



# Basic Concepts of FAS 133

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# Session Topics

- General comments
- Terminology
- Hedgeable exposures
- Non-hedgeable exposures
- Three hedge types
- CF Hedge accounting cycle
- Hedge termination
- Documentation
- Critical terms
- G20 for options
- Shortcut treatment
- FV of exposures
- Hypothetical derivative
- Spot-to-spot methodology
- Highly effectiveness tests
- Counterparty risk
- P&L ineffectiveness
- Summary chart
- Appendix
  - Embeddeds
  - Option hedging rules



# General Comments – 1

- FAS 133 is 50% substance and 50% form
  - Both are rigorous
- Under FAS 133, hedge accounting is privilege, not a right, and that right must be earned, including the related accounting costs
- Master the documentation and you master 133:
  - Determine what actions are needed to properly hedge your company's economics risks
  - Then find the hedgeable transactions that will give the best accounting results for the economic hedge actions



# General Comments – 2

- A common mistake is confusing the 80-125% effectiveness test rule with forecast error
  - If a forecast is in error, it must be marked-to-market; there's no 20% grace amount
  - Forecast error is not ineffectiveness
- FAS 133 does not care at all what hedging instrument or technique is used, provided the hedge is expected to be and is effective
  - No matching of hedged item and the derivative is required
  - Can have multiple or single derivatives against single or multiple transactions
  - Maturities do not have to match either



# General Comments — 3

- Treasuries should not hedge forecasts unless they have been signed off by someone else
- Always get the auditors to show their authoritative 133 or DIG references for their FAS 133 decisions
  - Show me the paragraph
- FX hedging is managing the trade-offs between forecast error vs. hedge ineffectiveness and underhedging economic risks
- IR portfolio and commodity hedging require a lot of work doing the effectiveness testing
- Taxes are a sleeper, since all hedges are tax-effected separately at the marginal transaction rate



# Terminology

- ¶ - refers to FAS 133 paragraphs
- Alphanumerics ("G3") are DIG Issues
- OCI/AOCI - Accumulated Other Comp. Income
- CF - Cash flow (hedges or actual CF)
- FC - foreign currency (i.e., non-functional currency)
- FMV - Fair market value (true economic value)
- FV - Fair value, which is not always = FMV
- $\Delta$ FV - change in fair value for FAS 133 purposes
- HET - Highly effectiveness test
- IRS/CCIRS - Interest rate swap and cross-currency interest rate swap



# General Hedgeable Exposures

1-100% of a B/S or anticipated transaction, or a portfolio of such transaction, which:

- If B/S, do not have changes in valuation that are immediately reflected in P&L
  - Inventory if carried at historic cost
  - Debt if carried at historic cost
  - AFS securities ( $\Delta$ FMV to OCI/AOCI)
  - Net investments in self-sustaining units
- If anticipated, must be probable forecasts or firm commitments that affect net income



# Special Hedgeable Exposures

- Puts, calls, interest caps, floors in an existing asset and liability **which are not bifurcated**
  - See Appendix on embeddeds/bifurcation
- AFS can be hedged only as FV hedges
  - Both sides get MTM to P&L
- HTM can be hedged only as CF hedges of FX, credit risk or prepayment risk
  - But not interest rate risk since that is the point of being HTM

# Hedgeable Portfolios

Portfolios of hedgeable transactions are hedgeable provided that:

- All transactions in the portfolio share the same risk
- Sharing the same risk is defined for FV hedges
  - All components must move proportionately with the overall portfolio  $\pm 20\%$
- **Not** defined for CF hedges
  - Much more flexibility



# Hedgeable FAS 133 Risks

A hedgeable risk of a hedgeable exposure must be subject to changes in FV or in CF due to one or more of these risks:

- Entire change in fair value/cash flow
  - Must be used for commodity risk
- Interest rate risk (including the risk-free rate)
- Currency risk against the unit's functional currency
- Credit risk (and prepayment) risk



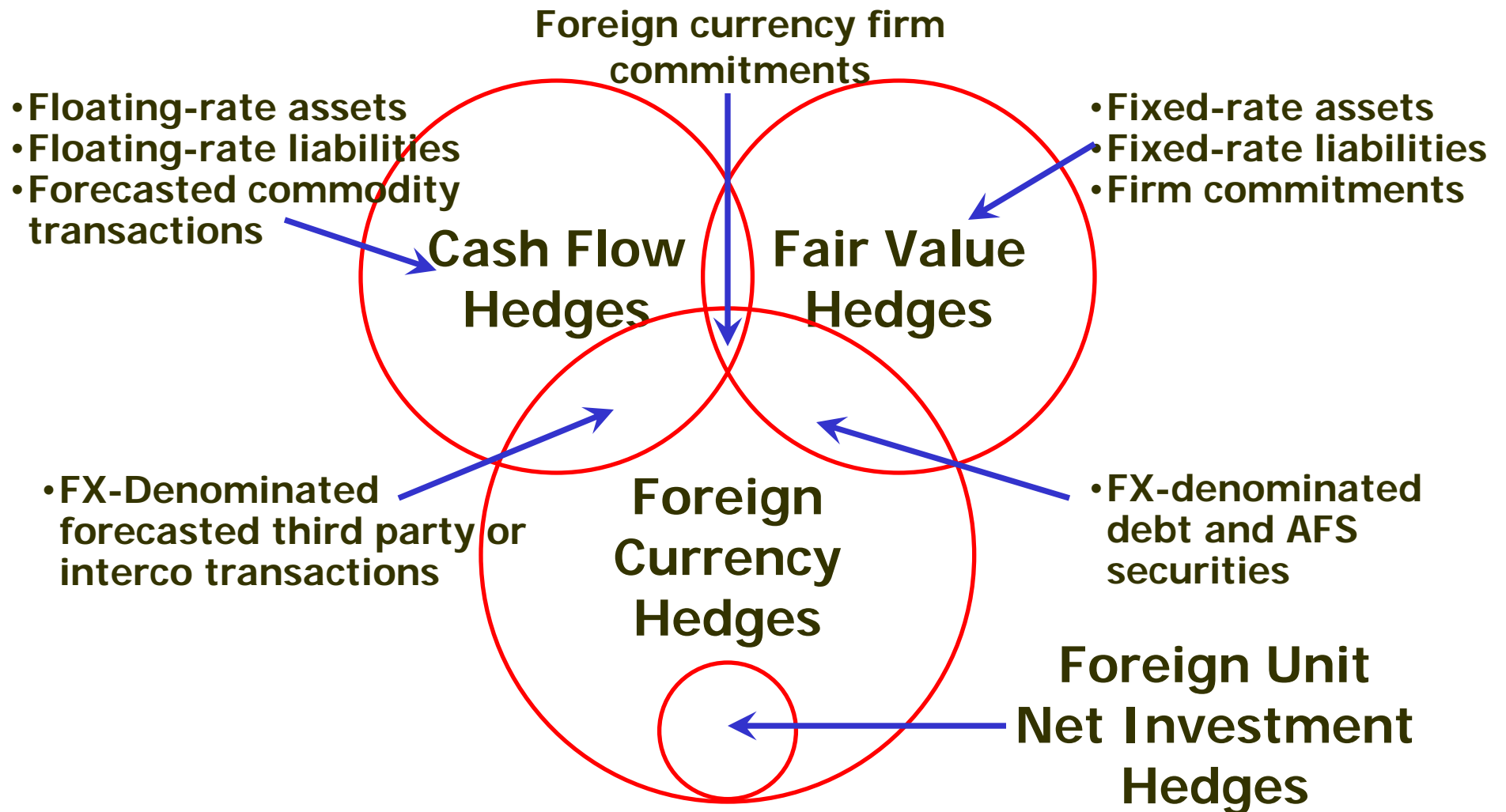
# Non-FAS 133 Hedgeable Exposures — 1

- Foreign currency monetary assets/liabilities
  - They are remeasured to P&L
  - However, associated future interest flows can be hedgeable items
  - Can be economically hedged with an FX derivative with both MTM to P&L
- Freestanding or bifurcated embedded derivatives
  - Such derivatives are always MTM to P&L
  - Can be economically hedged with a derivative, with both MTM to P&L

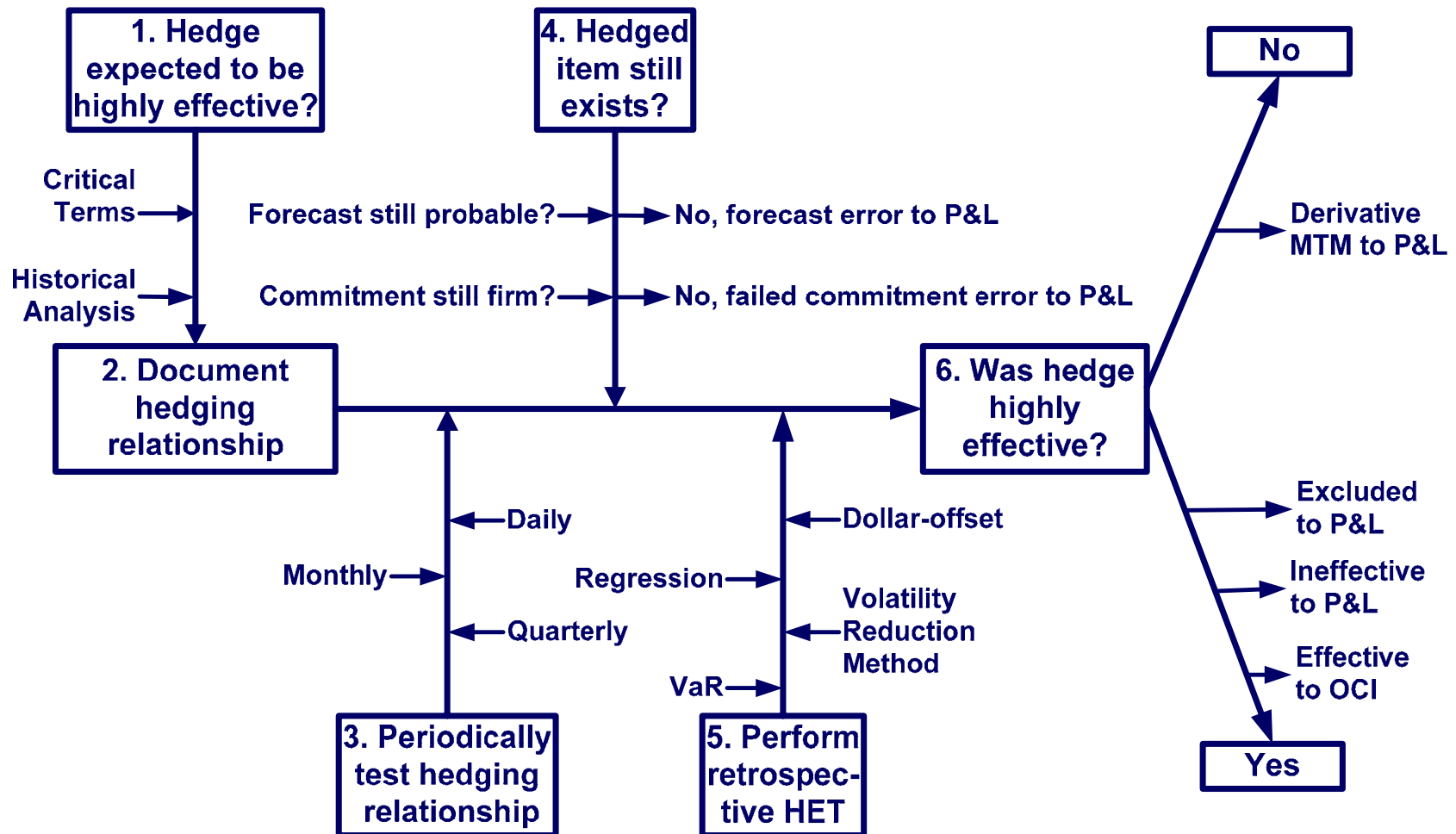
# Non-FAS 133 Hedgeable Exposures – 2

- Instruments classified as equity
  - Issuance or redemption of stock
  - Dividend declarations
- Anticipated business combinations or investments to be accounted for by the equity method
  - **Price FX risk cannot be hedged**
- Equity investments measured at cost which cannot be reliably fair valued (“unlisted”)
- P&L FX translation risk

# Three Hedge Types



# CF Hedge Accounting Cycle



# Hedge Termination

- When the hedge instrument is sold, exercised or matures or when the hedge designation is voluntarily discontinued (“de-designated”) or the hedge fails an HET:
  - Prior period’s deferred gains/losses remain deferred and current period’s G/(L) deferred as of hedge termination date until they would be normally recognized
- However, if the forecast is no longer probable or somehow the hedged item ceases to exist
  - Any amounts deferred related to the fair value of the hedging item is recorded in earnings



# Documentation Requirements — 1

1. Risk management objective and strategy for the hedge transaction
2. Description of the hedged item(s)
  - Can be a portfolio of transactions **if they share the same risk(s)**
3. Specifying which of 7 permissible risk combinations are being hedged:
  - FMV (§140-143)
  - One or more of: benchmark interest rate risk, FX risk, or issuer credit risk (six possible)



# Documentation Requirements – 2

4. Specifying which of 3 ways to fair value the hedged risk(s):
  - FMV (¶140-143)
  - Spot-to-spot (¶165-172)
  - Option pricing models (G20)
5. Description of the hedged instrument(s)
  - Multiple derivatives are possible
  - Cannot be a leg of a derivative



# Documentation Requirements — 3

5. Specifying which of 4 ways to fair value the hedge instrument:
  - FMV with no exclusions
  - Option FMV excluding time value (§63.a)
  - Option FMV excluding volatility value (§63.b)
  - Forward FMV excluding points (§63.c )
6. Using which of 4 justifications for the **expectation** that the hedge relationship **will be** highly effective (“prospective HET”)
  - Critical terms are the same
  - Historical analysis (dollar-offset, regression, and volatility reduction method)



# Documentation Requirements – 4

7. Specify which of 3 methodologies (“retrospective HET’s”) for proving that the hedge **was** highly effective
  - Dollar-offset on actual hedge data
  - Statistical analysis using historic and current data
    - Regression analysis
    - Volatility reduction method
8. Specify the time period for measuring the retrospective HET
  - Current period vs. since hedge inception



# Calculating HET & P&L Ineffectiveness

- For all hedges, if
  - The critical terms are not the same or
  - IRS hedging not qualify for shortcut treatment or
  - Option hedging does not qualify under G20
- Then we must perform:
  - The prospective HET
  - The retrospective HET
  - Calculate any hedge ineffectiveness
- All three involve comparing  $\Delta FV$  Hedge Instrument to  $\Delta FV$  Hedged Item as [these changes are defined in the documentation](#)



# Critical Terms are the Same

G9 allows the assumption of 100% effectiveness if the derivative terms exactly match the exposure:

- Notional amounts equal
- Maturities are the same
- Derivative's underlying index matches how the changes in the fair value of the exposure are documented
- Derivative's FMV at inception is zero
- No changes in counterparty credit risk



# Shortcut Treatment for Swaps

- Applies only to interest rate swaps of debt and investments
  - Not to cross-currency interest rate swaps
- Swap terms must match perfectly the terms of the hedged item
  - Including any call provisions
- If so, perfectly effective hedge
- Interest expense = interest net of swap interest



# G20 Option Critical Terms

G20 expands on G9 by allowing a net purchased option or a zero cost collar to be documented as 100% effective CF hedge if:

- Option derivative is a European purchased option
- Critical terms are the same
  - Notional
  - Maturity dates
  - Option strike = documented levels



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- **Defining FV of exposures**
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# Defining the $\Delta FV$ of the Hedged Item

In practice, it can be difficult to define the  $\Delta FV$  of the Hedged Item and get satisfactory effectiveness tests. Two solutions:

- Hypothetical derivative method
- Spot-to-spot method

# The Hypothetical Derivative Method

Allows the  $\Delta FV$  hedged item to be documented as the  $\Delta FV$  of a derivative perfectly matching the hedged item:

- Forwards for net investment (H8 and H9)
- IRS for floating rate CF debt hedges (G7)
- CCIRS for foreign currency debt hedges (by analogy to G7)
- European options for option-hedged exposures (G20)



# Using Spot-to-Spot

- If the hypothetical derivative method does not apply, spot prices always exist
  - May be particularly useful for commodities
- Then, document hedging the risk from changes in the movement of the spot-to-spot rate
- With option and forward hedging, use ¶63.a and ¶63.c to exclude time value and the forward points
- See Dual-Spot paper at [www.greenwichtreasury.com](http://www.greenwichtreasury.com)



# Dollar-Offset Ratio Test

## Dollar-offset ratio method

- Dollar-offset ratio =
  - $\Delta$  FV of the hedging instrument (**after** any exclusions) divided by
  - $\Delta$ FV of the hedged risk(s) **as specified** in the documentation
- If the ratio is between 80-125%, the hedge is highly effective
- Note that there's a risk that small changes in the underlying market rates can blow this ratio
- Generally better to use this on a cumulative basis rather than for the current period



# HET Statistical Methods

- As E7 states, “...the application [of statistical analysis] is complex [and] requires appropriate interpretation and understanding of statistical inferences.”
- Regression analysis is most common
  - $R^2 > .80$
  - Correlate on price levels rather than price changes
  - Minimum of 30 data points
  - Best if regression slope (beta) is close to one or hedge ratio matches the slope
- Volatility reduction method ([www.kalotay.com](http://www.kalotay.com)) is useful in complex interest and commodity hedging



# Counterparty Risk

- Evaluating counterparty risk is **not** an explicit documentation requirement
- Evaluating counterparty risk **is** an explicit part of the hedge effectiveness testing
  - If counterparty risk degrades, then critical terms are the same or shortcut would be no longer applicable
- Dealing with major banks is not the issue
- Problems can arise with bifurcated derivatives in commercial contracts and less than investment grade commodity counterparties



# Minimizing Termination Risk

For most common corporate hedging situations using simple derivatives and where there is little risk of failing any HET, use the dollar-offset:

- Much quicker and easier than statistical analysis
- Use it on a cumulative, not current period, basis

However, statistical analysis is generally better for portfolio hedging or where there is basis risk:

- A fixed rate LIBOR swap on CP
- EUR proxy hedging of SEK exposures
- Nearly all commodity hedging since critical terms are the rarely the same



# Calculating P&L Ineffectiveness

- For FV hedges, P&L ineffectiveness =  $\Delta FV$  Hedged Item -  $\Delta FV$  Hedge Instrument for the current period
- For CF hedges, it is cumulative difference from hedge inception for the two  $\Delta FV$ 's using the "lesser of the two cumulatives" test (§30.b)



# Lesser of Two Cumulatives Test

This test reports to P&L any over hedging but not any under hedging of the hedged item:

<u>Qtr</u>	<u>Derivative Value Period Change</u>	<u>Derivative Value Cum Change</u>	<u>Exposure Period Change</u>	<u>Exposure Cum Change</u>	<u>Lesser Cum</u>	<u>OCI</u>	<u>P&amp;L</u>
1	100	100	(96)	(96)	96	96	100-96 =4
2	94	194	(101)	(197)	194	194-96 =98	194-194- 4= (4)
3	(162)	32	160	(37)	32	32-194 =(162)	32-32 -0=0
4	(101)	(69)	103	66	(66)	-66-32 =(98)	-69-(-66) -0=(3)
5	30	(39)	(32)	34	(34)	-34-(-66) =32	-39-(-34) -(-3)=(2)

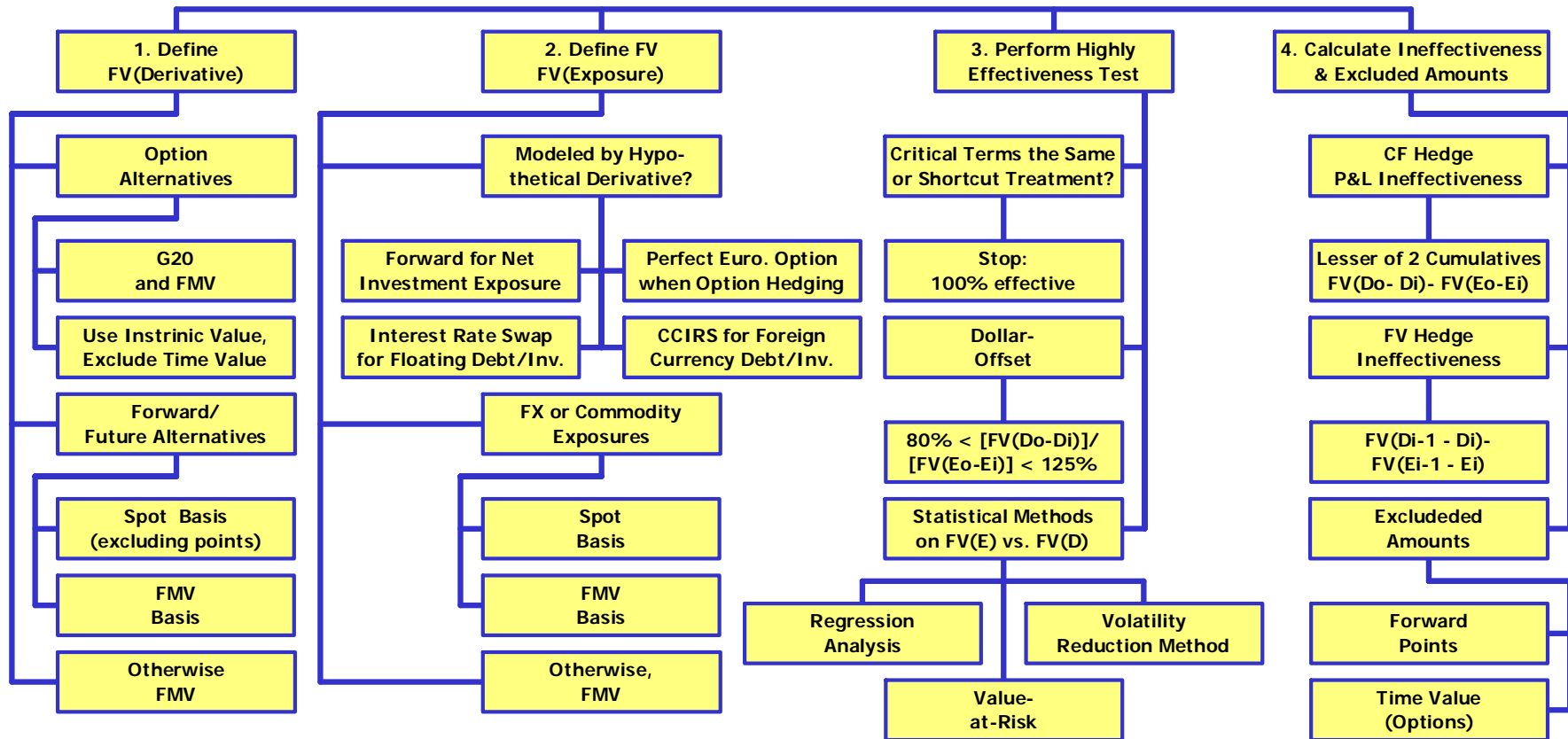


# Minimizing P&L Ineffectiveness

- The best way and most common way is to do “perfect hedges” where the critical terms are the same
- With imperfect hedges, write the hedge documentation so that  $\Delta FV$  of the hedged item  $>$   $\Delta FV$  of the derivative. This will generally be the case if:
  - The hedged item notional  $>$  the hedge notional
  - The hedged item maturity  $>$  the hedge maturity
  - Provided that the hedge is still highly effective



# FAS 133 Measurements Summary



# Who We Are

Founded in 1992, Greenwich Treasury Advisors have been delivering integrated treasury solutions for global businesses to over 250 clients:

- Global treasury organizational structures
- Risk management on an effective GAAP basis
- Bank selection and relationship management
- Selecting and implementing treasury technology



# Risk Management/FAS 133 Practice

Both substance and form:

- Risk management policy development
- Implementing best practices in hedging FX and interest rate risk
- Improving trading back office operational efficiencies and controls
- Providing advice to companies on structuring GAAP effective hedging programs
- Writing hedge documentation that will satisfy the auditors



# Representative Clients

Alcan

Amgen

BP

CITGO

DaimlerChrysler

Dow Chemical

DuPont

EDS

Financial Sciences

Ford

General Motors

McDonald's

Merck

Nestle

Novartis

NZ Dairy Board

Procter & Gamble

Principia

Saint-Gobain

SunGard

Simcorp

Siemens

Unisys

Wall Street Systems



# Jeff Wallace

- Founded Greenwich Treasury Advisors in 1992, and author of:
  - The Group of 31 Report: Core Principles for Managing MNC FX Risk (AFP, 1999)
  - A Risk Metric Approach to Hedging (2002)
  - FAS 133 chapter of The Handbook of International Finance & Accounting (2004, John Wiley)
- Formerly VP-International Treasury at American Express, AT at Seagram and at D&B; CPA at PW
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# Appendix – Embedded Derivatives

An embedded derivative is a derivative-like instrument that is not “clearly and closely related” to a host contract that is not fair valued under GAAP. If so:

- Derivative is bifurcated or separated from the host contract
- If it is not an option, use its stated and implied substantive terms so that it has an initial fair value of zero, with subsequent changes recorded in P&L
- If an option, use its terms to price it
- If derivative cannot be so valued, then entire contract is fair valued!



# Appendix – Clearly and Closed Related

If the value of the derivative varies with the same factor as the host contract:

- A cap in a floating rate note
- A forward FX rate in an normal purchase or sale contract
- A foreign currency normal purchase or sale contract that is denominated in the functional currency of either party or is the normal commercial currency (USD for oil transactions)



## Appendix – Not Clearly and Closely Related

When embedded shares dissimilar risks with the host contract:

- Normal purchase and sale contracts with a foreign currency option component
- An S&P 500 stock option embedded in a structured note would required bifurcation
- Interest bearing notes with commodity derivative components
- Embedded derivatives with leverage/complex optionality are usually bad
- A useful resource are the 37 DIG “B” issues dealing with embedded derivatives



# Special Option Hedging Rules — 1

- Written options can only be hedges if they hedge a purchased option
  - If not, written options are MTM to P&L
- Otherwise, only net purchased options qualify as hedge instruments (E2)
  - Only 2 legs, same indices with same maturities, and no net premium received
  - Different notionals possible (E18)

# Special Option Hedging Rules – 2

G20 allows us to document a net purchased option (or a zero cost collar) as 100% effective of a CF exposure if:

- Option is a European purchased option
- Critical terms are the same
  - Notional
  - Maturity dates
  - Option strike = documented levels



## Special Option Hedging Rules — 3

G20 provides that if the hedge instrument consists only of option(s) and qualifies as a net purchase option or a zero cost collar but is not a vanilla European option, then

- Effectiveness test is the hedge instrument against a hypothetical perfect European option hedge of the exposure at the documented level