



INDEPENDENT EXPERTS  
LEADING THE DERIVATIVES  
AND DEBT MARKETS

## Market Risk Management

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ADVISORY SERVICES | TECHNOLOGY SOLUTIONS | GLOBAL IMPACT

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# About Chatham Financial

The largest independent interest rate, currency and commodity risk advisor

## ADVISORY SERVICES

- Interest Rate, Currency and Commodity Hedging
- Debt & Capital Advisory
- Defeasance
- Hedge Accounting
- Regulatory Advisory

## TECHNOLOGY SOLUTIONS

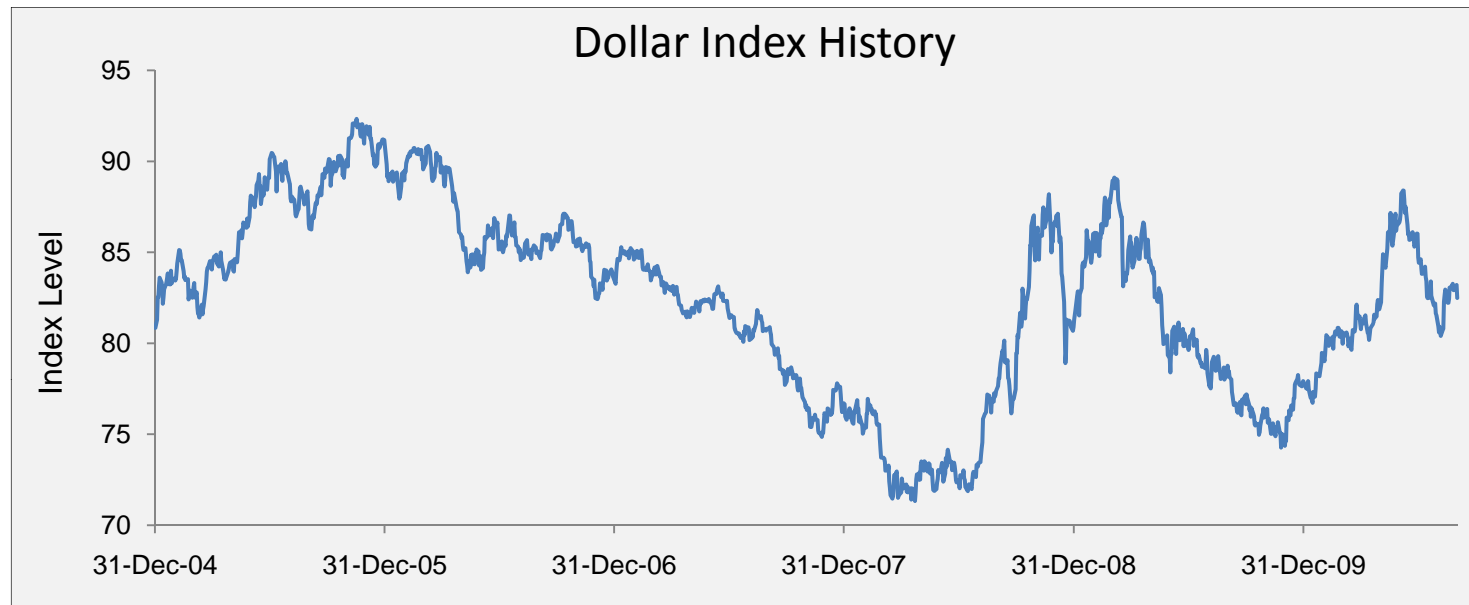
- Valuation Services
- Debt Management
- Web Tracking & Reporting
- Collateral Management
- Hedge Accounting Systems

## GLOBAL IMPACT

- 5 Office Locations Globally: U.S., Europe, Asia
- Since 1991, Advised On Over 47,000 Transactions and \$2.1 Trillion Notional
- Over 1000 Clients Annually

- Privately-owned risk advisory firm with 200 employees
- Core expertise:
  - Interest rate risk
  - Currency and Commodity risk
  - Accounting compliance
- How we serve:
  - Risk analysis
  - Strategy development
  - Market execution
  - Documentation
  - Disclosure preparation
  - Reporting
- Chatham advises on over \$1 billion in hedging transactions daily

# Why are we talking about Market Risk Management?



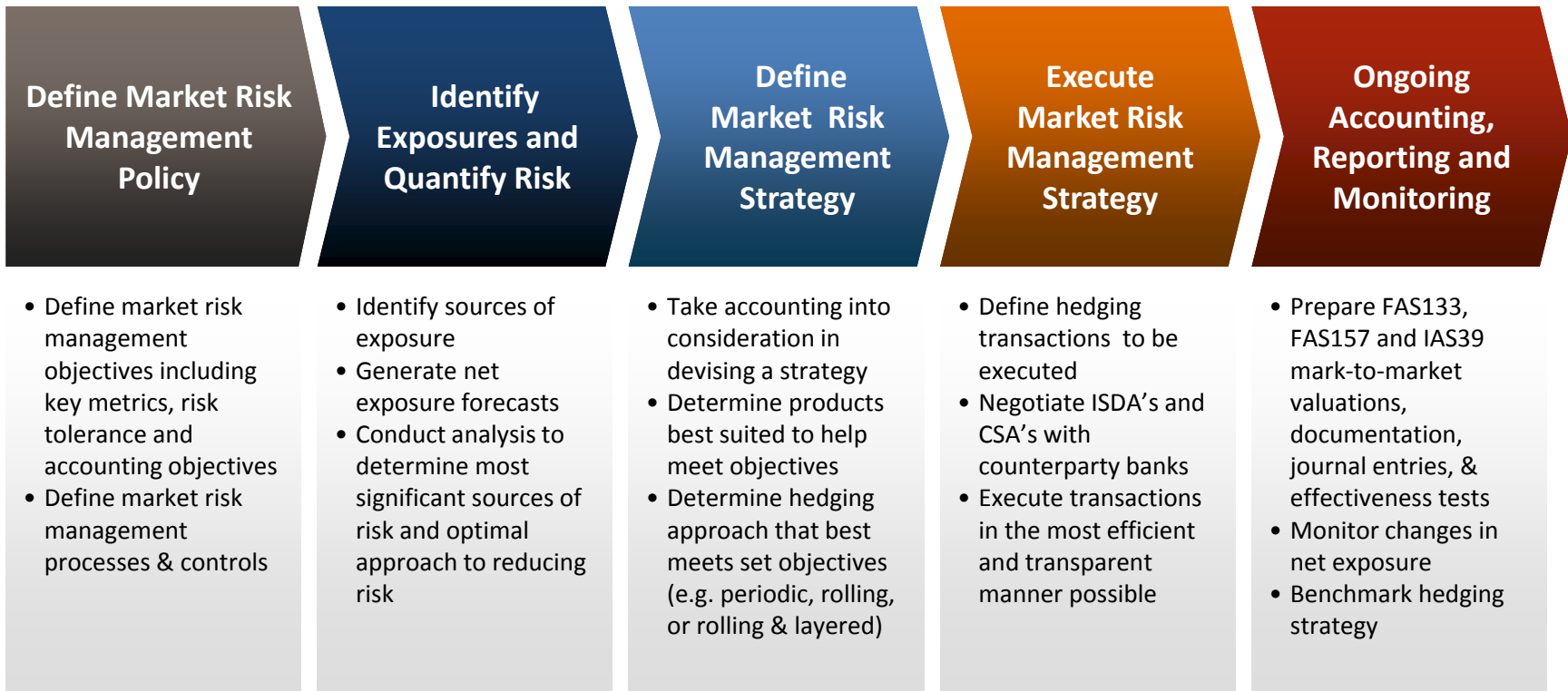
“ For the six months ending June 30, 2009, our overall revenue declined 15.8%, of which **7.3% was related to changes in foreign exchange rates.** ” (Omnicom, 2009)

“ Net income per share was \$0.98 for the quarter and \$1.85 for the six months, **including negative impact from foreign currency translation of \$0.09 per share and \$0.17 per share for the quarter and six months, respectively.** ” (McDonalds, 2009)

“...ongoing higher material costs, the deepening global recession, and **volatile foreign exchange rates have put downward pressure on our financial results.**” (John Deere, 2009)

“In 2008, **foreign currency exchange rates favorably impacted operating income by approx. 6%**, primarily due to a weaker US dollar compared to the euro, Japanese yen and Brazilian real...” (Coca-Cola, 2008)

# Our Comprehensive Market Risk Management Approach



These steps are essential to developing a robust, efficient and effective hedging program.

# Agenda

- **Define Market Risk Management Policy**
- Identify Exposures and Quantify Risk
- Define Market Risk Management Strategy
- Execute Market Risk Management Strategy
- Ongoing Accounting, Reporting and Monitoring

# Define Market Risk Management Policy

- Objectives & Key Metrics – What does the firm want to achieve and track?
- Risk Tolerance – What is the firm's tolerance for risk?
- Processes – What process will be used to complete critical market risk management tasks such as data gathering and execution?
- Risk Quantification Methodology – What method will be used to quantify risk?
- Controls – What controls will be used with regards to people, timing, & limits?
- Risk Reduction Methods – What methods will be used to reduce risk?
- Benchmarking – What methods will be used to assess the performance of the market risk management program?

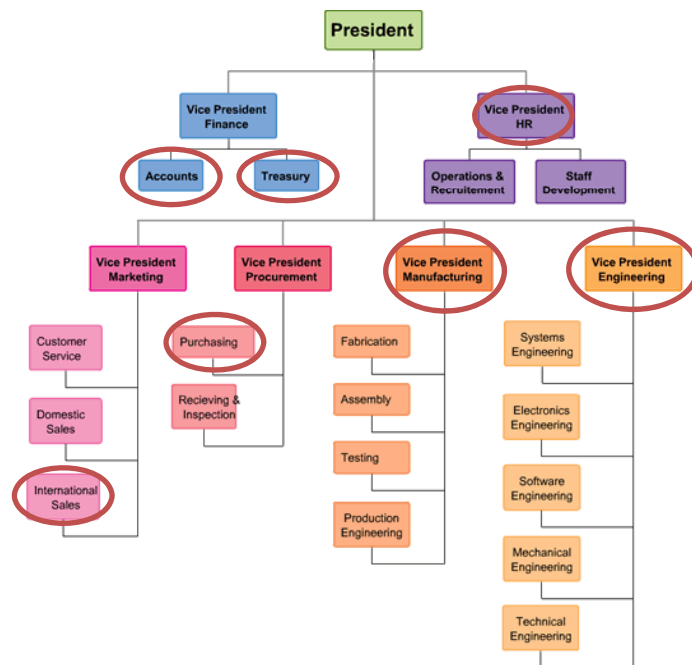
The key is to have a well defined policy that will foster a disciplined approach to market risk management.

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# Identify Exposures

This is typically very challenging as firm forecasts may not be available, reliable nor consistent – in a lot of cases they're also not housed in a central location

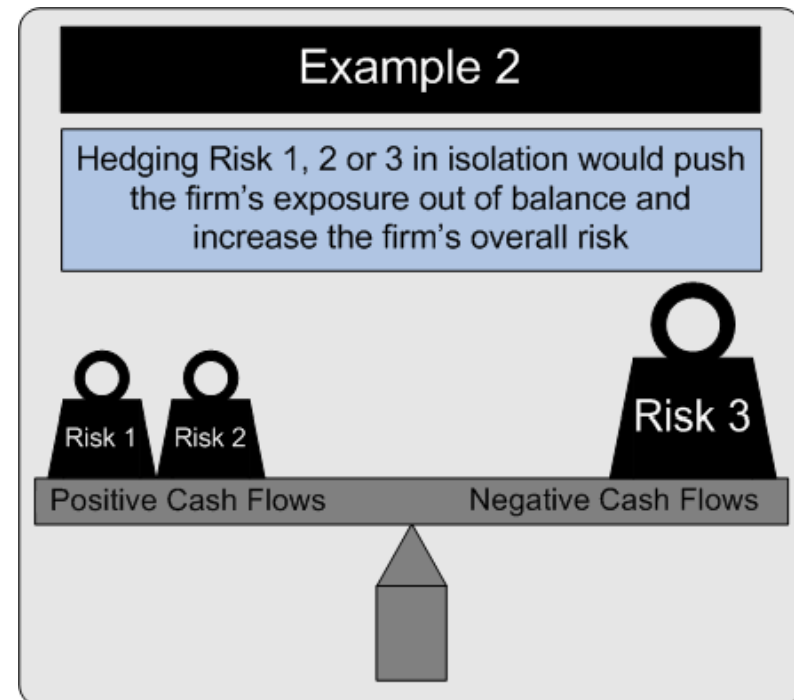
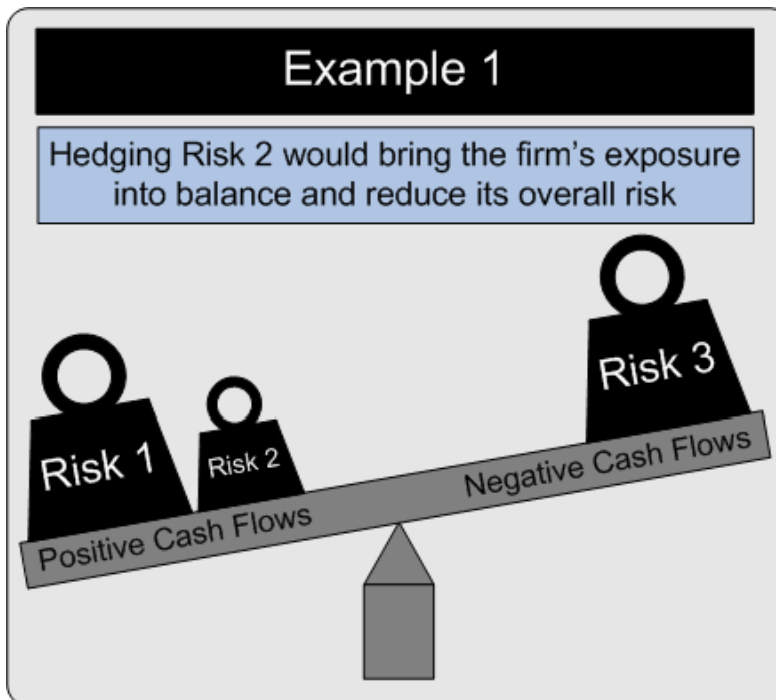


The key is to establish robust and efficient processes and systems for gathering exposure forecast data regularly



# The Dynamics of Risk

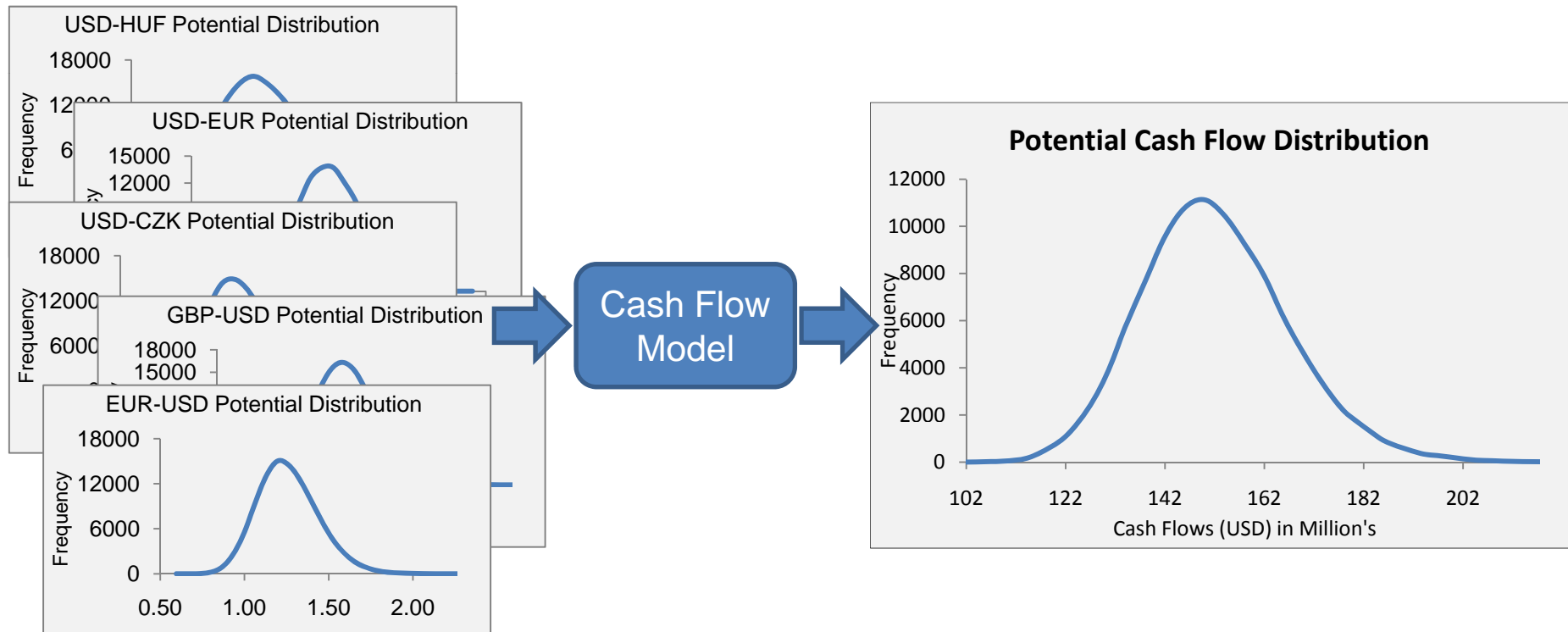
- Risk should be considered at the portfolio level as opposed to a standalone basis
- What matters is how a particular risk adds or removes risk from the overall portfolio
- The effect of adding or removing a particular exposure is not always straight forward





# How to Measure and Analyze Risk

- *Metric-At-Risk* is the industry standard approach for quantifying and analyzing risk
- Any approach needs to take forward rates, implied volatility and correlations into account
- *Monte Carlo Simulation* is one of the most flexible yet robust methods for calculating a metric-at-risk





# Risk Quantification Example

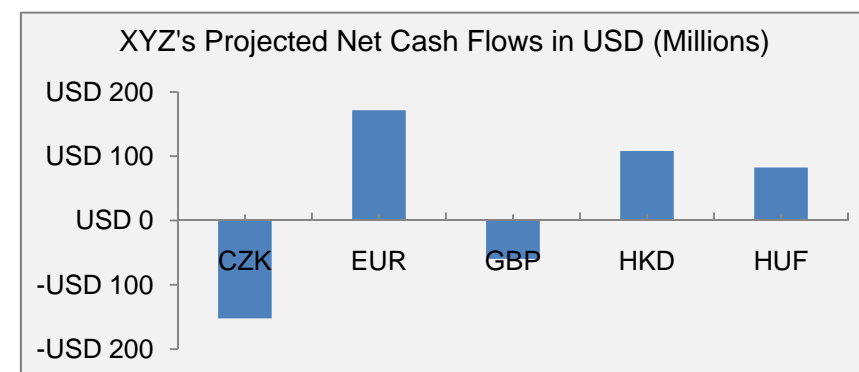
Let's look at a simple example of a US based firm with the net exposure foreign currency exposures listed in the table below as of June 30, 2010

The first thing we want to do is layer on the forward curve and calculate the net exposures in terms of USD

Net Exposure in Foreign Currency (Millions)					
Date	CZK	EUR	GBP	HKD	HUF
Sept 2010	-800	35	-10	210	4,900
Dec 2010	-800	35	-10	210	4,900
March 2011	-800	35	-10	210	4,900
June 2011	-800	35	-10	210	4,900

FX Forward Curve					
Date	CZK	EUR	GBP	HKD	HUF
Sept 2010	21.0225	1.2244	1.4944	7.7835	235.21
Dec 2010	21.0214	1.2250	1.4943	7.7773	236.95
March 2011	21.0210	1.2255	1.4943	7.7720	238.75
June 2011	21.0075	1.2263	1.4942	7.7660	240.01

Net Position in USD (Millions)					
Date	CZK	EUR	GBP	HKD	HUF
Sept 2010	-38.05	42.86	-14.94	26.98	20.83
Dec 2010	-38.06	42.88	-14.94	27.00	20.68
March 2010	-38.06	42.89	-14.94	27.02	20.52
June 2010	-38.08	42.92	-14.94	27.04	20.42
<b>Total</b>	<b>-152.25</b>	<b>171.55</b>	<b>-59.76</b>	<b>108.04</b>	<b>82.45</b>



# Risk Quantification Example

We should also take volatility into account:

Quarterly Averaged Market Implied Volatility for 1 Year					
Period	CZK	EUR	GBP	HKD	HUF
1 Year	15.8%	14.7%	13.1%	0.9%	22.1%

If we look at how much risk is generated by each currency on a standalone basis we get:

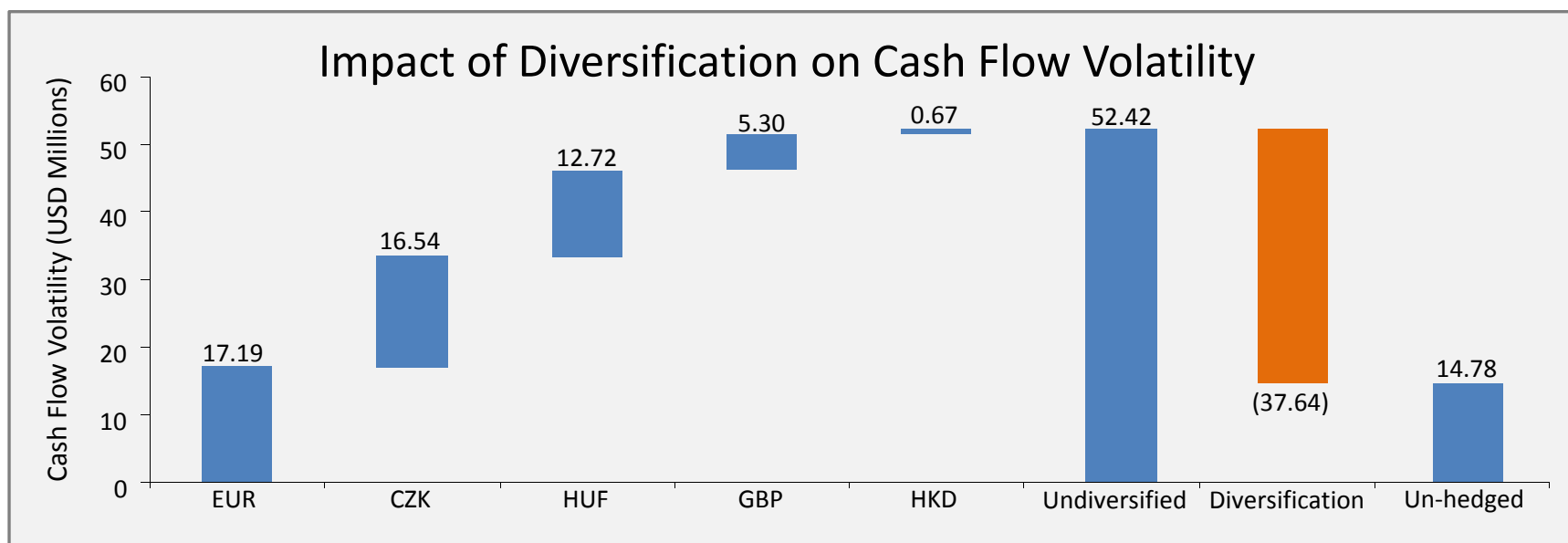
Standalone Cash Flow Risk in USD (Millions)		
Currency	Expected Cash Flows	Cash Flow Volatility
EUR	171.55	17.19
CZK	-152.25	16.54
HUF	82.45	12.72
GBP	-59.76	5.30
HKD	108.04	0.67

Given this information one might think that hedging EUR would be the number one hedge to put on, with the other currencies on the list following it

# Risk Quantification Example

However, we should also take correlations into account:

Correlation Matrix					
	CZK	EUR	GBP	HKD	HUF
CZK	1				
EUR	0.84	1			
GBP	0.57	0.55	1		
HKD	0.16	0.14	0.09	1	
HUF	0.85	0.82	0.51	0.18	1



# Risk Reduction

Once the currency exposures have been quantified – then what?

Hedging all exposures is typically unrealistic due to

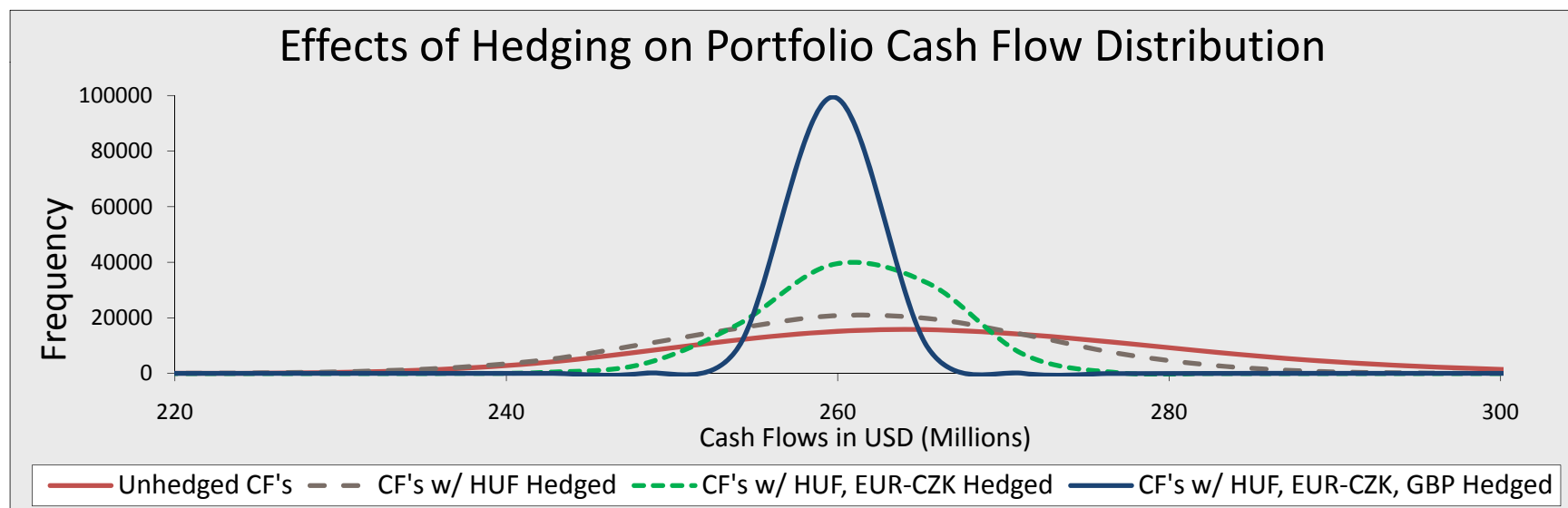
- Uncertainty around forecasted cash flows
- Accounting implications
- Logistics of managing a complex hedging program
- Risk tolerance
- Cost of hedging
- Liquidity & market constraints
- Credit considerations

The key is to identify the most efficient way  
to reduce the firm's risk



# Risk Reduction

Effects of Hedging on Portfolio Volatility in USD (Millions)	
Hedge	Portfolio Cash Flow Volatility
Un-Hedged	14.78
Hedge HUF	10.99
Hedge HUF and EUR-CZK	5.28
Hedge HUF, EUR-CZK & GBP	0.67
Hedge HUF, EUR-CZK, GBP & HKD	0.00



Risk analysis tools help to maximize hedging efficiency

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# Define Market Risk Management Strategy

- Driven by business operations & hedging objectives
- Key Considerations
  - Hedge accounting constraints
  - Ability to pass along risk and/or re-price goods
  - Ability to reduce exposures through sales or expenses in different currencies
  - Level of exposure uncertainty
  - Logistics of managing the program
  - Credit considerations & cash impacts
  - Liquidity and market constraints

There's no one-size-fits-all strategy. The key is to find the strategy that best aligns with the firm's hedging objectives.

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## Execute Market Risk Management Strategy

- Negotiate ISDA's
- Prepare Term Sheets
- Evaluate credit terms and charges
- Take all banking relationship considerations into account
- Take into account the pricing nuances of all markets involved
- Execute Trades on an auction or negotiated basis
- Develop insight into how much bank is actually charging

The key is to find the optimal combination of cost effectiveness, transparency, efficiency and fairness.

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# Ongoing Accounting and Reporting

## Accounting and Reporting

- Preparing ASC815 (FAS133) and IAS39 hedge accounting documentation (e.g. hedge designation memos)
- Generating monthly valuations and ASC820 (FAS157) Credit Valuation Adjustments (CVA's)
- Preparing monthly journal entries, effectiveness assessments, and quarterly/annual quantitative disclosures
- Assisting with ongoing monitoring of hedging relationships necessary for maintaining hedge accounting
- Answering auditor questions as they come up

The key is to have the systems, processes and expertise required to do this right and efficiently.



# Ongoing Monitoring

## Monitoring Exposures

- Given the dynamic nature of the markets and of businesses, exposures should be re-evaluated on a regular basis
- This re-evaluation should coincide with the hedging decision-making process

## Monitoring Performance

- Performance Benchmarking should be a regular part of any hedging program (e.g. what if we hadn't hedged?, what if we had hedged 100% of our exposures?, what if we had hedged a different mix of exposures?)

The key is to put in place processes and systems that allows the firm to regularly calibrate it's hedging strategy.

# Chatham Financial

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For more information on advisory and/or technology solutions to help manage your market risk, please contact:

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