

Global Currency Hedging for Pension Funds

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March 22, 2007



Comments



- Background paper
- Key findings and example
- Practical relevance and additional considerations

Background paper

- Currency demand has two sources
 - **Risk management demand**
 - Minimizing risk total profile, for given expected return
 - Independent of investors' risk appetite
 - Correlation between stock returns and exchange rates is key
 - **Speculative demand**
 - Proportional to expected excess return and investors' risk appetite
 - Speculative demand is zero if Uncovered Interest Parity holds
 - Disregarded in this paper

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Key findings

- Risk aversion shocks in stock markets induce 'flee to quality'
- Investors buy risk-free assets primarily in USD, EUR, CHF
- Mean variance stock market investor should hold long currency positions in {USD, EUR, SFR} and short positions in {AUD, CAD, JPY, GBP}
 - This currency position tends to rise when stock markets fall
 - Vector of optimal risk management based currency demands

$$\Psi = -\frac{\text{Cov}(\text{stock return}, \text{currencyreturn}_i)}{\text{Var}(\text{currencyreturn}_i)}$$

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Example

- For a value-weighted global stock investor the optimum is

Stocks	100		
USD	66	CAD	70
CHF	22	JPY	13
EUR	13	AUD	9
		GBP	9

- Optimum is independent of investor's home country
- Investor needs substantial currency exposure
- Long position in low interest rate countries (quality discount) 5

Monthly Value at Risk (ex. cont.)

<i>Portfolio</i>	<i>Net investment</i>	<i>Volatility</i>	<i>VaR</i> <i>($\alpha=2.5\%$)</i>
Stocks unhedged	100M	0.1728	10.0M
Full currency hedge	100M	0.1382	8.0M
Optimal hedge	100M	0.1248	7.2M

Relevance for pension funds

- Currently pension funds generally chose corner solutions
 - Either fully currency hedge or no hedge at all
- Mean-variance analysis is a way to find an optimum
 - Siegel's paradox $E[1/X] = 1/E[X]$
 - Expected currency return > 0 for both EU and US based investor
- Special features for pension funds
 - Subject to borrowing constraints
 - Include sponsor currency exposure/hedging activities

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Some additional considerations

1. Elegant extension of Strategic Asset Allocation
2. Empirical tests rely strongly on CAD and AUD
 - Fat tails in currency returns, contagion effects
 - Regime switches: introduction of EUR
 - Growing importance of China (CNY) and India (INR)
3. Paper assumes fixed stock portfolio weights
 - Simultaneous mean-variance optimization of all assets
 - Optimum (probably) very sensitive for parameter input

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Some additional considerations (*cont.*)

4. Use dynamic hedging
 - Forward returns are to some extent predictable
5. Compare with other ways of reducing stock market risk
 - Including the reduction in expected return (buying put options)
6. For bond portfolios full hedging is equivalent to optimal hedge
 - Include (single currency, long duration) liabilities
 - New objective function: *min* Surplus at Risk
 - 'Flee to quality' also drives down interest rates
 - Impact on marked-to-market value of liabilities > currency effect