Commodity Risk Management: Supply Chain Best Practices

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Presented by Michael Irgang
Executive Vice President
Global Risk Management Corp.

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Agenda

I. **Commodity Market Volatility**

II. **Case Study:** The Impact of Commodity Prices on Financial Results & Supply Chain Metrics

III. **Best Practices of Commodity Risk Management in the Supply Chain**

COMMODITY MARKET VOLATILITY

Today's Purchasing Environment is Heavily Influenced by Outside Factors:

Energy Markets

Weather

$USD

Terrorism

Food Contamination

Competitive Issues

Price Forecasting Error

Global Commodity Cycles

Internal Risk Communication

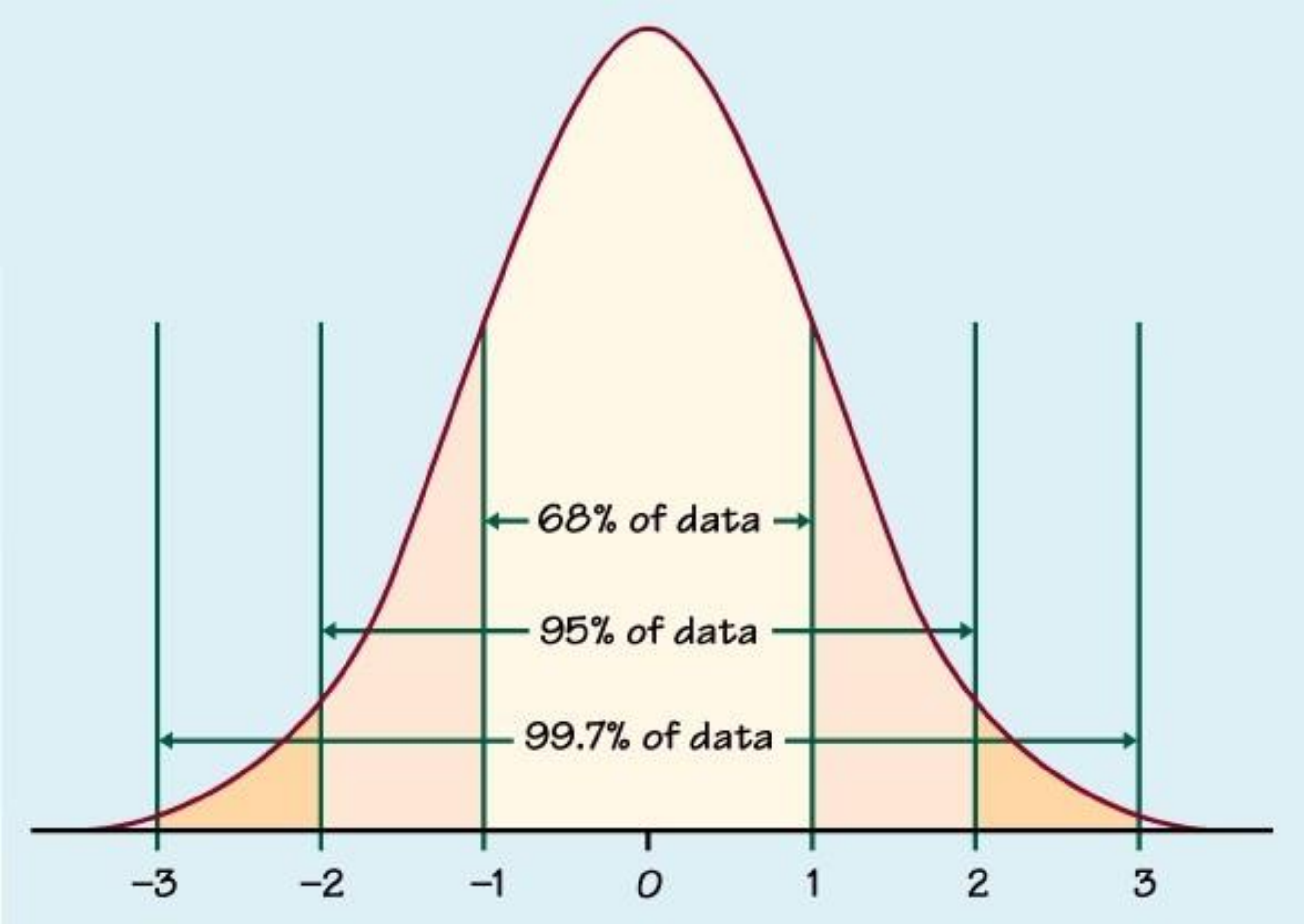
Growing Asian Demand

Bio Fuels

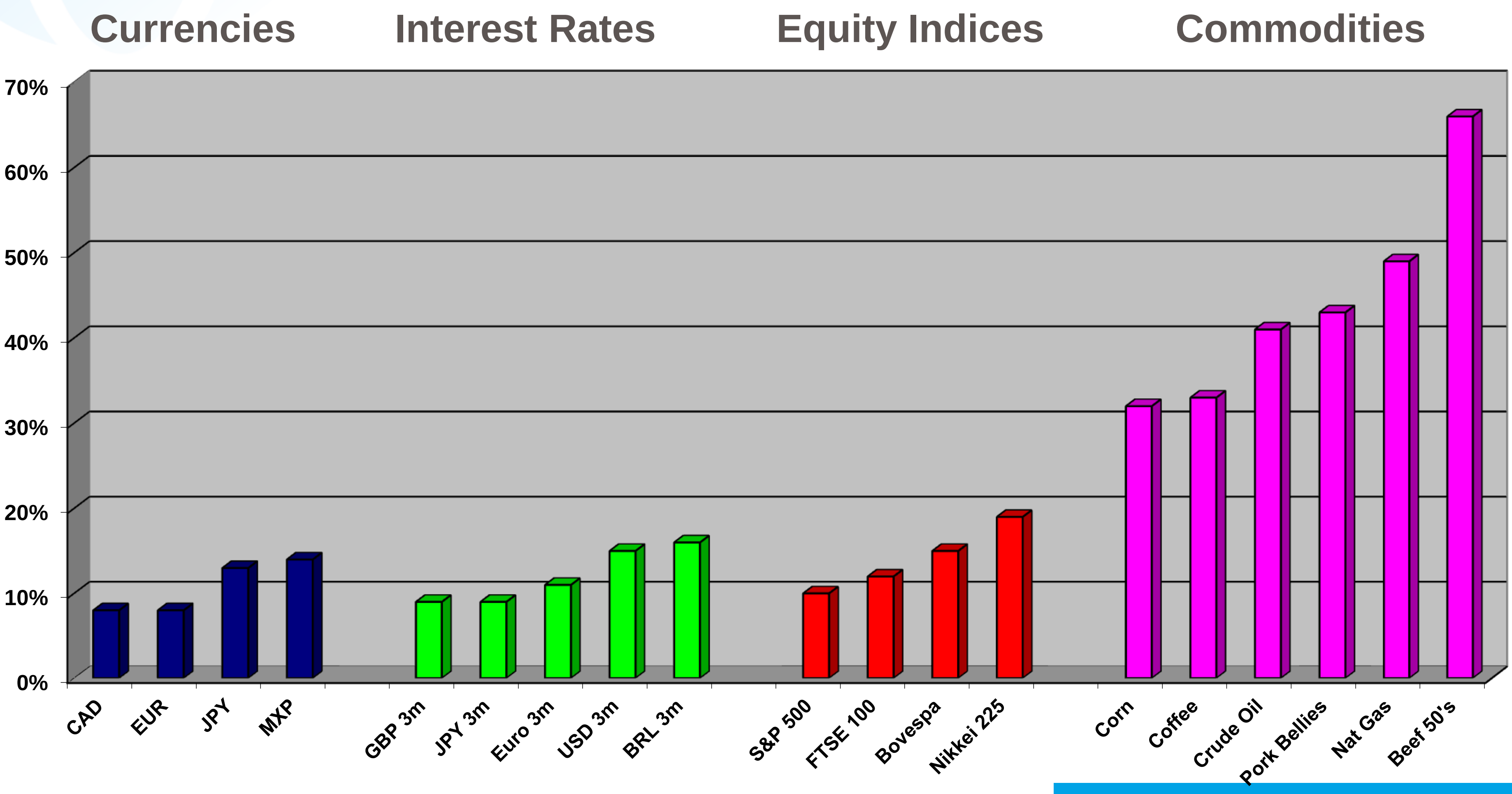
Speculative Fund Money

Government Ag Policy

What is Volatility?



Volatility by Asset Class



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Commodity Market Volatility

Why are commodities more volatile than other asset classes?

- ✓ Mother Nature
- ✓ Institutional and Speculative Investors
- ✓ Government Policy
- ✓ Liquidity
- ✓ Economics 101 as it pertains to inelastic demand

IMPACT OF COMMODITY PRICE VOLATILITY ON OPERATING RESULTS:

KEURIG GREEN MOUNTAIN INC.

Keurig Green Mountain Inc.

Consolidated Statements of Operations (Dollars in '000's)*	September 26th 2015	% of Sales
Net Sales	$4,520,031	100%
Cost of Sales	2,912,507	64%
Gross Profit	1,606,524	36%
Selling & Operating Expenses	539,259	12%
General & Administrative Expenses	287,591	6%
Restructuring Expenses	15,250	1%
Operating Income	$765,424	17%

* **Source**: Kuerig Green Mountain Inc. Form 10-K file 11/19/2015

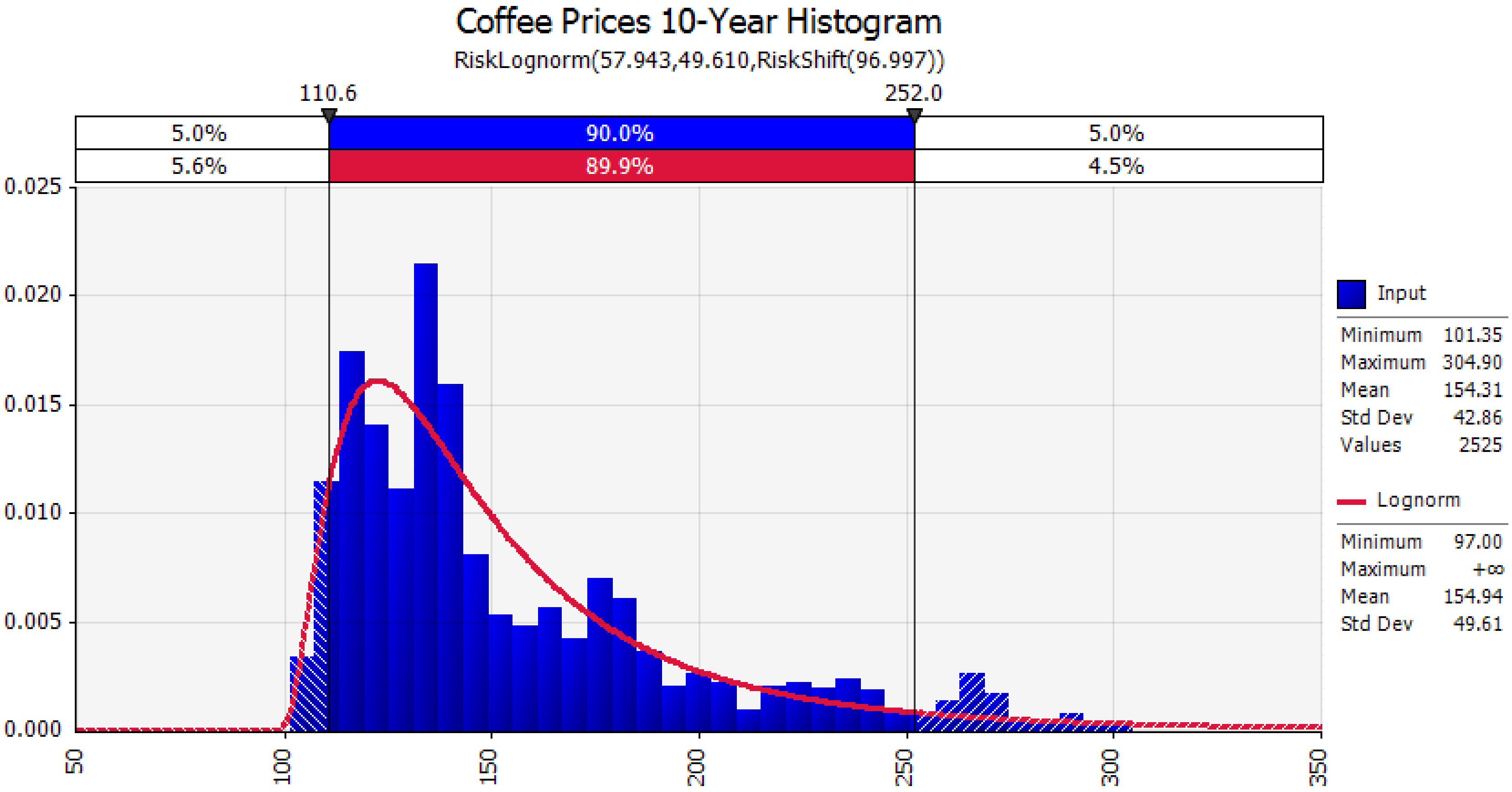
Keurig Green Mountain Inc.

GRM Cost of Sales Assumptions *		
Cost of Sales	$2,912,507	**100%**
Coffee Costs	873,752	**30%**
Non-Coffee Costs	2,038,755	**70%**

* GRM Estimation for Illustration Purposes

Understanding Your Risks

Historical coffee prices best fit to a lognormal distribution



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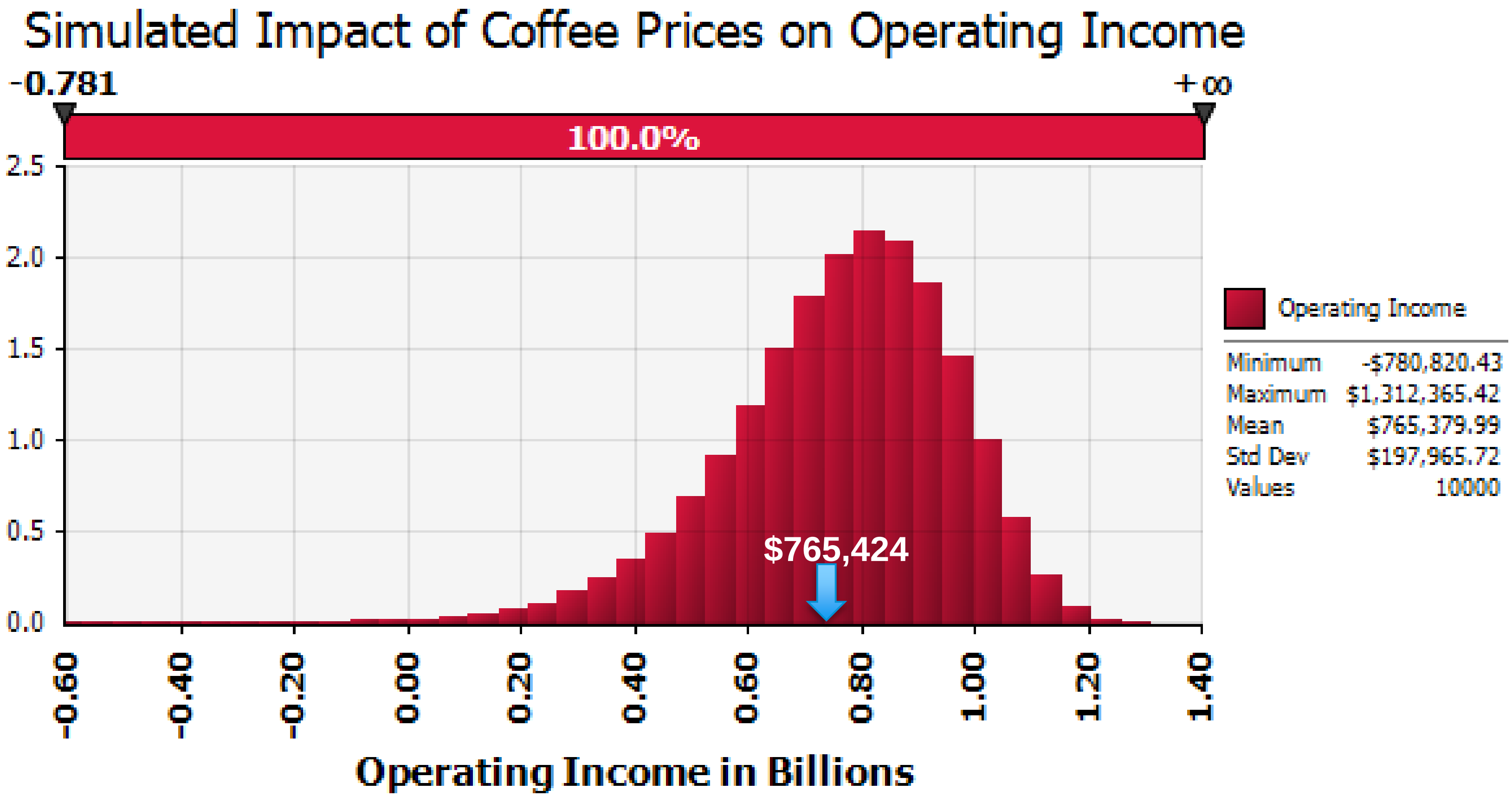
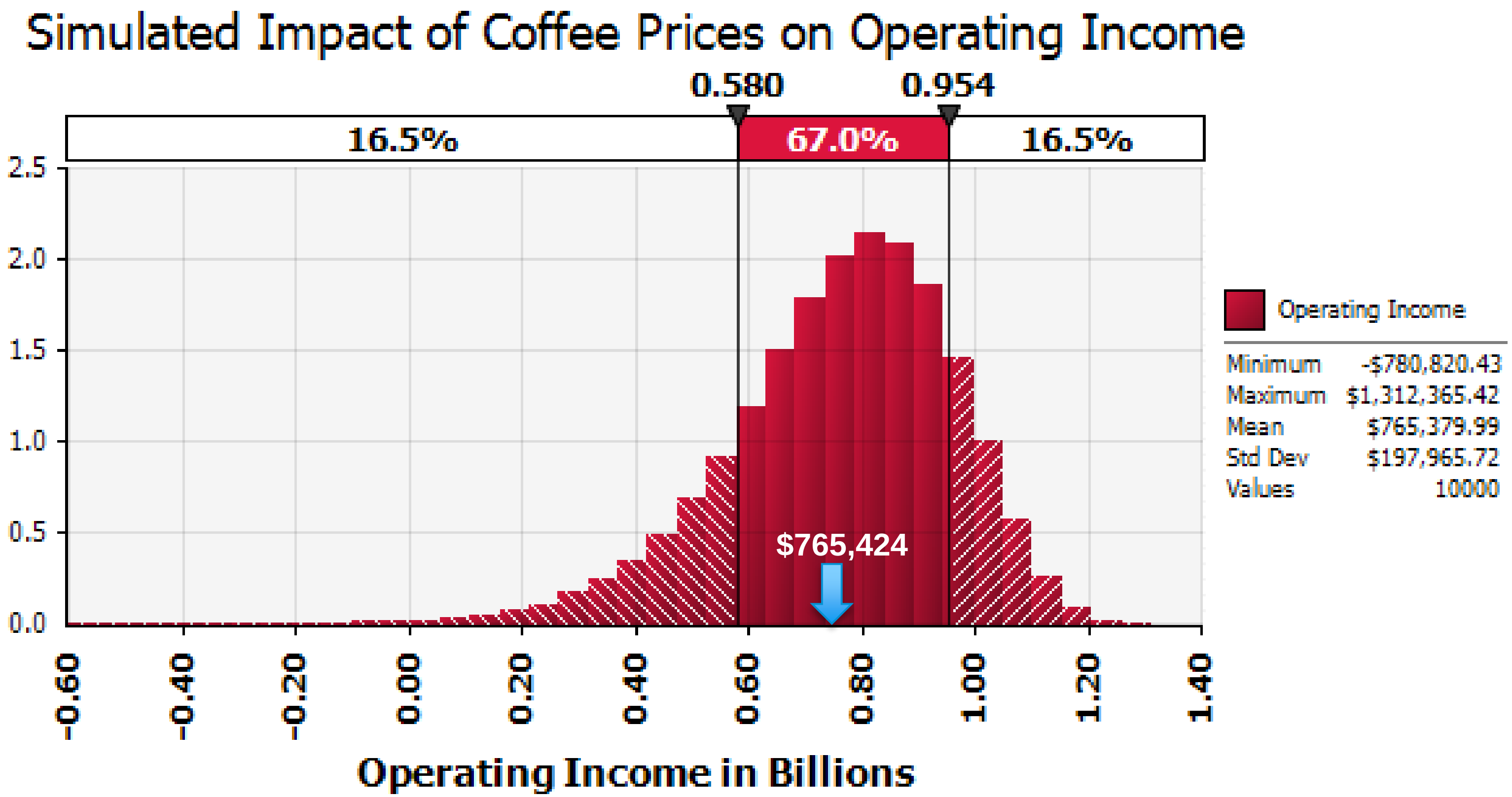
Risk Analytics – Stochastic Modeling



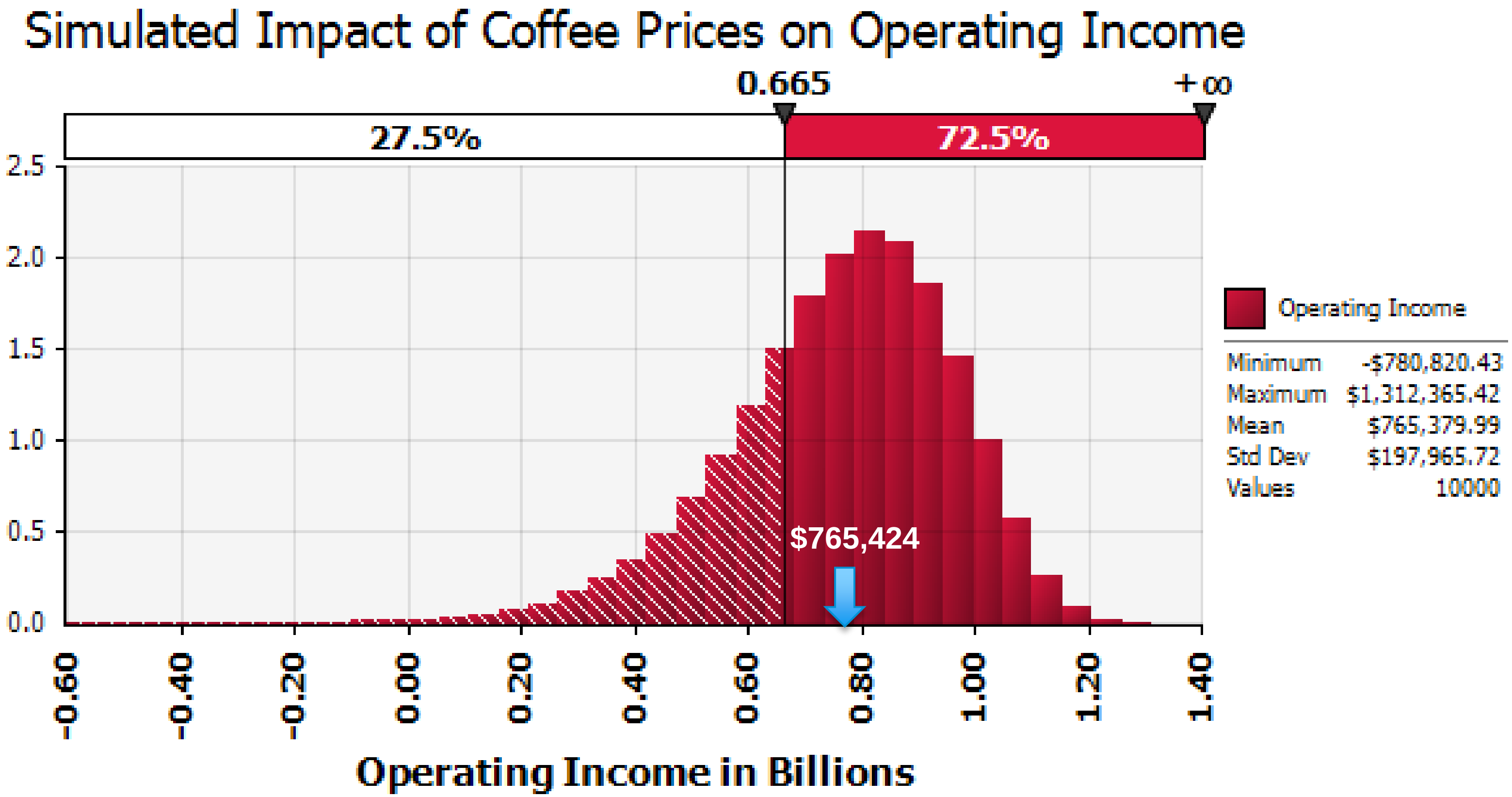
Simulated Results

A one SD increase in coffee prices reduces operating income to $580 Million



Simulated Results

What is the probability unfavorable movements in coffee prices will reduce operating income by $100 Million?



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Commodity Risk Management

Best Practices in Supply Chain Management

Key Concepts and Terms

- **Volatility:** Statistical measure of market variation.
- **Risk:** Volume of commodities x volatility
- **Hedge Coverage:** The use of futures, options or fixed-price agreements to reduce commodity risk.
- **Financial Risk Tolerance:** Amount of money the company can afford to lose without changing the way it does business. Typically a % of the key financial metric.
- **Product Pricing Window:** The amount of time it takes to implement a product price change in response to a competitive action ,significant cost change ,or price leadership role.
- **Even Position:** When sales and commodity coverage are in balance and profit margins are secured. This should match the product pricing window. Positions “long” or “short” of even add risk. Also know as “Neutral Cover.”

Even Position Length is Identified

- If raw material cost is known when prices are set… No risk
- Keep purchases and sales in balance
- When purchases extend to cover sales, the position is “neutral”

- The length of commodity coverage that balances the business’ ability to deliver its financial objectives with its competitive position in the industry
- Incremental coverage long or short of even creates risk

Neutral Cover Length–Key Questions

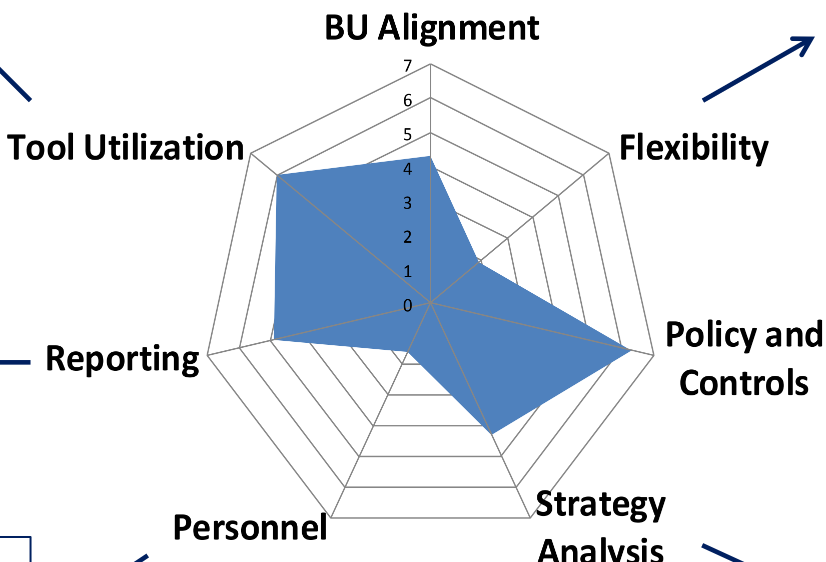
- Time to implement price change?
- Consumer elasticity?
- Who leads?
- Customer willingness?
- Competitive cover?
- Cost savings?
- Cost of holding cover?
- Supply assurance?

7 Best Practices

Creates Internal Synergy
- $ risk tolerance
- product pricing horizons
- purchasing expectations
- communication
- margin centric risk management

Business Adaptation
- flexible strategies
- adjust to business environment
- maintain competitive costs
- match risk profile
- BU alignment

Effective Hedging
- approved strategies
- approved tools
- new tools
- tools match risk profile



Internal Protocol
- written document
- broad adherence
- 8 critical factors
- BU alignment

Decision Making
- accurate positions
- quantified impacts
- quantified risk
- “what –if” scenarios

Process Rigor
- market conditions
- seasonal tendency
- statistical analysis
- market risk/reward
- business risk/reward

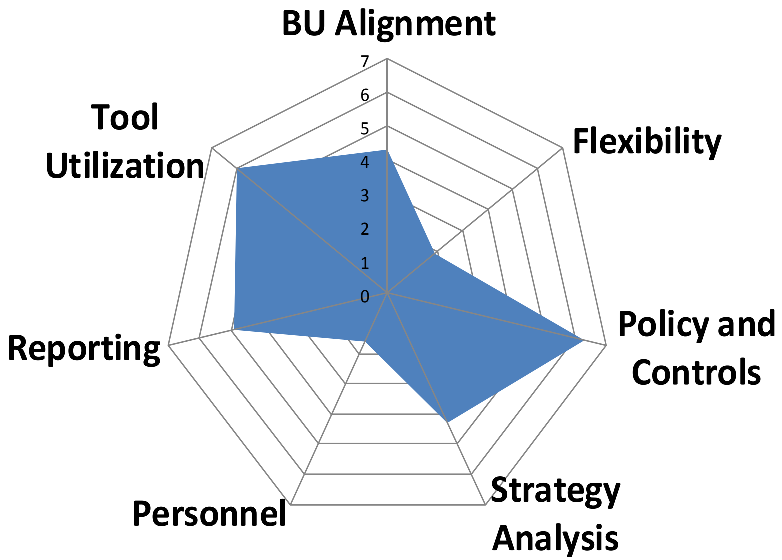
Consistency
- BU alignment
- knowledgeable
- role understood
- well trained

Best Practices: How do you Measure Up?

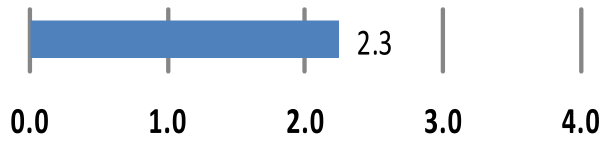
Benchmarking current risk management processes against industry "best practices" highlights area of strengths and concerns

Areas reviewed

Business unit alignment	25%
Policy and controls	20%
Reporting	15%
Personnel	15%
Strategy analysis rigor	10%
Hedge tools and utilization	10%
Strategy flexibility	5%



Risk Management Scorecard - Example



	Score	Weight
I. Business Unit Alignment	2.3	25%
Unified and quantified definition of risk	2.0	40%
Sr. Mgmt involved in extended position decisions	3.0	25%
Formal commodity and business strategy review process	2.0	25%
Mgmt consistently draws on commercial expertise	2.0	10%

Purchasing Role is Not Understood

The Company's most important goal of the Commercial Department and its commodity risk management process should be to:

	Sr Team	Finance	Marketing	Commercial	Sales	Other
Generate significant savings versus the market	1	1	1	3	1	
Protect margins on all forward priced products	1		1			1
Protect costs versus plan	3		2	1	1	1
Capture savings versus year ago if possible						
Buy in the lower percentile of a historical pre-						
Other	1	1				1

Sr. Management Comments:

- Would like to see Purchasing to play around the edges, doesn't believe they can beat the overall market.
- Purchasing needs to be focused to beat the market.
- Purchasing goal should be to provide a level of certainty.
- Primary goal of the Purchasing team is to beat the market by 3% over a period.
- Goal, keep the factory running. Add value wherever they can

Length of Neutral Position - Survey Responses

How long does it take to make a finished product price change in response to changing commodity costs?								
Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	**1 Period or Less**	**2 Periods**	**3 Periods**	**4 Periods**	**5 Periods**	**6 Periods**	**7 Periods**	**More Than 7 Periods**
	0	0	6	4	2	8	0	1
	0%	0%	29%	19%	10%	38%	0%	5%

Follow-up revealed a 4 month window to actually affect a change

Acceptable Risk Tolerance - Survey Responses

How large of a commodity cost surprise can be absorbed by the business within a fiscal year without major earnings impact?	Number of Response(s)	Response Ratio
Less than 200,000 AUD	2	8.3%
>200,000 AUD to 500,000 AUD	0	0.0%
>500,000 AUD to 1,000,000 AUD	7	29.1%
>1,000,000 AUD to 1,600,000 AUD	4	16.6%
>1,600,000 AUD to 3,600,000 AUD	5	20.8%
>3,600,000 AUD	3	12.5%
No Responses	3	12.5%
Total	24	100%

Initial responses indicated wide divergence

Follow-up identified a unified definition of risk at $3 million

Case Study – Quantifying risk across a diverse portfolio of businesses

- Businesses stated they could absorb $80 million commodity risk
- Sr. Management was shocked by the magnitude
- Analysis reduced acceptable portfolio risk to $55 million
- New policies were implemented to reduce that potential impact

Business	**Risk Tolerance** $MM	**Pricing Window**
A	5.0	6 months
B	1.0	1 year
C	0.0	1 month
D	5.0	Weekly
E	4.0	Monthly
Total (not all divisions shown)	$80.0	

Process Discovers Hidden Risk

Internal Risk

- Poor sales, demand, and position reporting systems
- Nonexistent or inconsistent understanding of financial risk
- Risk not quantified
- Product pricing strategies not understood throughout
- Disconnect between margin/ product pricing and commodity strategies
- Heavy commodity price forecasting and personal bias focus
- Lack of experience / trained personnel
- Lack of ongoing disciplined RM process

External Risk

- Expanded market volatility
- Outside market influences leading to unpredictable market behavior
- Economy leading to poor financial performance
- Uncompetitive cost structures

Presentation Highlights

- Commodity markets are increasingly volatile and can significantly impact raw material costs & profit margins

- Stochastic modeling is a valuable tool to quantify, simulate, and communicate risk

- Integrating the 7 best practices of a commodity risk management program will lead to an enduring competitive advantage for your organization

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Chris Morley
Ph: 651-209-9502
cmorley@grmcorp.com

Michael Irgang
Ph: 651-209-9507
mirgang@grmcorp.com

Brian Harris
Ph:636-485-6697
bharris@grmcorp.com

Global Risk Management, Inc.
3433 Broadway St. NE, Suite 110
Minneapolis, MN 55413

www.grmcorp.com

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