FX SWAPS TO HEDGE FOREIGN CURRENCY TRANSACTION RISK AT SYRACUSE CHEMICAL

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CASE DESCRIPTION

The primary subject matter of this case is hedging foreign currency exchange rate risk with FX swaps. Secondary issues examined include assessing transaction exposure and understanding how FX swap points are calculated. The case requires students to have an introductory knowledge of accounting, statistics, finance and international business thus the case has a difficulty level of four (senior level) or higher. The case is designed to be taught in one class session of approximately 3 h and is expected to require 3-4 h of preparation time from the students. The case is based on a hypothetical regional chemical distributor located in Syracuse, New York. Unique problems faced by the chemical distributor in 2017 allow students to apply complex subject matter as part of a business solution.

Syracuse Chemical is a regional chemical distributor, headquartered in Syracuse, New York. Don Williams, the President and primary owner, began Syracuse Chemical ten years ago after a successful career in chemical sales and marketing. The company has gradually expanded its product line and network of manufactures. However, a mid-year report had shown shrinking profit margins on product lines associated with the specialty chemical division. Williams has asked for recommendations regarding his firm's exposure to exchange rate risk. The case is designed to allow students to understand how adverse movements in exchange rates will negatively impact profit margins, while recognizing that favourable movements in exchange rates will positively improve profit margins. As future exchange rates are uncertain, students are asked to hedge upcoming transactions to eliminate both the downside consequences as well as upside benefits. Finally, students are required to explain the basics of FX Swaps and apply the appropriate FX Swap to hedge a transactional currency risk faced by Syracuse Chemical.

BACKGROUND

Syracuse Chemical is a regional chemical distributor, headquartered in Syracuse, New York. Don Williams, the President and primary owner, began SC ten years ago after a successful career in chemical sales and marketing. The company reported small losses during its first two years of operation but has since reported eight consecutive years of increasing sales and profits. The growth has required the acquisition of additional land and equipment and expansion of storage capacity. Over this period, the workforce has more than tripled in size and Syracuse Chemical has become the leading distributor in the Northeast. Since beginning his career in the chemical distribution industry, Williams has developed solid customer contacts in upstate New York, as well as with major customers in Pennsylvania, Massachusetts and Vermont. He has also developed valuable contacts with key chemical manufacturers.

A chemical distributor is a wholesaler. Operations may vary but a typical distributor purchases chemicals in large quantities (bulk - barge, rail or truckloads) from a number of manufacturers. They store bulk chemicals in "tank farms", a number of tanks surrounded by dikes to prevent pollution in the event of a tank failure. Tanks can receive and ship materials from all modes of transportation. Packaged chemicals are stored in a warehouse. Other distributor activities include blending, repackaging and shipping in smaller quantities (less than truckload, tote tanks, 55 gallon drums and other smaller package sizes) to meet the needs of a variety of industrial users. In addition to the tank farm and warehouse, a distributor needs access to specialized delivery equipment (specialized truck transports and tank rail cars) to meet the handling requirements of different chemicals. A distributor adds value by supplying its customers with the chemicals they need, in the quantities they desire, when they need them. This requires maintaining a sizable inventory and operating efficiently. Distributors usually operate on very thin margins. *IBISWorld* indicates operating margins for Wholesalers – Other Chemical and Allied Products Merchant, (NAICS number: 424690) averaged 5.2% in 2016 (IBISWorld, http://ibisworld.com/reports/us/industry/currentperformance, accessed October 1, 2017). In addition to operating efficiently, a successful distributor will possess 1) a solid customer base and 2) supplier contacts and contracts which will ensure a complete product line is available at competitive prices.

THE SITUATION

During the last week of July 2017, Williams decided to take advantage of the relative calm that usually accompanies the annual maintenance shut-down period for Syracuse Chemical (SC) and review mid-year financial reports. One of the more confusing documents involved shrinking profit margins on sales of specialty chemical products. Many of the components making up the specialty chemical line came from Norcand Chemical located just outside Toronto. However, Williams was not personally familiar with Norcand Chemical. His company had only recently expanded into distributing lines of specialized chemical products and in the past, purchases from Norcand had been relatively small.

Williams walked downstairs to talk with John Young, the purchasing agent in charge of orders from Norcand Chemical. Young noted that the company had been buying specialty chemicals from Norcand for the last two years. SC had recently developed a special sub-contracting relationship with Norcand to process overflow orders Norcand did not have the capacity to fill. In the sub-contractor agreement, SC served as an intermediary distributer for some of Norcand's excess overflow orders mainly for products related to sealants and polymers. Young gave a simple example regarding the most recent order of specialty chemicals.

In January, a Norcand subsidiary in Montreal needed various orders packaged in 55 gallon drums and 275 gallon IBC pallet tanks. The Norcand parent company did not have the capacity to fill the whole order and contacted SC to subcontract out the portion they could not fill internally. Per our agreement with Norcand, SC ordered eight rail tanks (about 50,000 gallons) of product in January from the parent company facility in Toronto priced at about 2.00 CAD per gallon. We then repackaged and shipped via truck a total of about 45,000 gallons to various Norcand subsidiary customers in Montreal. The Norcand subsidiary had agreed to pay us 2.22 CAD per gallon. This arrangement has worked well

as we generally net out our purchases and sales from Norcand orders. SC paid 100,000 Canadian dollars for the 50,000 gallon order at the end of February when the shipment arrived and received 100,000 Canadian dollars in March from the Norcand subsidiary for repackaging about 45,000 gallons. In essence, SC is receiving payment for our services via excess product. Had SC ordered a 5,000 gallon shipment directly, we would pay a considerably higher price. Considering our cost of providing the service, the excess product SC retains saves us about 50% over ordering directly and provides SC with volume discounts on other orders. SC is replenishing some specialty chemical inventory at a deep discount by providing a subcontractor service to Norcand. Young said that he has been trying to do as much business with Norcand as possible as this relationship has provided SC with bulk volume pricing discounts as well as new customer relationships. Young noted the only major drawback to the Norcand arrangement was that Norcand required payments in Canadian dollars from SC and the Norcand subsidiary required invoices in Canadian dollars.

Young provided a spread sheet (Exhibit 1) showing payments (outflows) to Norcand and receivables (inflows) from Norcand subsidiaries over the last year. The Canadian manufacturer shipped product by rail or truckload and payment terms were 30 days from the end of the delivery month. For a January order, payment was made in February and the subsequent repackaged shipments were generally delivered by February with payment from the subsidiary received by SC in March. Exhibit 1 also showed how the volume of business had increased substantially in the last year and included the most recent agreement for a 900,000 CAD order.

Exhibit 1
SYRACUSE CHEMICAL INFLOWS AND OUTFLOWS FROM NORCAND AGREEMENT

	Norcand Subcontract Totals in (Thous.)	**Payment to Norcand Parent (Thous.)**	**Recievables from Norcand Subsidiary (Thous.)**
	CAD	CAD	CAD
January, 2016	100		
February, 2016		100	
March, 2016			100
April, 2016	200		
May, 2016		200	
June, 2016			200
July, 2016	500		
August, 2016		500	
September, 2016			500
October, 2016	600		
November, 2016		600	
December, 2016			600
January, 2017			
February, 2017	800		
March, 2017		800	
April, 2017			800
May, 2017			
June, 2017	900		
July, 2017		900	
August, 2017			900
September, 2017			

Exhibit 2 INVOICE IN CAD PAID TO NORCAND AND US DOLLAR EQUIVALENCY			
	Payment to Norcand Parents	**Exchange Rate used for Payment # of CAD/1USD**	**US Dollar Cost Of Payment**
January, 2016			
February, 2016	100	1.40	$ 71.43
March, 2016			
April, 2016			
May, 2016	200	1.33	$150.38
June, 2016			
July, 2016			
August, 2016	500	1.31	$381.68
September, 2016			
October, 2016			
November, 2016	600	1.33	$451.13
December, 2016			
January, 2017			
February, 2017			
March, 2017	800	1.34	$597.01
April, 2017			
May, 2017			
June, 2017			
July, 2017	900	?	?
August, 2017			
September, 2017			

Williams walked down the hall to talk with Jill Packmore, who handled all of the accounts receivables for Syracuse Chemical. Packmore noted that all payments received from the Norcand subsidiary in Canadian dollars were automatically converted into US dollars by the bank at the 12 pm exchange rate on the day that the payment was made, which was consistently the last day of the month. Packmore noted that the bank was giving them a very favorable exchange rate in terms of the bid-ask spread due to the large consistent volume of business they had provided over the last 2 years. Packmore printed out a report (Exhibit 3), showing the payments received from Norcand subsidiaries since 2016. When Williams asked about the shrinking margins from the Specialty Chemical division, Packmore mentioned that she had just returned from her annual fishing trip to Canada. She had always stayed at the same hotel and the price of the hotel was 100 Canadian dollars per night this year, which had remained unchanged from last year. She didn't know the exact difference, but guessed this year the hotel cost her approximately US$80 per night and only US$75 per night last year even though the listed price of the hotel was the same. Maybe the difference in exchange rates which caused her fishing trip to be more expensive this year was also responsible for shrinking profit margins.

Exhibit 3
RECEIVABLES IN CAD FROM NORCAND SUBSIDIARIES AND US DOLLAR EQUIVALENCY

	Receivables from Norcand Subsidiary	**Exchange Rate Used for receivables #of CAD/1USD**	**US Dollar Value of Receivables**
January, 2016			
February, 2016			
March, 2016	100	1034	$ 74.63
April, 2016			
May, 2016			
June, 2016	200	1.30	$153.85
July, 2016			
August, 2016			
September, 2016	500	1.32	378.79
October, 2016			
November, 2016			
December, 2016	600	1.35	$444.44
January, 2017			
February, 2017			
March, 2017			
April, 2017	800	1.36	$588.24
May, 2017			
June, 2017			
July, 2017			
August, 2017	900	?	?
September, 2017			

Williams walked back upstairs to the office of James Thorton, a newly hired MBA currently working in the finance office, anxious to resolve this matter quickly. Williams recited his recent exploits. He explained to Thorton that barring a complete review of the Norcand subcontracting agreement, which appeared to be a very favorable arrangement for SC, he still did not have an answer to the falling profit margins. Thorton promised to look into the matter and prepare a report for Williams in 2 days.

DATA COLLECTED

By the end of the day, Thorton had organized the sub-contracting report from Young (Exhibit 1) for the last year, collected the accounts payable documents from Scott (Exhibit 2) and the accounts receivables documents from Packmore (Exhibit 3). Looking at the January 2016 100,000 Canadian dollar order, Young entered the US dollar cost of the products purchased from Norcand using the spot exchange rate between the Canadian dollar and the US dollar at the end of February 2016. The spot rate used to make the payment was 1.40 CAD/1 USD, which resulted in a $71,429 payment to the Norcand parent company. The corresponding 100,000 Canadian dollar accounts receivable payment from the Norcand subsidiary was converted to US dollars using the March 2016 spot exchange rate. The spot rate at the time of the receivables was 1.34 CAD/1USD, which resulted in a US dollar equivalency of $74,627 being paid to SC by the Norcand subsidiary. In this case, SC benefited by about $3,000 from the weakening of the US dollar over the one-month period.

However, any exchange rate movement between the accounts payable month and the accounts receivables month meant that SC was exposed to 30 days of exchange rate risk for each Norcand subcontracting order. Although the inflows and outflows were identical per the sub-contracting agreement, the US dollars paid did not always match up with the US dollars received. Because orders were on an as-needed basis, there was no offsetting inflows or outflows in a particular month.

Looking over the last year, the cost difference was mixed, sometimes working in SC's favour and other times working against them. However, Thorton had no idea as to the direction of exchange rate movements in the future. While Thorton could explain past Norcand transactions, Williams was certain to ask for a recommendation regarding future transactions involving specialty chemicals orders from Norcand. Thorton briefly remembered reading an article about FX Swaps in a recent trade magazine and thought it might fit well in this situation. Thorton looked at the most recent June 2017 accounts receivables from Norcand valued at 900,000 CAD. This invoice will be paid in July 2017 using the prevailing spot rate on the last day of July. However, a corresponding 900,000 CAD accounts receivable order will be arriving in August 2017 and the spot rate in August 2017 may be higher or lower than the spot rate in July 2017. Thorton pulled up a quote from the bank for a July spot/forward FX swap that could be used to hedge the recent June order involving 900,000 Canadian dollars. The quote at the end of July read as follows (Forextraders, https://www.forextraders.com/forex-charts/usdcad/, accessed October 1, 2017) (Table 1):

Table 1
JULY SPOT/FORWARD FX SWAP

USD: CAD	**1.2495**	**Spot**	**1.2468**	**1.2495**
		1 month	33	37

THE TASK

Thorton compiled a list of tasks that needed to be performed before his meeting with Williams. Where applicable, Thorton decided to use the most recent 2016-2017 data for estimated orders placed with Norcand along with estimated Canadian dollar customer receipts from those customers who requested invoicing in Canadian dollars.

1) Calculate the percentage change in the (USD:CAD) # of CAD/$1 exchange rate between the payable month and receivables month for all past transactions provided.
2) Explain the effect of exchange rate movements on profit margins during the 2016-2017 years.
3) Describe the extent of currency risk faced by SC if they were to leave future Norcand transactions unhedged.
4) Describe how a FX Swap would eliminate the transaction risk faced by SC if they choose to both hedge Canadian dollars outflows to Norcad and Canadian dollar inflows from Norcand's subsidiary.
5) Explain the FX Swap quoted by the bank and the corresponding transactions that would result if Syracuse Chemical entered into the Sell/Buy July FX Swap quote

given by the bank to hedge the 900,000 CAD July 2017 payables and 900,000 CAD August, 2017 receivables.

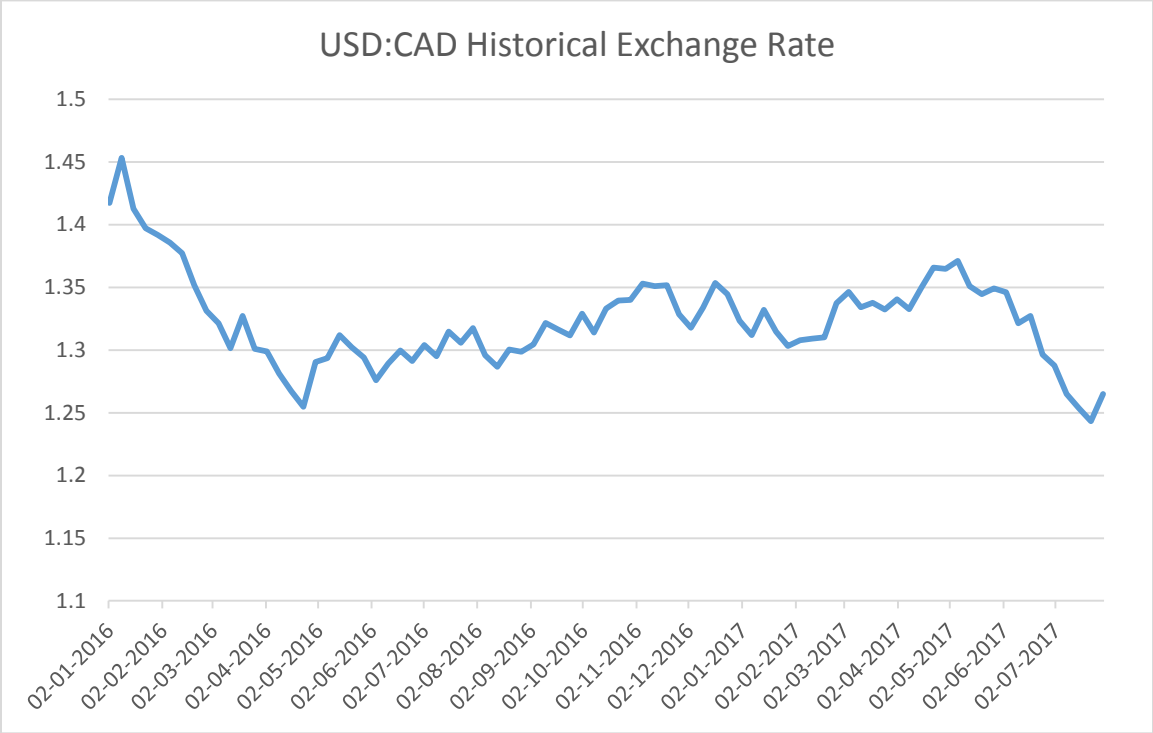

EXHIBIT 4
HISTORICAL FOREIGN EXCHANGE DATA (# OF CANADIAN DOLLARS PER 1 US DOLLAR)
(OANDA, http://www.oanda.com/fx-for-business/historical-rates, ACCESSES OCTOBER 1, 2017)

CONCLUSION

Syracuse Chemical has recently entered into a sub-contracting agreement with a major Canadian supplier that on the surface appears to be a profitable arrangement. However, the special nature of the arrangement has exposed Syracuse Chemical to about 30 days of exchange rate exposure. Students are asked to identify the exchange rate risk and the impact movements in US dollar-Canadian dollar exchange rate over time have on operating margins. While the contacting agreement resulted in Canadian dollar outflows matching up with Canadian dollar inflows, exchange rate movements meant US dollars paid were not always equal to US dollars later received. Favourable movements in the exchange rate would "improve" margins, while unfavourable movements would adversely affect margins.

Students utilize FX Swaps as a way to hedge the transactional risk faced by Syracuse Chemical. According to the Bank of International Settlements, trading in foreign exchange markets averaged $5.1 trillion per day in 2016, of which $2.4 trillion involved FX swaps (Bank for International Settlements, *Triennial Central Bank Survey*, Monetary and Economics Department, December 2016). FX Swaps are the largest

category of currency trading by notional amount and yet are widely ignored those teaching International Finance courses. While major financial institutions are the majority users of FX Swaps to fund foreign exchange balances, this case is design to introduce students to FX Swaps is a less intimidating and more intuitive framework.

REFERENCES

Forextraders. (2017). https://www.forextraders.com/forex-charts/usdcad/

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