

# A Practical Guide to Managing Balance Sheet Exposure

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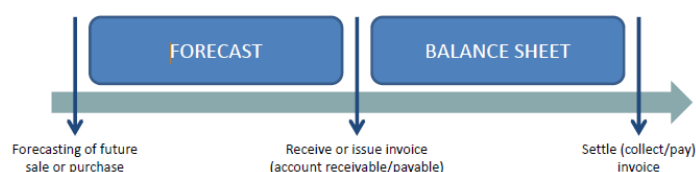
## Executive Summary

Given the economic and income statement volatility caused by unhedged foreign currency trade receivables, payables, and other balance sheet exposures, global companies aim to manage these exposures on a regular basis. While the mechanics behind the hedging process varies at each company, the goal of managing balance sheet exposure is the same: to minimize currency-related gains and losses from the moment when a foreign currency transaction hits the balance sheet until cash settlement. This paper offers a practical guide to Corporate Treasury risk managers who are seeking to launch a new balance sheet hedging program or evaluating a legacy hedging program.

## Introduction

Foreign currency transactions typically create economic and income statement risk long before the transactions hit the balance sheet. For example, assume your U.K. subsidiary generates EUR-denominated sales. Before the U.K. subsidiary receives a purchase order, some forecasted EUR-denominated sales were built into your subsidiary's revenue projections. A weakening EUR will mean less revenue. Once the sale is booked and the invoice sent, the EUR-denominated receivable will continue to increase or decrease in value as the EUR/GBP exchange rate fluctuates until the transaction settled in cash.

Figure 1. Transaction Exposure Timeline



Some companies aim to hedge transaction exposures all the way from forecast through to cash settlement. Others hedge only the forecast portion or only the balance sheet portion. Figure 1 illustrates the difference between forecasted and balance sheet transaction exposures.

Frankly, balance sheet exposures are easier to manage than forecasted exposures. Why? 1. Trade receivables, payables, and other balance sheet exposures are relatively easy to identify and quantify with confidence; 2. The approaches used to hedge balance sheet exposures are straightforward since hedge contracts are typically short in duration and often match 100% of exposure; and 3. Hedging success is easy to measure because the currency gains and losses on both balance sheet exposures and on corresponding hedge contracts are visible in one income statement line item. Consequently, many companies focus solely on hedging exposures that have already materialized on the balance sheet.

The focus of this paper is on managing balance sheet exposure. The considerations herein are the same for all companies, regardless of whether they choose to hedge both forecast and balance sheet or just balance sheet exposures. **In other words, you don't have to hedge the balance sheet differently if you intend to also hedge forecasts.**

## Income Statement Volatility Trend

Currency gains and losses related to balance sheet exposures are found in one income statement line item: transaction gain/loss. On a monthly basis, we recommend reviewing the activity in this income statement account reported by each of your entities. Conveniently, this level of detail is readily available centrally via your financial reporting or consolidation system. You or your corporate accounting colleagues can easily build a spreadsheet similar to the format shown in Figure 2, with formulas linked to your financial reporting system that summarizes the monthly activity in this account.

Figure 2. Sample Transaction Gain/Loss Trend Report

	A	B	C	D	E	F
1	FXRate			Jan	Feb	Mar
2	USD Total			2018	2018	2018
3	Periodic					
4	<u>Entity code</u>	<u>Entity Name</u>	<u>Curr</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>
5	Code123	Chicago, Inc.	USD	15.0	(10.0)	5.0
6	Code456	Monterrey, Llc	MXN	200.0	170.0	(150.0)
7	Code246	Manchester Plc	GBP	(50.0)	(25.0)	-
8	Code135	Frankfurt GmbH	EUR	5.0	3.0	4.0
9		<b>Total in USD thousands</b>		<b>170.0</b>	<b>138.0</b>	<b>(141.0)</b>

Once built, the spreadsheet can be refreshed each month to reveal the monthly gain/loss trend per entity. In the example, the entity named "Chicago, Inc." booked a foreign exchange loss of 15 in January and a gain of 10 in February, and the company's January consolidated income statement transaction loss was 170.

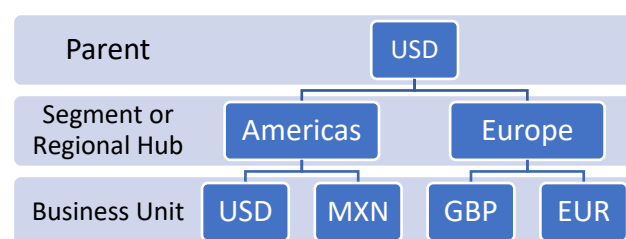
For non-hedgers, this report quantifies the income statement volatility caused by unhedged foreign currency balance sheet items that your business must absorb, and identifies the source(s) that make up each period's gain or loss. On the other hand, for companies that hedge balance sheet exposures, this report quantifies the success of the hedging program. If you're perfectly hedged, then the hedge gains will offset balance sheet losses, resulting in net zero transaction gain/loss.

## Identifying Currency Risk on the Balance Sheet

Balance sheet exposures are significant, non-functional currency denominated receivables, payables, and other assets and liabilities that are subject to revaluation.

Most balance sheet exposures do not directly reside at the parent level. You may have, for example, some corporate, foreign currency denominated interest payable, but the bulk of your balance sheet exposure is typically carried by your subsidiaries. Your subsidiary business units that have foreign currency denominated sales and/or purchases bear the currency risk and it's their ledgers where the exposure data may be found. Figure 3 shows four business units, each of which may have balance sheet exposure.

Figure 3. Sample Company income statement Hierarchy



Let's assume the U.K. subsidiary, which is GBP-functional, has EUR-denominated trade receivables that total EUR 350,000 at the end of June. At the same time, the EUR-functional German subsidiary has GBP-denominated trade payables in

the amount of GBP 100,000. These exposures are summarized in Figure 4.

Figure 4. Sample Raw Balance Sheet Exposures on June 30

BUSINESS UNIT	FUNCTIONAL CURRENCY	EXPOSURE CURRENCY	EXPOSURE CURRENCY AMOUNT LONG/(SHORT)
U.K. SUB	GBP	EUR	€350,000
GERMAN SUB	EUR	GBP	(£ 100,000)

All ERP systems should be able to generate these key fields that are needed for managing the balance sheet exposures: business unit name, business unit's functional currency, exposure currency, and of course the exposure amount. While commonly found in local ERP systems, this level of exposure currency detail is unfortunately not typically mapped to companies' financial reporting systems.

### Centralized and Decentralized Organization

Your company's organizational structure and enterprise resource planning systems (ERP) hierarchy will determine where you go to gather the exposure information. You may need to request it directly from the financial controllers at each local business unit. Or you may be able to leverage a regional financial hub, or better yet, your corporate colleagues.

Whether the source of exposure data is from one central ERP at headquarters or from multiple remote subsidiary financial controllers who each retrieve the data locally from their ERP, it's best to manage these exposures centrally for appropriate treasury oversight. In rare cases when significant controls are in place and the subsidiary staff is properly trained, companies allow subsidiaries to hedge their own exposures directly. **The best practice is to aggregate the subsidiary exposures centrally so that hedging may also be executed centrally with lower hedging costs and better control.**

### Aggregating Exposure Data from Multiple Sources

Finding the raw balance sheet exposure data from your ERP —whether from central or from various decentral sources— is relatively easy. The trick is aggregating all your company's exposures centrally on a regular basis. If you are lucky enough to be able to extract your subsidiary exposure information from one or two places, then you can skip to the next section.

Most companies rely on multiple financial colleagues around the world who extract the balance sheet exposure data locally and then submit it to central treasury either via spreadsheet and email or via treasury technology solution.

Historically, companies have relied on some type of spreadsheet process, which works like this:

1. Subsidiary financial controllers view their balance sheet exposures in their local ERP on a particular date, typically a few days prior to month-end;
2. The financial controllers enter the significant exposures in a spreadsheet similar to the format shown in Figure 4;
3. The exposure spreadsheet is emailed to the central treasury;
4. Central treasury manually aggregates the exposure data into a spreadsheet format similar to Figure 4.

Spreadsheets and company email at this stage are convenient and require little to no investment. However, there are several downsides, especially when you have more than ten reporting business units. Keeping track of and following-up on which entities reported and which have yet to email their exposures is time-consuming. Likewise, gaining confidence in the data by validating that the reported exposure is in line with expectations and prior periods is prohibitively difficult. Audit trails and approval workflows are not available with

spreadsheet processes and referencing historical spreadsheets is clunky.

Alternatively, companies can use third-party technology solutions to ease the process of aggregating exposures. Systems that provide efficiencies and controls for this stage of the foreign exchange risk management process are limited.

Whitewater Analytics offers a solution that helps at this stage, with tools that address each of the spreadsheet concerns. Rather than email spreadsheets to central treasury, financial controllers at each subsidiary or regional hub log into Whitewater's web-based application to submit their exposures. Once submitted, the central treasury department can view the aggregated exposures. See Exhibit 1 for more on how Whitewater helps aggregate exposures.

## Netting Naturally-Offsetting Exposures

Once balance sheet exposures are aggregated, the next step is to take into account naturally offsetting exposures by “netting off” matching currency pairs. In other words, the exposures must be converted from the simple format in Figure 4, to a format shown in Figure 5.

Figure 5. Sample Net Balance Sheet Exposures on June 30

BUSINESS UNIT	BASE CURRENCY	QUOTE CURRENCY	QUOTE CURRENCY AMOUNT LONG/(SHORT)
U.K. SUB	EUR	GBP	£(315,000)
GERMAN SUB	EUR	GBP	£(100,000)
	CURRENCY-PAIR TOTAL		£(415,000)

In this example, the two business units contribute to the company's overall EUR/GBP exposure equal to £415,000 (assuming an exchange rate of 0.90 to convert U.K.'s exposure from €350,000 to £315,000). The exercise to convert from raw, aggregated exposure data to netted, actionable exposures is complex.

Doing this step manually with spreadsheets is very prone to errors. For example, it's very easy to accidentally divide instead of multiply an exchange rate or forget to convert from positive to negative or vice versa. The more reporting entities you have, the more formulas and macros, the greater the risk in performing this step. Often these complex spreadsheets are built and operated by one person who understands the artisanal process. When he or she is out of the office or leaves the company, you are left with an unfortunate void.

Whitewater Analytics automatically calculates net exposures from raw exposures. Raw exposures can be imported from one aggregated file (if you have a centralized source) or imported/uploaded by each of your reporting business units. Either way, Whitewater sorts, ranks and nets the exposures automatically into actionable exposures ready to be hedged. See Exhibit 2 for more on how Whitewater automates the netting of exposures.

## Data Integrity & Controls

Successfully managing balance sheet exposures requires a strong degree of confidence in the exposure data itself. You can't hedge exposures that you don't know about. If exposure data is incomplete or inaccurate, then your hedge won't be effective. It's critical to have good practices and controls in place that provide confidence in your exposure data. Here are some tips to ensure accurate exposure data during the data collection process:

- Accept exposure data only from trusted staff;
- Avoid re-keying data when possible;
- Consider leveraging technology as an alternative to spreadsheets and email;
- Establish an approval step in the workflow so that a second individual, likely in the central treasury, reviews the data before it's used for hedging.

The reviewer should notice suspicious exposures that merit follow-up with the data submitters. Some review tips for catching questionable reporting include:

- Identify entities with the largest exposures (both nominal and in terms of volatility), and spend the majority of your time and attention making sure these exposures make sense;
- Compare current exposures to historical exposures to identify trends and catch something out of the ordinary;
- Leverage regional or segment financial leaders' assistance in the review process periodically, e.g. he/she may be able to spot errors if given the chance to review exposures reported by his/her region.

The more automated the process of collecting, aggregating and netting exposures, the more time is freed up for a robust review, and the more effective you will be managing your balance sheet exposures. See Exhibit 3 on how Whitewater lends confidence to exposure data.

### Data Collection Frequency & Materiality Threshold

Balance sheet exposures should be gathered, aggregated and netted monthly or quarterly. Most companies choose monthly to coincide with monthly financial reporting and to leverage more up-to-date information. Due to the high frequency, it's important that your method of gathering and aggregating balance sheet exposures be as efficient, consistent, and reliable as possible.

Each company must consider its subsidiaries and review a Transaction Gain/Loss report as in Figure 2, to get comfortable with which entities need not participate in reporting exposures because they have little or no foreign currency transactions. Likewise, there may be entities who routinely have transactions in many different currencies, but none are significant. Some currency pairs are less risky

than others and merit a higher threshold. For example, HKD is pegged to USD, so perhaps you decide USD/HKD exposures are not worth hedging at any amount. A judgment call on a threshold amount will be necessary.

### Hedging Decisions

After validating your exposures and calculating significant, actionable, net balance sheet exposures, you are in a position to recommend and execute hedge contracts.

Because balance sheet exposures are known, companies typically hedge 100% of the exposures. This makes it relatively easy to derive the trades as shown in Figure 6 using the net exposures shown in Figure 5.

Figure 6. Sample Balance Sheet Hedge Trades

TRADING ENTITY	COUNTER-PARTY	BUY CURR	SELL CURR	BUY AMOUNT
U.K. SUB	PARENT	GBP	EUR	£ 315,000
GERMAN SUB	PARENT	GBP	EUR	£ 100,000
PARENT	BANK	GBP	EUR	£ 415,000

Figure 6 is suggesting that the parent hedges the net exposure amount of GBP 415,000 with the bank and does internal trades with each of the two subsidiaries. Hedge contracts should mature monthly or quarterly to coincide with your data collection cycles. The new set of hedges should begin at the same time the prior period's hedge settles. More on hedging decisions to come in a future whitepaper.

## Conclusion

At the end of the day, the process for managing balance sheet exposures is fairly straightforward and may be broken down into four different steps:

1. Understanding your company's income statement volatility and foreign exchange gain/loss trends. See Figure 2.
2. Collecting and aggregating the most significant exposures. See Figure 4.
3. Netting exposures by currency pairs when possible. See Figure 5.
4. Executing the hedge. See Figure 6.

**The more controls and automation you can build around these steps, the more effective you will be at managing your balance sheet exposures. The ability to reliably replicate the process, day in and day out, regardless of staff turnover, cannot be underestimated. Not only does automation and solid controls help avoid potentially costly errors, but it also enables treasury risk managers the time necessary to gain confidence in the exposure data, consult business units on identifying exposures, develop a perspective of currency exposure trends over time, and provide meaningful, high-level currency risk management reporting to senior management.**

## About the Author

Mr. Greg Charlesworth is General Manager for Whitewater Analytics, LLC and is responsible for day to day operations. Prior to joining Whitewater Analytics, Mr. Charlesworth had a 35-year career with BMO Capital Markets (former Marshall & Ilsley), providing foreign exchange and interest rate derivative solutions. Greg received a Bachelor of Science degree for the University of Wisconsin-La Crosse and an MBA from Keller Graduate School of Business. Whitewater Analytics provides a robust solution for the collection, consolidation, and analysis of foreign exchange exposure data. It is a productivity-enhancing solution, providing a deeper and more accurate analysis in less time.

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## EXHIBIT 1. Aggregating Exposure Data from Multiple Sources with Whitewater

With Whitewater Analytics, aggregating FX exposure data is easy, efficient, and designed to reduce error. Instead of your remote financial controllers around the world entering their exposure data onto a spreadsheet and emailing it to central treasury, they simply log into Whitewater Analytics and enter or upload balance sheet exposures using a secure web browser.



Corporate treasury risk managers see the information submitted by subsidiaries in real-time, approve or reject it, and then view consolidated currency exposures via our easy-to-use, powerful, online dashboard as in Figure 7 below. Whitewater also tracks for you which entities have reported and which are still missing for easy follow-up.

Figure 7. Whitewater Analytics Aggregated Exposures Dashboard

Entity Name	Functional Cur	Exposure Cur	Exposure Amount 31-Jul-2018
Singapore Pte Ltd	SGD	AUD	103,557,000.00
Brussels BBV	EUR	GBP	16,990,000.00
Singapore Pte Ltd	SGD	CNY	63,662,000.00
Portsmouth Ltd	GBP	JPY	930,900,000.00
Tokyo PLC	JPY	GBP	6,137,000.00
Chicago Inc	USD	CNY	(53,710,000.00)
Mexico City	MXN	USD	7,695,000.00

Audit trails and approval workflow controls are built-in such that only exposures approved by a second (and optionally a third) person are actionable. Approvers can view prior periods, reject reported exposures, drill down, rank, and filter the exposure data to gain confidence in the reported exposures.

## EXHIBIT 2. Netting Naturally-Offsetting Exposures with Whitewater

Among the many analytical functions available in the Whitewater Analytics tool, is the ability to view net currency exposure for the entire organization, while still being able to drill down to individual entities, regions or business lines. Aggregated exposures are automatically ranked and netted. Naturally-offsetting exposures can be viewed as net currency-pairs, side-by-side prior periods as shown in Figure 8 below. The exposure amounts can be filtered, grouped, and viewed in USD-equivalent or in quote currency as shown.

Figure 8. Whitewater Analytics Net Exposures Dashboard

Base Currency	Quote Currency	Quote Amount 31-Jul-2018	Quote Amount 30-Jun-2018	Quote Amount 31-May-2018
AUD	SGD	(103,611,523.35)	(2,463,018.19)	(2,515,251.38)
EUR	GBP	17,706,832.35	17,754,615.49	17,787,592.98
USD	CNY	(67,410,146.50)	(66,980,721.00)	(66,471,776.00)
SGD	CNY	63,662,000.00	63,655,000.00	63,655,000.00
USD	MXN	(152,826,134.50)	(158,690,149.60)	(164,322,457.20)
EUR	CNY	(55,449,221.84)	(54,764,371.40)	(53,621,378.95)
GBP	USD	6,463,000.00	6,465,000.00	6,455,000.00
CAD	MXN	(96,676,968.86)	(99,776,528.00)	(105,360,752.32)
USD	BRL	(17,587,850.40)	(18,517,063.40)	(17,608,167.50)
EUR	BRL	(17,270,289.08)	(18,417,852.45)	(17,497,552.05)
CAD	CNY	(28,400,000.00)	(28,382,000.00)	(28,380,000.00)
BRL	CNY	24,771,000.00	24,745,000.00	24,740,000.00
EUR	INR	(244,751,880.42)	(247,175,454.25)	(240,187,810.53)

### EXHIBIT 3. Data Integrity with Whitewater

Whitewater Analytics provides a robust solution for achieving best practices in the foreign exchange exposure data collection, consolidation, and analysis process. The Whitewater approach makes data integrity a priority by:

- Limiting access to enter and approve exposures
- Eliminating the need for redundant activity in the data collection process such as re-keying and emailing data;
- Eliminating artisanal, complex spreadsheet formulas for aggregating and netting exposures;
- Establishing a secure audit trail and approval process, with central treasury reviewing and approving exposures before hedging
- Providing analytical tools to flag suspicious data early in the process and gain confidence in exposure data and trends, such as historical comparison, ranking, filtering, grouping, and drill-down features within the reports
- Offering a framework that automates the routine steps along the process and thereby enabling treasury risk managers more time to spend consulting business units on currency risk management