bond for LIBOR, plus a spread. Total return swaps are often used as financing vehicles. A company, for example, wants to purchase a portfolio of bonds. It approaches a financial institution which will buy the bonds on its behalf. Then the financial institution would enter into a total return swap wherein it will pay the return on the bonds to the company and receive LIBOR. The advantage of this type of arrangement is that the financial institution reduces its exposure to default by the company (See Gupta 2006, pp 542-543).

SWAPTIONS

A swaption is an option on an interest rate swap (Hull 2007, p. 625; Strong 2006, p. 337). It gives the holder the right but not the obligation to enter into an interest rate swap at a certain time in the future. With a swaption, the company benefits from favourable interest rate movements while acquiring protection against unfavourable interest rate movements. Many large financial institutions that offer interest rate swaps to their corporate clients are also prepared to sell them swaptions or buy swaptions from them (*For more details of swaptions, see Gupta 2006, p. 333; Apte 2007, pp 493-495; Smullen & Hand 2005, p. 395; Hull 2005, p. 393; Gurusamy 2004, p. 574*)

CONCLUSION

The modern application of and innovation in the methodologies associated with financial derivatives have revolutionized the current global financial industry. The paper stated that swap is an agreement between two parties to exchange a sequence of specified cash flow over a period of time in the future. Swaps give the facility to the financial institutions to manage their interest rate, foreign exchange and credit risks. Swaps are frequently used by large corporations to arrange complex and innovative financing which decrease borrowing costs and increase control over other financial variables.

Interest rate swaps are the single largest segment in OTC derivatives markets. At the end of December 2016, they accounted for 57% of the notional amount of all outstanding OTC derivatives and 59% of the total gross market value. Yet their importance has been declining since 2014 when they accounted for close to 70% of the gross market value of all OTC derivatives. Another development is credit derivatives which enable banks and other financial

institutions to manage their credit risk. The most popular credit derivative is a credit default swap. The paper discussed in detail that CDS is a contract that provides insurance against the risk of default by a particular company. The share of centrally cleared credit default swaps jumped from 37% of notional amounts outstanding at the end of June 2016 to 44% at the end of December 2016.

The paper suggested that the key lesson to be learnt from the losses incurred by the use of derivatives instruments is the importance of internal controls. Most of the episodes of losses in derivatives markets arose due to the lack of transparency and weak internal controls. Senior management should lay down clear and unambiguous guidelines in relation to the use of derivatives instruments.

REFERENCES

Apte, P.G. (2007). International Financial Management. Tata McGraw-Hill Publishing Company Limited, New Delhi

Bank for International Settlements. (2016). OTC Derivatives Statistics at End-June 2016. [On-line]. [Accessed 27th April, 2017]. Available from World Wide Web: www.bis.org/publ/otc_hy1611.pdf

Bank for International Settlements. (2017). OTC Derivatives Statistics at End-December 2016. [On-line]. [Accessed 10th May, 2017]. Available from World Wide Web: www.bis.org/publ/otc_hy1705.pdf

Ehsan, M.A. (2012). Islamic Perspective on Financial Derivatives: Demand for Instruments of Risk Management in Various Businesses of Pakistan. [On-line]. [Accessed 28th May, 2017]. Available from World Wide Web: http://etheses.dur.ac.uk/5949/

Gupta, S.L. (2006). Financial Derivatives: Theory, Concepts and Problems. Prentice-Hall of India Private Limited, New Delhi

Gurusamy, S. (2004). Financial Services and Markets. Vijay Nicole Imprints Private Limited, Chennai

Hull, J.C. (2005). Introduction to Futures and Options Markets. Prentice-Hall of India Private Limited, New Delhi

Hull, J.C. (2007). Options, Futures and Other Derivatives. Prentice-Hall of India Private Limited, New Delhi

Saunders, A. & Cornett, M.M. (2007). Financial Markets and Institutions. Tata McGraw-Hill Publishing Company Limited, New Delhi

Smullen, J. & Hand, N. (eds.) (2005). Oxford Dictionary of Finance and Banking. Oxford University Press

Strong, R.A. (2006). Derivatives: An Introduction. Eastern Press Pvt. Limited, Bangalore