

The SAP logo is displayed in white, bold, sans-serif capital letters on a dark blue, right-angled triangular background.

# Euro Import Risk

Larissa Buerano  
Dwight Doscher  
Kai Wu





# *Company History*

- We are a technology consulting company based in Washington, DC that licenses software to other firms.
- In addition to moving software both physically and electronically via the web, we also provide support and maintenance services to ensure the client is able to utilize and update the products.



# *Business Problem*

- Our products are experiencing a downturn in sales and we are switching to use SAP as our base product
- We will provide value added products under SAP's partner edge program
- We will pay SAP, a German software developer, €157 million for licenses, support, and software
- The deal with SAP requires that in September we import €157.5 Million worth of software which is equivalent to 1260 contracts
- Each contract is for €125,000 @ €1.27 which is equivalent to \$203.2 million

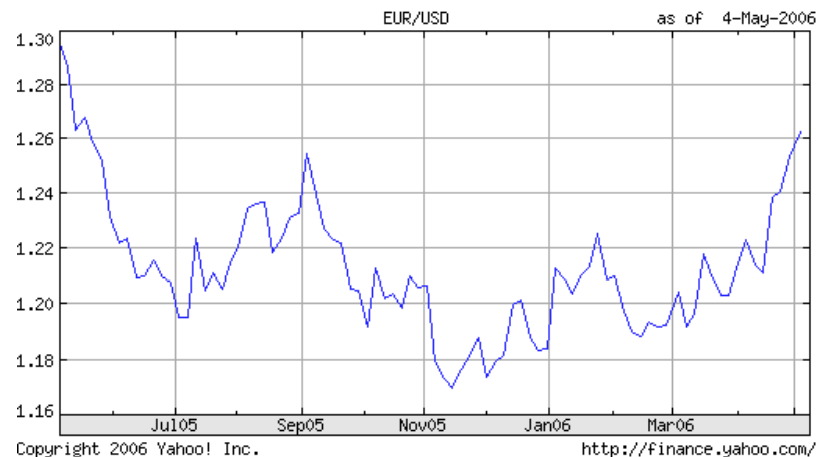


# *Business Risk*

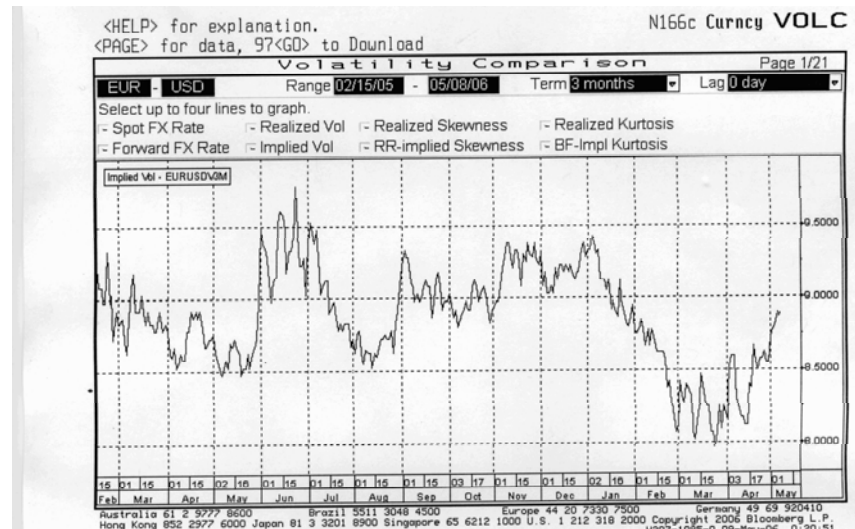
- Position: We are short EuroFX (or -F)
- In September 2006 we will owe SAP €157.5 Million
- Given our short position, we are worried about a big up because it would do significant damage to the profitability of our SAP deal
- We want only 2.3% (or 2 standard deviations) chance of a 5% loss, which is equivalent to a \$10 million loss limit

# Market View

- Our position is -F
- We anticipate that in the coming months the Euro will slightly appreciate against the US Dollar.
- Due to increasing inflationary pressures, analysts (according to FXNews.com) expect the Euro to rise in the long term along with the rise interest rates.
- Given the instability in several key European countries (ie German unemployment and riots in France) we are uncertain about our view, combined with the fact that the price movement chart shows a wide range of prices over the next year, it is our opinion that there will be high volatility.



# Market View Continued



This graph indicates that the current implied volatility for the Euro is rising and this is in line with our view that there will be high volatility before the option's date of maturity.

# Market Prices

- According to futures prices listed on the CME, the Euro is expected to remain relatively stable over the next five months.
- Due to increasing inflationary pressures, the Euro is expected to rise in the long term but since our date of maturity is in the short term, we will not see the effects of the price increase. Analysts consensus from FXNews.com expect the Euro to be relatively stable in the near future.
- Critical Price Range is 1.1309 to 1.4263
- Spot price as of 4/28/06 = €1.27
- In other words, one can buy €0.787 for \$1.

<b>Euro FX Settlement Prices as of 4/28/06</b>	
<b>Futures Prices</b>	
<i>June 18, 2006</i>	1.2652
<i>Sept. 19, 2006</i>	1.2722
<i>Dec. 19, 2006</i>	1.2786

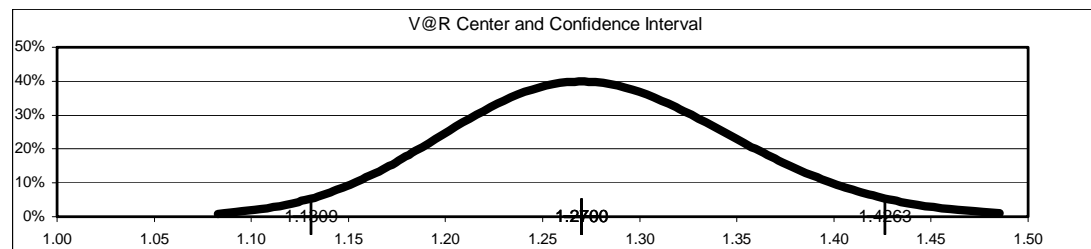
# Price Value at Risk

Price Value at Risk (V@R)		Underlying	EU		
Today	4/27/2006	Futures price	1.27	Monthly price volatility (stan. dev.)	2.6390
Risk Limit		-10,000,000	# of contract underlying	125,000	
# s.d. V@R (e.g. 1.00)		2.00	Exposure (+/-Contracts)	-1260	
Exposure (maturity) Date	9/19/2006	\$ underlying	-\$200,025,000		
For risk premium-adjusted V@R		Adjustment (+/-Contracts)		749 OK@ -511	
Funding Rate	5.00%	Monthly Estimates		T>30 days= 145	
Risk Premium Estimate	0.00%	Riskmetrics (optional)	Riskmetrics inferred (optional)		
		weight last 150 obs.	Own estimate	monthly vol*sqrt(145/30) Own estimate	
Standard deviations (s.d. E.g. 1% as 1.0)		2.6390	2.6390	5.8018 5.8018	
Short V@R @ price*exp(+#*sd)		1.3388	1.3388	1.4263 1.4263	
\$ V@R		-4,396,585	-4,396,585	-9,980,859 -9,980,859	
Short upside @ price*exp(-#*sd)		1.2047	1.2047	1.1309 1.1309	
\$ profit		4,170,551	4,170,551	8,887,387 8,887,387	

Probability of doing worse than +2.00 standard deviation (or 1.43) is 2.28%

Note: Riskmetrics assumes a zero risk premium.

If the graph doesn't plot, click the X-axis and format axis "scale" to bracket price range.



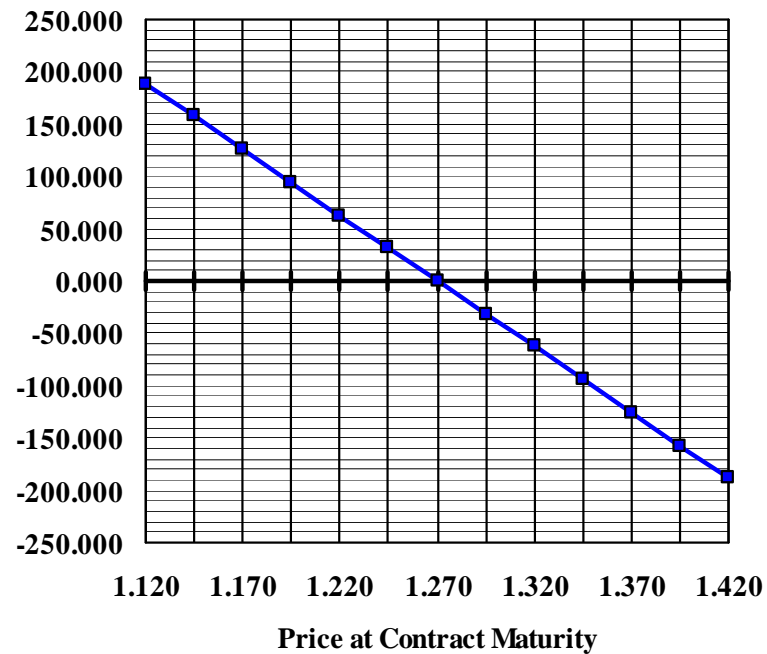
# Current Position: Unhedged –F

L or S (Long/Short)	S
F, C, or P (Forward, Call, Put)	F
Forward/Strike Price	1.2700
Price (C or P), 0.0 (F) - FV	0.0000
Number of Contracts	1260

Calculated Profit of a Short Forward Position

Prices at Maturity	1.120	189.000
	1.145	157.500
	1.170	126.000
Step size	1.195	94.500
0.0250	1.220	63.000
	1.245	31.500
Input futures price	1.270	0.000
	1.295	-31.500
	1.320	-63.000
	1.345	-94.500
	1.370	-126.000
	1.395	-157.500
	1.420	-189.000

Short Forward Position





*Current Position: Unhedged –F*

- Position: -1260F
- View: Down, not up
- Purpose: Trading



## *Hedging Strategy*

- Given a  $-F$  position and a market view that is up with high volatility, it is imperative that we hedge to lower our maximum loss to fit within our \$10 Million limit
- Because the market view is up in the future, if we do not fix our position now our maximum loss could be over our loss limit



# *Option Prices*

	<b>Calls</b>		<b>Puts</b>	
	<b>Strike Price</b>	<b>Price Quote</b>	<b>Strike Price</b>	<b>Price Quote</b>
<b>More OTM</b>	1.290	0.0192	1.250	0.0179
<b>OTM</b>	1.280	0.0233	1.260	0.0199
<b>ATM</b>	<b>1.270</b>	0.0280	<b>1.270</b>	0.0245
<b>ITM</b>	1.260	0.0333	1.280	0.0296
<b>More ITM</b>	1.250	0.0393	1.290	0.0354

As of 4/28/06

# Recommended Position: Synthetic Long Call

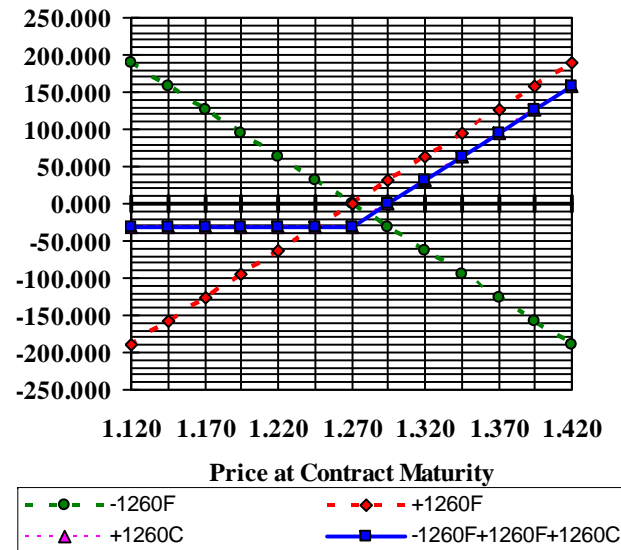
L or S (Long/Short)	S	L	L
F, C, or P	F	F	C
Forward/Strike Price	1.2700	1.2700	1.2700
Price (C or P), 0.0 (F) - FV	0.0000	0.0000	0.0245
Number of Contracts	1260	1260	1260

Calculated Profit of a

Combined -1260F+1260F+1260C Position

Prices at Maturity	1.120	1.145	1.170	1.195	1.220	1.245	1.270	1.295	1.320	1.345	1.370	1.395	1.420
Stepsize	189.000	157.500	126.000	94.500	63.000	31.500	0.000	-31.500	-63.000	-94.500	-126.000	-157.500	-189.000
Input Futures=> Price	-189.000	-157.500	-126.000	-94.500	-63.000	-31.500	0.000	31.500	63.000	94.500	126.000	157.500	189.000
Strike F9 to update	-30.870	-30.870	-30.870	-30.870	-30.870	-30.870	-30.870	0.630	32.130	63.630	95.130	126.630	158.130

Combined -1260F+1260F+1260C Position





## *Recommended Position: Synthetic Long Call*

- Position:  $-1260F + 1260F + 1260C$
- View: Up, High Volatility
- Purpose: Insurance (trading)
- Max Loss: \$-3,859,000



# *Alternative Positions*

Still keeping the Short EuroFx position (-F), other alternative possibilities if the market view is altered are:

## **View:**

- 1: Down, not up (not as much as -F position)
- 2: Up, Stable Volatility
- 3: Price Stable, Volatility High
- 4: Price Stable, Stable Volatility

## **Position:**

- 1: Forward Hedge
- 2: Synthetic Long Call (Out of the Money)
- 3: Synthetic Long Strangle
- 4: Synthetic Long Straddle

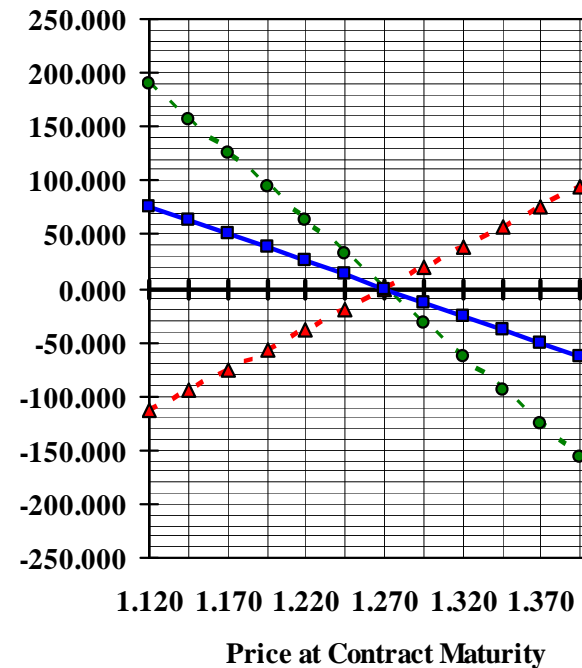
# Position 1: Forward Hedge

L or S (Long/Short)	S	L
F, C, or P (Forward, Call, Put)	F	F
Forward/Strike Price	1.2700	1.2700
Price (C or P), 0.0 (F) - FV	0.0000	0.0000
Number of Contracts	1260	749

Calculated Profit of a  
Combined -1260F+749F Position

Prices at Maturity	-1260F	+749F	-1260F+749F
1.120	189.000	-112.350	76.650
1.145	157.500	-93.625	63.875
1.170	126.000	-74.900	51.100
1.195	94.500	-56.175	38.325
1.220	63.000	-37.450	25.550
1.245	31.500	-18.725	12.775
Input Futures=> Price	1.270	0.000	0.000
1.295	-31.500	18.725	-12.775
1.320	-63.000	37.450	-25.550
1.345	-94.500	56.175	-38.325
1.370	-126.000	74.900	-51.100
1.395	-157.500	93.625	-63.875
1.420	-189.000	112.350	-76.650

Combined -1260F+749F Position





## *Position 1: Forward Hedge*

- Position:  $-1260F + 749F$
- View: Down, sure
- Purpose: Trading

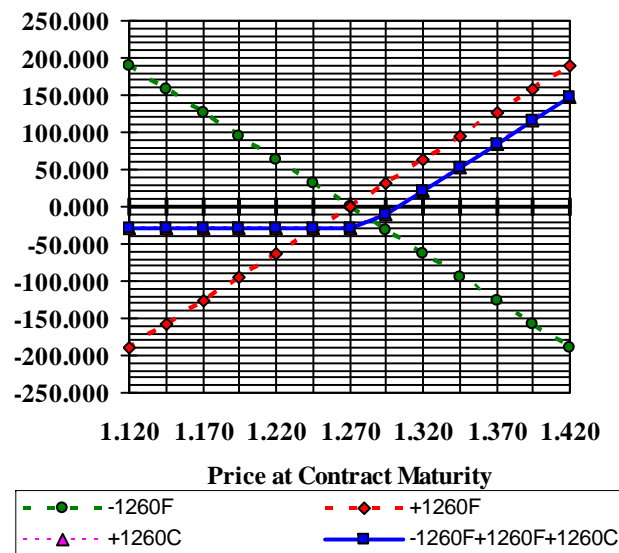
# Position 2: Synthetic Long Call (Out of the Money)

L or S (Long/Short)	S	L	L
F, C, or P	F	F	C
Forward/Strike Price	1.2700	1.2700	1.2800
Price (C or P), 0.0 (F) - FV	0.0000	0.0000	0.0233
Number of Contracts	1260	1260	1260

Calculated Profit of a  
Combined -1260F+1260F+1260C Position

Prices at Maturity	-1260F	+1260F	+1260C	+1260F+1260C
1.120	189.000	-189.000	-29.358	-29.358
1.145	157.500	-157.500	-29.358	-29.358
1.170	126.000	-126.000	-29.358	-29.358
1.195	94.500	-94.500	-29.358	-29.358
1.220	63.000	-63.000	-29.358	-29.358
1.245	31.500	-31.500	-29.358	-29.358
1.270	0.000	0.000	-29.358	-29.358
1.295	-31.500	31.500	-10.458	-10.458
1.320	-63.000	63.000	21.042	21.042
1.345	-94.500	94.500	52.542	52.542
1.370	-126.000	126.000	84.042	84.042
1.395	-157.500	157.500	115.542	115.542
1.420	-189.000	189.000	147.042	147.042

Combined -1260F+1260F+1260C  
Position





*Position 2: Synthetic Long Call (Out of the Money)*

- Position:  $-1260F + 1260F + 1260C_{itm}$
- View: Up, Stable Volatility
- Max Loss: \$-3,670,000

# Position 3: Synthetic Long Strangle

L or S (Long/Short)

F, C, or P

Forward/Strike Price

Price (C or P), 0.0 (F) - FV

Number of Contracts

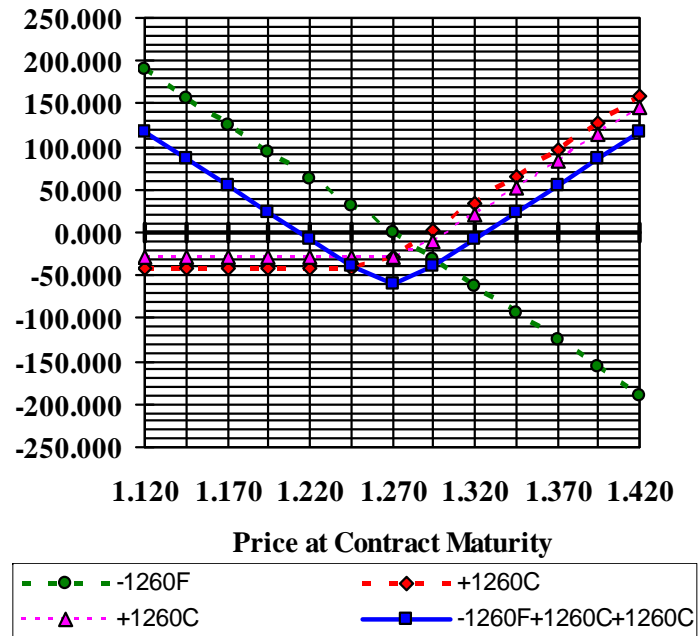
S	L	L
F	C	C
1.270	1.260	1.280
0.000	0.033	0.023
1260	1260	1260

Calculated Profit of a

Combined -1260F+1260C+1260C Position

Prices at Maturity	-1260F	+1260C	+1260C	+1260C
1.120	189.000	-41.958	-29.358	117.684
1.145	157.500	-41.958	-29.358	86.184
1.170	126.000	-41.958	-29.358	54.684
1.195	94.500	-41.958	-29.358	23.184
1.220	63.000	-41.958	-29.358	-8.316
1.245	31.500	-41.958	-29.358	-39.816
1.270	0.000	-29.358	-29.358	-58.716
1.295	-31.500	2.142	-10.458	-39.816
1.320	-63.000	33.642	21.042	-8.316
1.345	-94.500	65.142	52.542	23.184
1.370	-126.000	96.642	84.042	54.684
1.395	-157.500	128.142	115.542	86.184
1.420	-189.000	159.642	147.042	117.684

Combined -1260F+1260C+1260C Position





## *Position 3: Synthetic Long Strangle*

- Position:  $-1260F + 1260C_{itm} + 1260C_{otm}$
- View: Price Stable, Volatility High
- Purpose: Trade Volatility (Insurance)
- Max Loss:  $-\$8,195,000$

# Position 4: Synthetic Long Straddle

L or S (Long/Short)

F, C, or P

Forward/Strike Price

Price (C or P), 0.0 (F) - FV

Number of Contracts

	S	L	L
	F	C	C
	1.2700	1.2700	1.2700
	0.0000	0.0280	0.0280
	1260	1260	1260

Calculated Profit of a

Combined -1260F+1260C+1260C Position

**-1260F +1260C +1260CF+1260C+12**

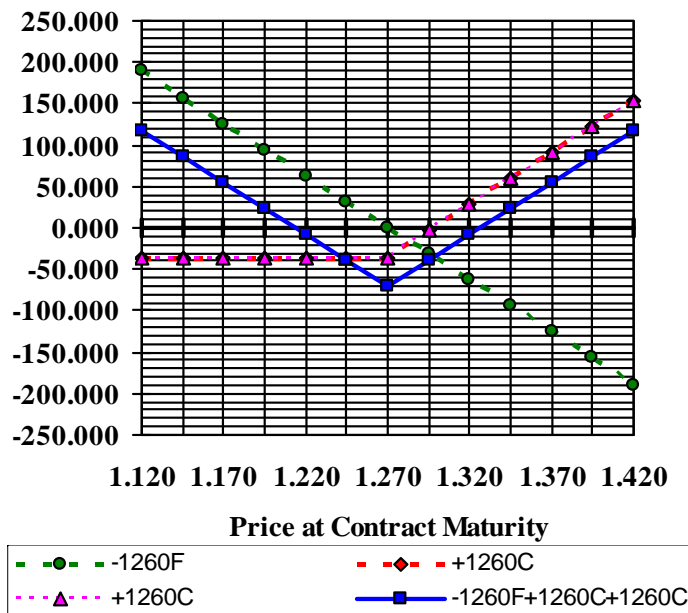
Prices at  
Maturity

Step size  
**0.0250**

Input  
Futures=> **1.270**  
Price

1.120	189.000	-35.280	-35.280	118.440
1.145	157.500	-35.280	-35.280	86.940
1.170	126.000	-35.280	-35.280	55.440
1.195	94.500	-35.280	-35.280	23.940
1.220	63.000	-35.280	-35.280	-7.560
1.245	31.500	-35.280	-35.280	-39.060
1.270	0.000	-35.280	-35.280	-70.560
1.295	-31.500	-3.780	-3.780	-39.060
1.320	-63.000	27.720	27.720	-7.560
1.345	-94.500	59.220	59.220	23.940
1.370	-126.000	90.720	90.720	55.440
1.395	-157.500	122.220	122.220	86.940
1.420	-189.000	153.720	153.720	118.440

Combined -1260F+1260C+1260C  
Position





## *Position 4: Synthetic Long Straddle*

- Position:  $-1260F + 1260C + 1260C$
- View: Price Stable, Stable Volatility
- Purpose: Trade Volatility (Insurance)
- Max Loss:  $-\$8,820,000$



## *Considerations for Recommended Strategy*

- We picked the Synthetic Long at the Money Call because it fits our market view (Up and High Volatility) and is within (\$3,859,000) our loss limit of \$10 Million



## *Max Loss Comparison*

<b>Position Name</b>	<b>Max Loss</b>
Synthetic At the Money Call	-\$3,859,000.00
Synthetic Out of the Money Call	-\$3,670,000.00
Long Straddle	-\$8,820,000.00
Long Strangle	-\$8,195,000.00

Here we can see that from our –F position, that all of our hedged positions are within the \$10 Million loss limit. Although not the position with the lowest maximum loss, the Synthetic At the Money Call position best fits our market view.