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## Managing FX Headwinds

*Managing Risk to Cash Flows and Earnings*



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# Agenda

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- Best Practices
- Translation, Risk to Cash Flows and Risk to Earnings
- Choosing Among Hedging Alternatives
- Hedging Cash Flows Moves Earnings Risk *Lower*
- Hedging Cash Flows Moves Earnings Risk *Higher*
- Multiple Exposures
- Appendix: EaR versus CFaR

## Best Practices

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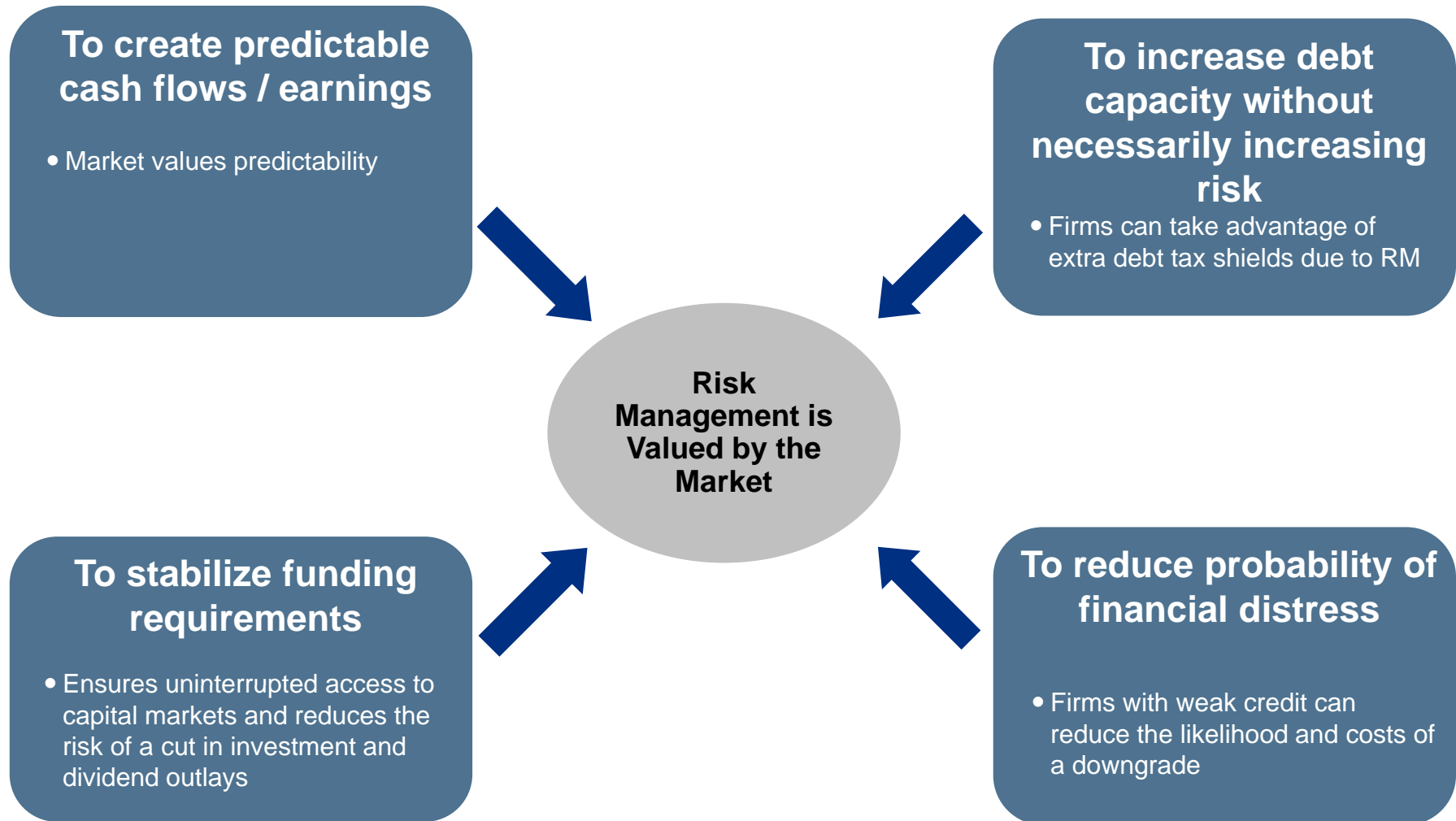
# Executive Summary

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- Risk Management increases value as:
  - It can ensure uninterrupted access to capital markets and can reduce the risk of a cut in investment and dividend outlays
  - It can increase debt capacity without necessarily an increase in risk
  - It can help reduce volatility of earnings and cash flows
- Empirically, derivative use for risk management has been associated with higher valuations
- The studies point to risk management as if all programs are created equal – they are not!
  - Corporate survey results show wide-ranging hedging methodologies
- The optimal hedge program may well indeed be company specific

# Why Hedge?

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# Practical Reasons Why Companies Hedge

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- Create certainty to business plan or annual budget cycle
  - Enhances ability to forecast and communicate with analysts and shareholders
- Protect cash flows for reinvestment, capital expenditures
- Buy time to adjust pricing or sourcing
- Reduce gains and losses recorded on remeasurement of FX assets/liabilities (ie FX payables/receivables, FX borrowing/lending) in income statement
- And quite honestly, many companies do not have a well-defined reason why they hedge the way they do

# A Best Practices Approach to Risk Management

## 1. Overall Business Objectives

Business objectives and factors that might influence FX risk management objectives include: (1) expectations of or promises made to equity analysts in regards to financial performance, (2) marketing and product pricing strategies, (3) competitive position in an industry, (4) industry trends, or (5) business philosophy and risk preferences

## Corporate Risk Management Road Map

### 2. Risk Identification & Measurement

- Identify FX exposures based on a functional currency approach
- Categorize exposures (i.e. accounting, economic)
- Design methodologies for quantifying the potential impact of exchange rates on an entity's financial performance
- Perform analysis to determine the overall risk to the Company

### 3. Setting Risk Tolerances & Hedging Objectives

- Based on the overall business objectives of the Company, define how much risk the entity is willing to tolerate and the overall objectives of the hedging program
- Clearly articulate these objectives in a formally approved risk management policy
- Define the procedures necessary to support the risk management process

### 4. Strategy Design & Implementation

- Evaluate different hedging alternatives in terms of instrument selection and management style
- Choice of strategy should be consistent with policy objectives and subject to constraints (i.e. accounting, lack of resources, dependability of forecasts)

### 5. Tracking & Performance Measurement

- Determine whether risks have been reduced below approved risk tolerances
- Assess effectiveness of hedging relationship periodically as required by FAS 133
- Benchmark performance against an actionable, passive, and simple hedging alternative
- Report hedging results to senior management

## Clarity Helps Build Appropriate Expectations...

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- It is essential that objectives be defined in the context of the Company's overall business objectives. For example:
  - Why does the Company place value in the predictability of cash flows (i.e. building credibility with investors and the market)?
  - Do bank covenants and the Company's leveraged position influence risk management decisions?
  - What role does the corporate budgeting process play in the risk management decisions?
  - How do the Company's underlying business conditions and strategies impact the FX risk management decision?

## ...And Drive Strategic Decisions

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- Without specifying the measurable period for reducing volatility (quarter-on-quarter, or year-on-year), the risk management objective fails to translate into an objective that can be reliably measured
- Without this level of detail, it is impossible to judge whether the risk management program is actually achieving its intended result. The following table shows examples of different risk management objectives and the strategies that are consistent with that objective

Risk Management Objective	Strategy & Hedge Tenor
Minimize Fiscal Year Volatility Compared to Budget Rates	Static hedge over fiscal year with forwards
Minimize Year-over-Year Volatility in Quarterly Results	Multiyear, layered hedging with forwards
Minimize Quarter-to-Quarter Volatility Within a Fiscal Year	Rolling quarterly hedge with forwards
Maximize Cash Flows/Returns Within Specific Risk Limits	Active or variable risk management strategies defined on pre-defined rules or view-driven

## Why Is This Important?

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- Creates a rigorous framework for understanding **RISK** and designing programs to reduce **RISK** to acceptable levels
- Creates clearly articulated objectives that are shared throughout the organization
- Helps build expectations of possible results of the program and as well as what the risk management program will not achieve
- Helps avoid surprises
- If second-guessing is going to occur (and it will!), channels those concerns through a process that is part of the process of constantly reevaluating the risk management program's merits
- Hedge characteristics and hedge objectives are more likely to be consistent

## What Every Company Should Know

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- What is the potential economic risk to our company's cash flows?
- What is the potential risk to our consolidated earnings?
- Does hedging cash flow risk *increase* or *decrease* our earnings risk?
- If hedging cash flow risk decreases earnings risk, what opportunity exists to lower earnings risk?
- If hedging cash flow risk increases earnings risk, how big is this trade-off?
- Strategically, what is more important and what are our priorities when designing a hedge program?

## Translation, Risk to Cash Flows and Risk to Earnings

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# Defining FX Risk – FAS 52 and IAS 21

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## FAS 52 and IAS 21

- Defines the *functional currency approach* - which is the basic principle for defining FX risk
- Describe the process of *translation* of financial statements for reporting purposes
- Provide background information on why the change in value of certain FX items are booked to earnings or to equity
- Was incorporated into the hedge accounting framework for FAS 133 and IAS 39

# Classifying FX Risk

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## *Translation Is A Two-Step Process*

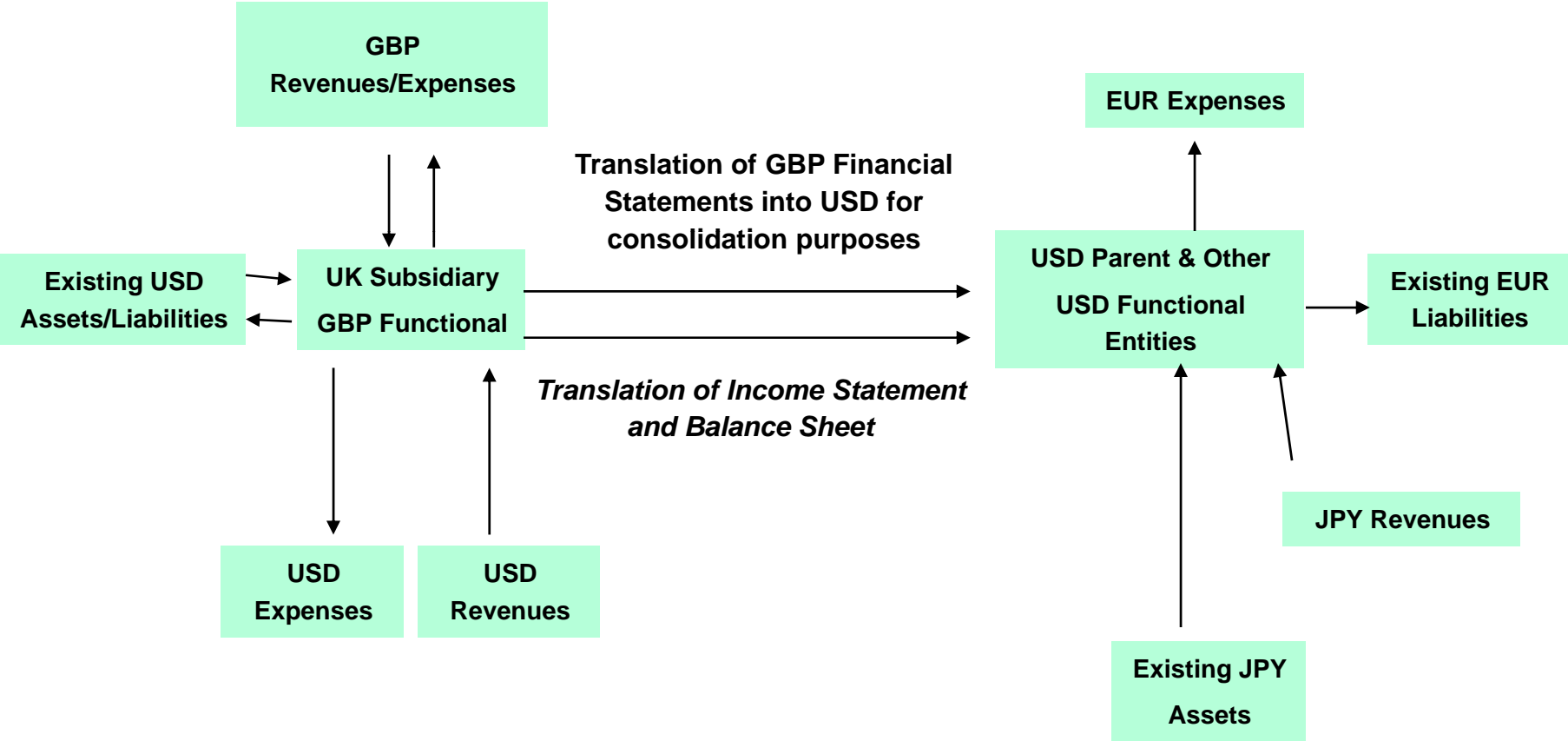
### **Step One**

- Each entity within the consolidated group translates FX-denominated revenues/expenses and any existing FX-denominated assets/liabilities into that entity's functional currency

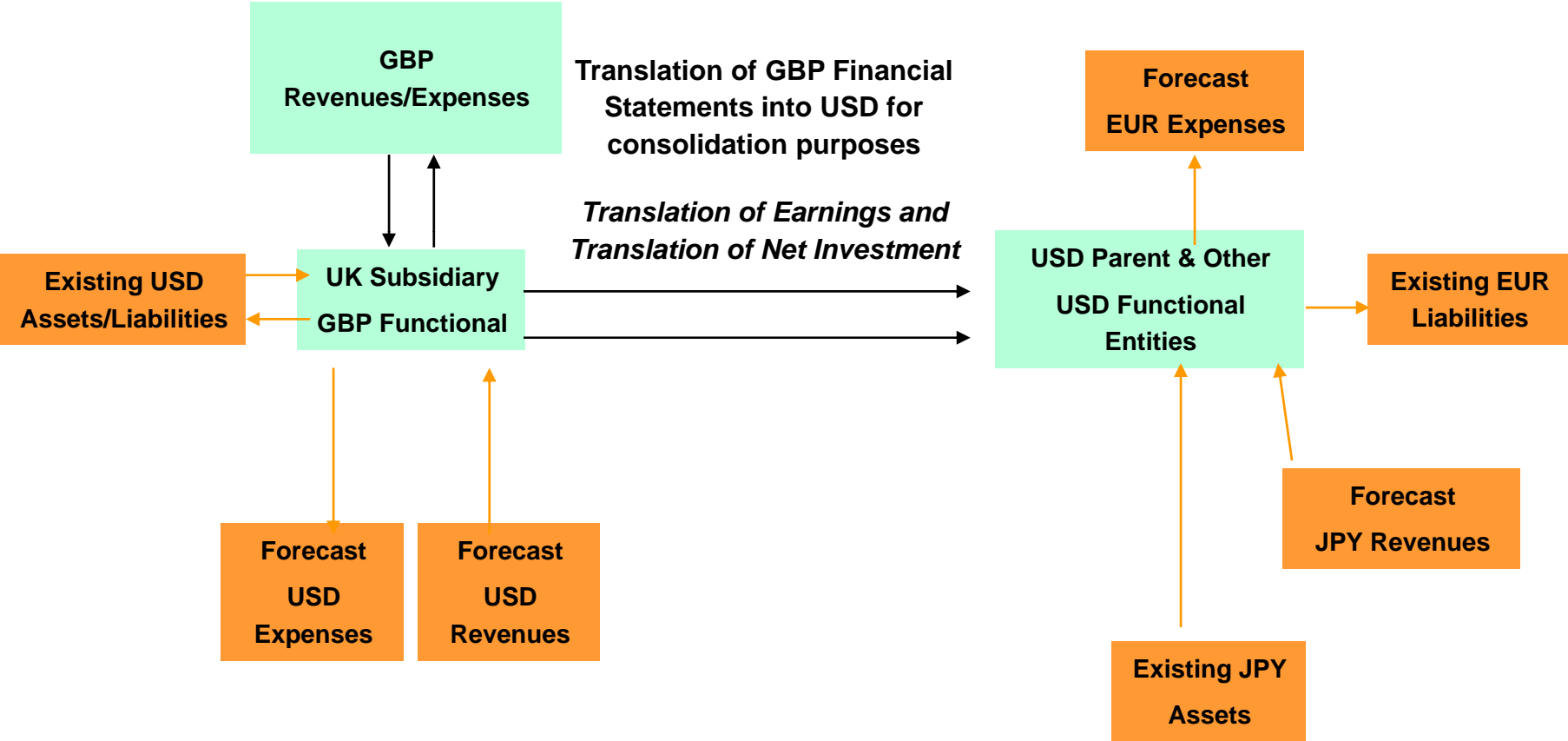
### **Step Two**

- Each entity's income statement and balance sheet are translated into the reporting currency of the consolidated entity for reporting purposes

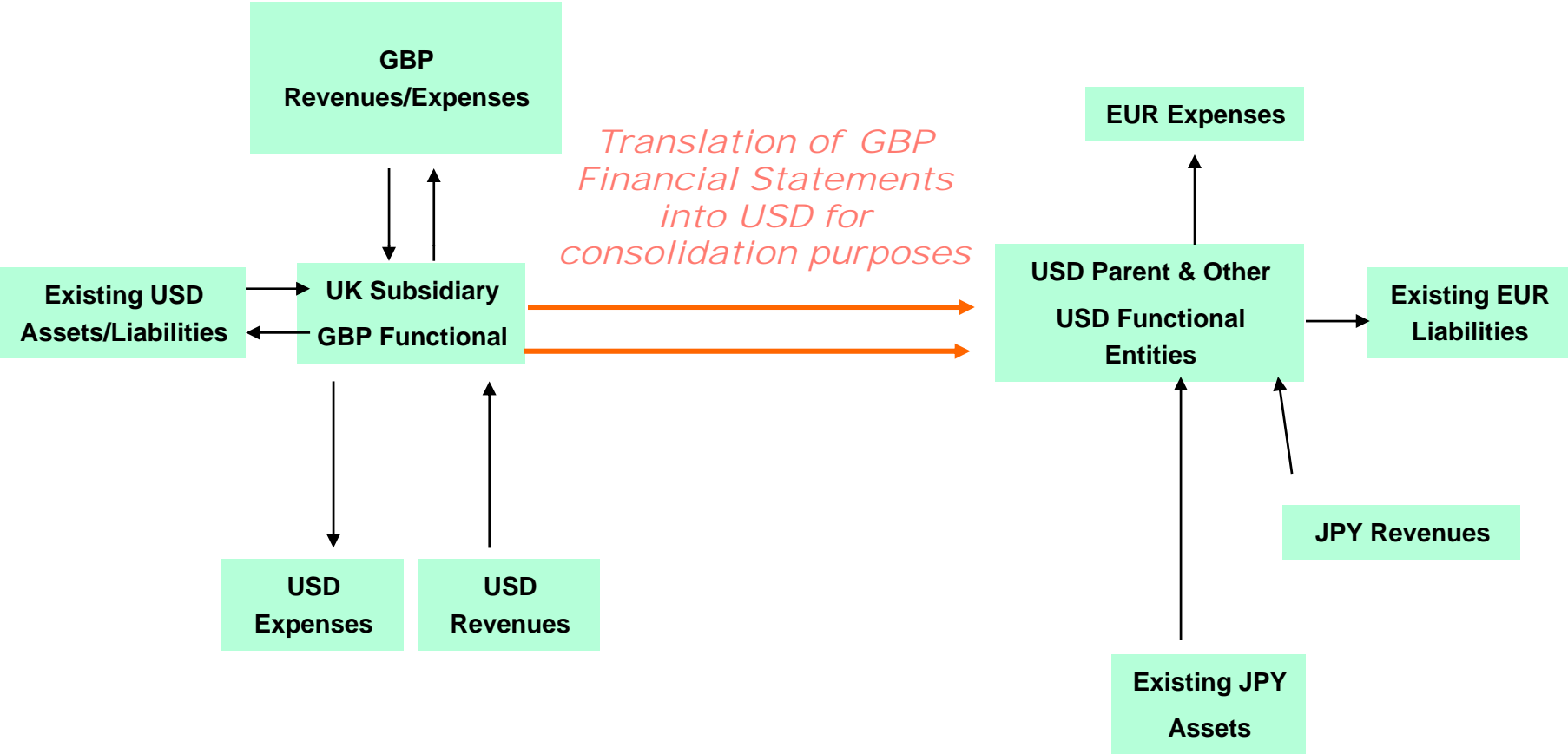
# Example – FX Risks



# Example – Step One: Translate at Entity Level



# Example – Step Two: Translate to Reporting Entity



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## Hedging Cash Flows Moves Earnings Risk Lower

# Risk To Cash Flows

***What is the notional amount of exposure to cash flows for this EUR-functional subsidiary?***

<b>EUR Functional Subsidiary of a USD Parent</b>			
<b>Revenues</b>		<b>Expenses</b>	
<b>EUR</b>	<b>400</b>	<b>EUR</b>	<b>(100)</b>
	<b>-</b>	<b>USD</b>	<b>(50)</b>
	<hr/>		<hr/>
	<b>400</b>		<b>(150)</b>

*\*All notionals are USD equivalents*

- **The cash flow risk is the USD expenses = (USD 50)**
- **The optimal hedge of this cash flow risk would be to hedge the USD position to EUR**
- **Resulting cash flow risk after hedging USD risk = 0**

# Risk To Earnings

**What is the notional amount of exposure to earnings for the USD-functional parent company from its EUR-functional subsidiary ?**

EUR Functional Subsidiary of a USD Parent			
Revenues		Expenses	
EUR	400	EUR	(100)
	-	USD	(50)
	<hr/>		<hr/>
	400		(150)

*\*All notionals are USD equivalents*

- The earnings risk is the net between the EUR revenues and expenses, equivalent to a net long position of +EUR 300 (+EUR 400 – EUR 100)
- The USD-denominated expenses are **NOT** an earnings risk in the consolidated financial statements

# Impact of Hedging Transactional Cash Flows

***If the subsidiary hedges 100% of its cash flow risk, what is the impact on consolidated earnings?***

EUR Functional Subsidiary of a USD Parent			
Revenues		Expenses	
EUR	400	EUR	(100)
	-	USD	(50)
	<hr/>		<hr/>
	400		(150)

*\*All notionals are USD equivalents*

- The cash flow hedge = a forward contract to buy USD 50 / sell EUR
- Resulting cash flow risk is now *lower* = 0
- Resulting earnings risk is now *lower* = +EUR 250 !

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## Hedging Cash Flows Moves Earnings Risk Higher

# Risk To Cash Flows

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***What is the notional amount of exposure to cash flows for this EUR-functional subsidiary?***

<b>EUR Functional Subsidiary of a USD Parent</b>			
<b>Revenues</b>		<b>Expenses</b>	
<b>EUR</b>	<b>300</b>	<b>EUR</b>	<b>(100)</b>
<b>USD</b>	<b>100</b>	<b>USD</b>	<b>(50)</b>
	<hr/>		<hr/>
	<b>400</b>		<b>(150)</b>

*\*All notionals are USD equivalents*

- **The cash flow risk is a net long position of +USD 50 (+USD 100 – USD 50)**
- **The optimal hedge of this cash flow risk would be to hedge the net USD position to EUR**
- **Resulting cash flow risk after hedging USD risk = 0**

# Risk To Earnings

**What is the notional amount of exposure to earnings for the USD-functional parent company from its EUR-functional subsidiary ?**

EUR Functional Subsidiary of a USD Parent			
Revenues		Expenses	
EUR	300	EUR	(100)
USD	100	USD	(50)
	<u>400</u>		<u>(150)</u>

*\*All notionals are USD equivalents*

- The earnings risk is the net between the EUR revenues and expenses, equivalent to a net long position of +EUR 200 (+EUR 300 – EUR 100)
- The USD-denominated transactions are **NOT** an earnings risk in the consolidated financial statements

# Impact of Hedging Transactional Cash Flows

***If the subsidiary hedges 100% of its cash flow risk, what is the impact on consolidated earnings?***

EUR Functional Subsidiary of a USD Parent			
Revenues		Expenses	
EUR	300	EUR	(100)
USD	100	USD	(50)
	<u>400</u>		<u>(150)</u>

*\*All notionals are USD equivalents*

- The cash flow hedge = a forward contract to sell USD 50 / buy EUR
- Resulting cash flow risk is now *lower* = 0
- Resulting earnings risk is now *higher* = +EUR 250 !



A trade-off exists between hedging cash flows and earnings!

# Impact of Hedging Transactional Cash Flows

**What is the hedge of transactional cash flows that decreases the level of earnings risk to the greatest extent?**

EUR Functional Subsidiary of a USD Parent			
Revenues		Expenses	
EUR	300	EUR	(100)
USD	100	USD	(50)
	<u>400</u>		<u>(150)</u>

\*All notionals are USD equivalents

← Hedge 100%

- Hedge 100% of USD expenses
- Hedge 0% of USD revenues
- Resulting earnings risk is now *lower* = +EUR 150
- Resulting cash flow risk is now *higher* = +USD 100



A trade-off exists between hedging cash flows and earnings!

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## Multiple Exposures

# Risk To Cash Flows

***What is the notional amount of exposure to cash flows for this EUR-functional subsidiary?***

<b>EUR Functional Subsidiary of a USD Parent</b>			
<b>Revenues</b>		<b>Expenses</b>	
EUR	150	EUR	(100)
CHF	75	USD	(50)
DKK	75		
GBP	50		
USD	50		
	400		(150)

*\*All notionals are USD equivalents*

- **The cash flow risk is:**

**USD 0, +CHF 75, +DKK 75, +GBP 50**

- **The optimal hedge of cash flow risk would be to hedge these exposures to EUR, selling each currency and buying EUR**

# Risk To Earnings

**What is the notional amount of exposure to earnings for the USD-functional parent company from its EUR-functional subsidiary?**

EUR Functional Subsidiary of a USD Parent			
Revenues		Expenses	
EUR	150	EUR	(100)
CHF	75	USD	(50)
DKK	75		
GBP	50		
USD	50		
	400		(150)

*\*All notionals are USD equivalents*

- The earnings risk is comprised of the following:  
**+EUR 50, +CHF 75, +DKK 75, +GBP 50**
- Again, the USD transactions are not a risk to consolidated earnings

## Impact of Hedging Transactional Cash Flows

***If the subsidiary hedges 100% of its cash flow risk, what is the impact on consolidated earnings?***

EUR Functional Subsidiary of a USD Parent			
Revenues		Expenses	
EUR	150	EUR	(100)
CHF	75	USD	(50)
DKK	75		
GBP	50		
USD	50		
	400		(150)

*\*All notionals are USD equivalents*

- With all transactions hedged into EUR, the earnings risk is +EUR 250
- Resulting cash flow risk is now *lower* = 0
- But is the earnings risk higher or lower after hedging? There is a choice between two earnings risks – *which one would you choose?*

1. +EUR 250, or
2. +EUR 50, +CHF 75, +DKK 75, +GBP 50

## Greater Diversification, Less Risk

***The more diversified the portfolio, the lower the risk***

Earnings-at-Risk For USD-functional Parent				
Exposure		VaR in \$		
EUR	250	\$	47.6	
EUR	50	\$	9.5	
DKK	75	\$	13.8	
GBP	75	\$	14.4	
USD	<u>50</u>	\$	<u>10.0</u>	
	250	\$	47.72	Sum of Component EaR
			(7.52)	Diversification Benefit
		\$	40.20	Portfolio EaR

*\*EaR at 95% Confidence Level*  
*\*All notionals are USD equivalents*

- **The level of diversification benefit received depends on the currencies, their relative notional sizes, implied volatilities, and the correlations between the currencies**

## EaR versus CFaR

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- For USD-functional companies that sell inventory to foreign subsidiaries that are FX-functional, hedging these forecasted transactions reduces risk to earnings (EaR) and cash flows (CFaR)
- Hedging forecasted intercompany royalty payments would also reduce both EaR and CFaR
- USD transactions are not an earnings risk to the consolidated entity
- The effect of hedging other types of exposures on earnings is uncertain and should be analyzed
- The optimal hedge of earnings requires companies to evaluate exposures on a gross basis, not net (!)

## Summary – Best Practices

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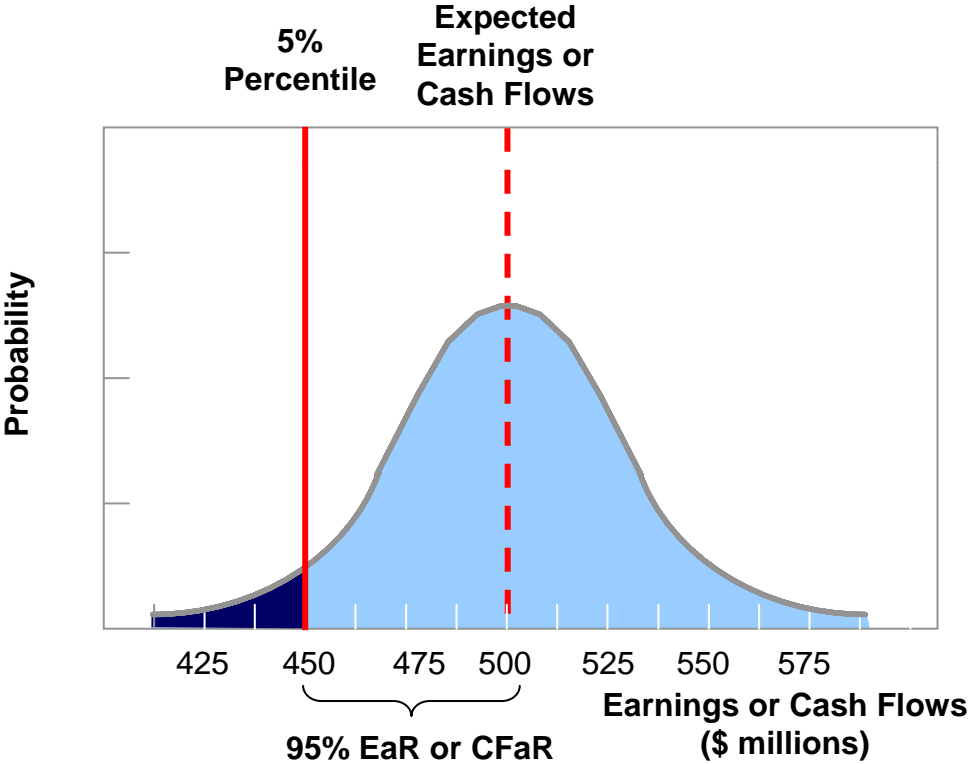
- A best practice approach depends on identifying and quantifying your risk
- In some cases, hedging transactional cash flows also reduces earnings risk but in some cases it actually makes risk to earnings go up
- When evaluating the optimal earnings hedge, companies should not net their exposures before they evaluate their risks – the best answer might be a hedge of expenses (or revenues) with no hedge against the revenues (or expenses)
- Any hedging program should deliver results that are expected and in line with stated objectives
- Remember: **How you hedge matters!**

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## Appendix: EaR versus CFaR

# EaR and CFaR – Basic Concepts

- Earnings-at-Risk (EaR) and Cash flow-at-Risk (CFaR) are estimates, with a given degree of confidence, of how much one can lose from a company’s exposures relative to an expected value over a given time due to adverse market rates



### Example

For a 12-month horizon, 95% confidence, an EaR of \$50 million means that there is a 5% chance that consolidated earnings will be \$50 million less than expected (e.g. budget plan) over the next 12 months.

# Example – CHF Functional Sub With Multiple FX Exposures

The following example shows the exposures of a USD-functional parent’s CHF-functional subsidiary and how hedging lowers notional exposures and creates a more diversified portfolio of risks

Currency	Revenues	Expenses	Net
<b>CHF-Functional Entity</b>			
CHF	-	(\$1.38 million)	(\$1.38 million)
USD	\$17 million	(\$12.71 million)	\$4.29 million
EUR	\$30 million	(\$17.1 million)	\$12.90 million
HUF	\$3 million	(\$6.93 million)	(\$3.93 million)
CLP	-	(\$2.19 million)	(\$2.19 million)
RON	-	(\$2.19 million)	(\$2.19 million)

FX Forecasted Cash Flow Exposures

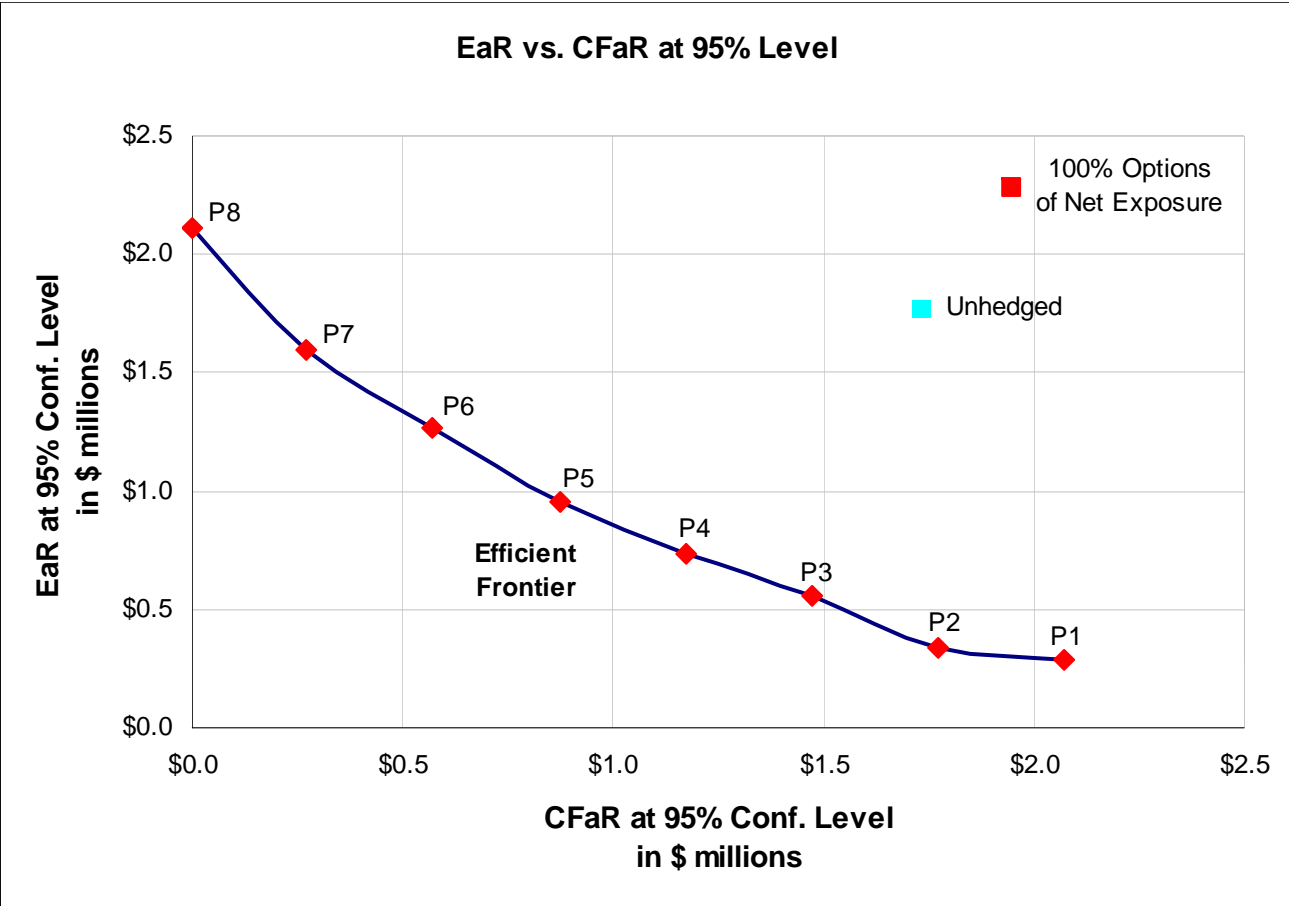


- It is important to analyze the revenues and expenses separately, as opposed to netting them
- In this example, we are assuming that all the exposures are with a third-party but the conclusions of this example will be similar if we had assumed that certain exposures were intercompany



# Example - Efficient Frontier

The following graph shows the efficient frontier between EaR and CFaR and compares it to the unhedged portfolio and other hedging strategies



- P1: Optimal hedge solution for EaR
- P9: Optimal hedge solution for CFaR

# Example - Hedge Ratios of the Efficient Frontier Portfolios

The following table shows the hedge ratios by currency of each of the portfolios in efficient frontier

	P1	P2	P3	P4	P5	P6	P7	P8
<b>Revenue - Hedge Ratio with Forwards</b>								
USD	9%	9%	10%	11%	12%	15%	21%	100%
EUR	55%	55%	52%	55%	57%	60%	57%	100%
HUF	5%	5%	5%	5%	5%	5%	6%	100%
CLP	0%	0%	0%	0%	0%	0%	0%	100%
RON	0%	0%	0%	0%	0%	0%	0%	100%
<b>Revenue - Hedge Ratio with Options</b>								
USD	0%	7%	7%	8%	9%	10%	13%	0%
EUR	8%	8%	8%	8%	8%	8%	8%	0%
HUF	0%	0%	0%	0%	0%	0%	0%	0%
CLP	0%	0%	0%	0%	0%	0%	0%	0%
RON	0%	0%	0%	0%	0%	0%	0%	0%
<b>Expenses - Hedge Ratio with Forwards</b>								
USD	39%	38%	29%	23%	18%	13%	10%	100%
EUR	32%	32%	34%	35%	35%	35%	35%	100%
HUF	55%	55%	61%	60%	56%	61%	62%	100%
CLP	63%	64%	65%	63%	60%	55%	69%	100%
RON	53%	53%	53%	54%	53%	54%	58%	100%
<b>Expenses - Hedge Ratio with Options</b>								
USD	6%	6%	6%	6%	6%	6%	6%	0%
EUR	0%	0%	0%	0%	0%	0%	0%	0%
HUF	0%	0%	0%	0%	1%	1%	1%	0%
CLP	35%	35%	35%	34%	33%	32%	25%	0%
RON	47%	47%	47%	46%	47%	46%	42%	0%
<b>Revenue - Overall Hedge Ratio</b>								
USD	9%	16%	17%	19%	21%	25%	35%	100%
EUR	63%	63%	60%	62%	65%	68%	65%	100%
HUF	5%	5%	5%	5%	5%	5%	6%	100%
CLP	0%	0%	0%	0%	0%	0%	0%	100%
RON	0%	0%	0%	0%	0%	0%	0%	100%
<b>Expenses - Overall Hedge Ratio</b>								
USD	45%	44%	35%	29%	24%	19%	16%	100%
EUR	32%	32%	34%	36%	35%	35%	35%	100%
HUF	55%	55%	61%	60%	57%	62%	63%	100%
CLP	99%	99%	100%	97%	94%	87%	94%	100%
RON	100%	100%	100%	100%	100%	100%	100%	100%

This highlights a couple of important concepts:

- FX revenues and expenses are analyzed separately
- Options and Forwards are part of the efficient frontier portfolios
- The percentage of non-USD exposures hedges depend on (a) the size and direction of the exposures, (b) the correlation among the currency pairs, (c) the implied volatility of each currency pair

## Matthew N. Daniel, Director, Corporate Solutions Group

Matthew Daniel is a member of Citigroup's Corporate Solutions Group in New York. Mr. Daniel assists corporate clients in assessing financial risks, evaluating risk management strategies, setting hedging objectives, and meeting the requirements of FAS 133 and IAS 39. Previously, Mr. Daniel was a member of Deloitte & Touche's Capital Markets Group for seven years and was involved in many of Deloitte's major FAS 133 implementation projects, as well as project-work related to corporate risk management activities. Mr. Daniel also has prior experience as a foreign exchange options specialist at Chase Manhattan Bank in New York, and he managed foreign exchange risk at both Union Carbide Corporation and Ford Motor Company.

Mr. Daniel holds an MBA in finance from the University of Washington, Seattle and a BA in human biology from Stanford University. Mr. Daniel is a frequent speaker on derivatives accounting, hedging strategies and foreign exchange risk management.

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