Inflation Impacts for Industrial Capital Projects

Aug 15, 2022

Shane Calder

Draft 15 August 2022

Contents

Abstract 3
Commodities Market Pricing 3
Commodities Pricing Copper HG=F 4
Commodities US Midwest Domestic Hot-Rolle HRC=F 5
Commodities Aluminum ALI=F 5
Currency Pairs 6
CAD/CHF 6
CAD/USD 7
Consumer Price Index (CPI) 7
Canada CPI 7
United States of America CPI 8
Switzerland CPI 8
United Kingdom CPI 8
Germany CPI 8
South Korea CPI 9
How to use the CPI information: 10
Example: 10
Threat Example 10
Opportunity Example 10
Conclusion 11

Abstract

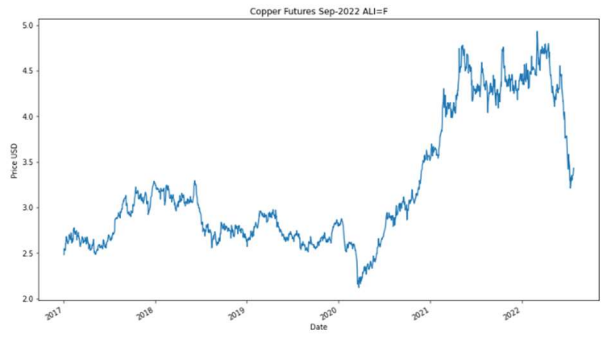
Due to the global supply chain disruption, demand for industrial materials and inflationary impacts to markets. This abstract will provide background information and provide some steps to plan contingency amounts for industrial projects. This abstract will contain current commodity pricing, consumer price indexes for a select number of countries, common currency pairs and projections for the next 120 days. This abstract will provide examples as to how to capture contingency risks cost impacts after class estimates of uncommitted materials and labour. Information is presented in a format from a Canadian perspective, but information can be applied to other international projects by using the GitHub repository.

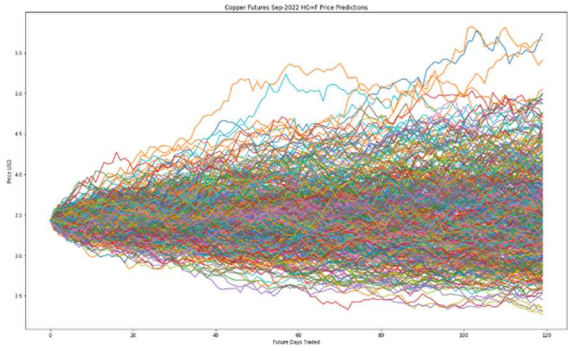
Commodities Market Pricing

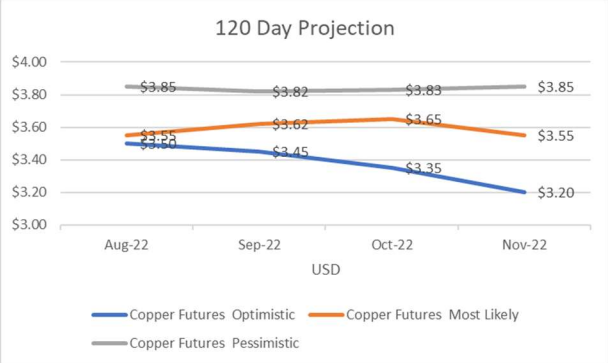
This abstract will breakout commodities into three outcomes optimistic, most likely, and pessimistic. The goal is not to predict the market price but generate a range of outcome to manage threats and opportunities. This range is to assist in the preparation of calculations for contingency and management reserve amounts. These ranges can also assist in the breakout of risks and potential impacts before additional investigation is conducted to verify impacts as either negative or positive.

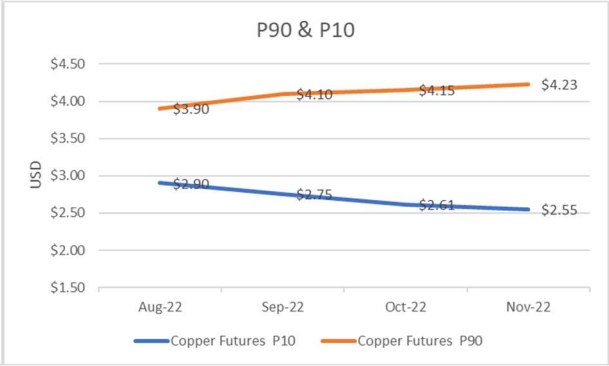
The commodity of copper is commonly known as a good reliable indicator to economic health due to its widespread application in most sectors of the economy. Using copper as the only indicator of economic health should not be relied upon as other impacts or events can cause disruptions of supply or price. In this abstract copper prices will be used for a direction of prices for industrial materials over the next 120 days.

Commodities Pricing Copper HG=F





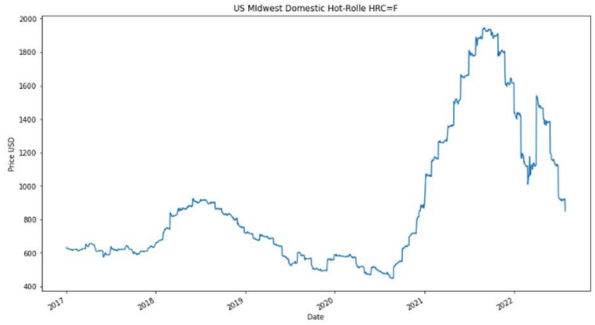


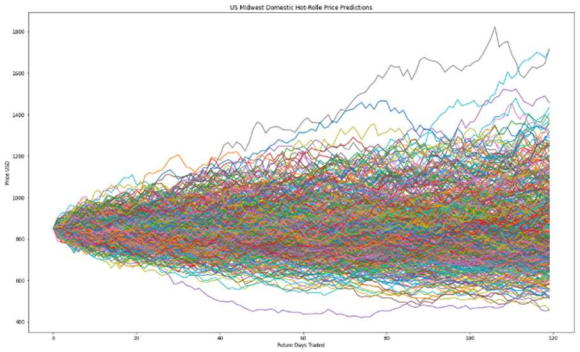


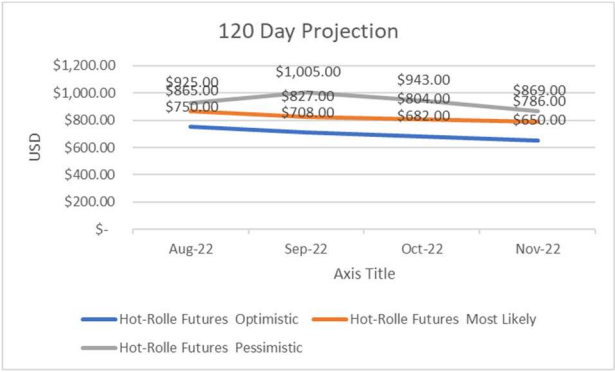
Copper has seen an approximate decrease in price of 15% within the last 12 calendar months. This decrease in price may not impact manufacturing product price until stockpiled supplies or market pressure results in a decrease of cost. This may take upwards of 6 -9 months to bee seen on manufacturers pricing sheets.

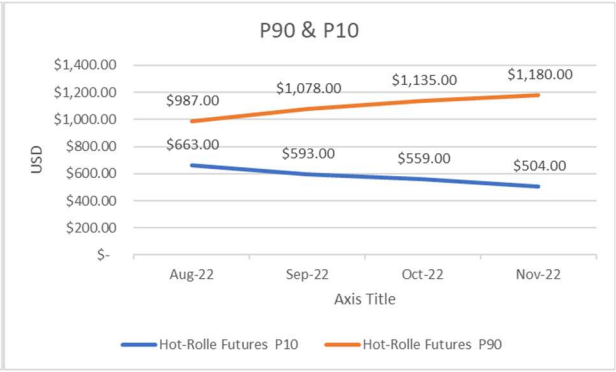
How this can be applied is if the copper price is 10% of the overall product costs, then you can project a range of impact from 0.5% to 1.5% in manufactured cost savings. 15% translates to 1.5% if the raw material makes up 10% of the overall cost. This does not consider the price of inflation, other materials costs, or energy cost impacts.

Commodities US Midwest Domestic Hot-Rolle HRC=F

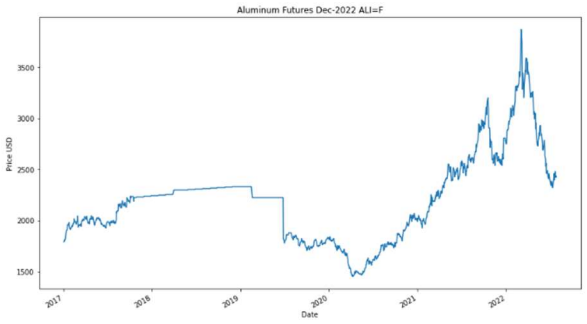


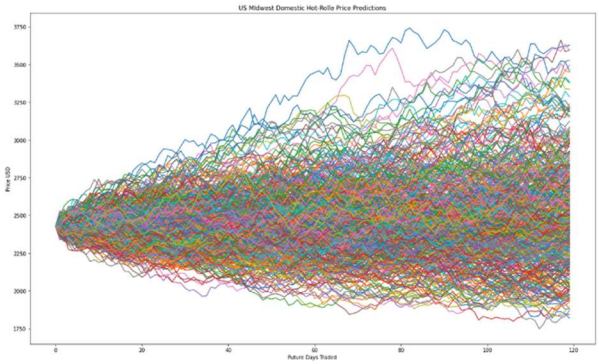


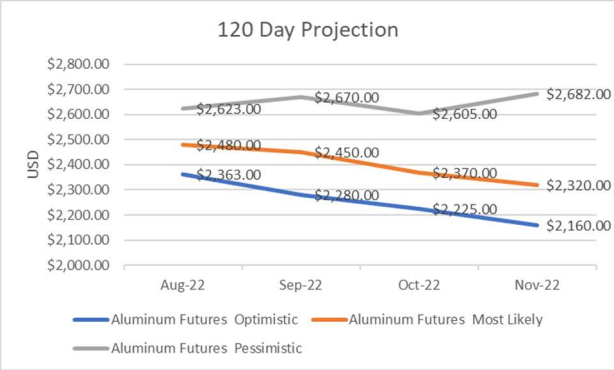


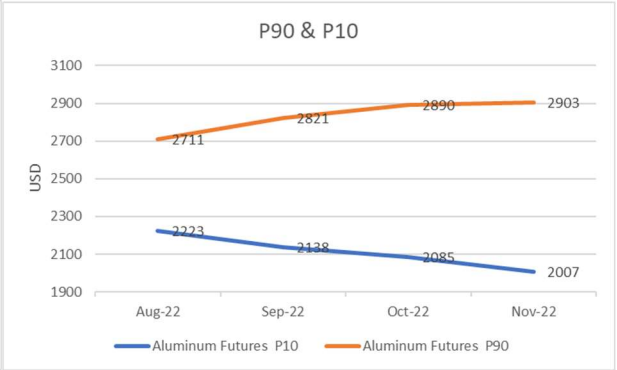


Commodities Aluminum ALI=F





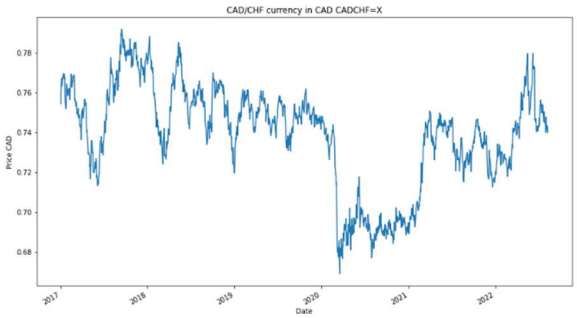


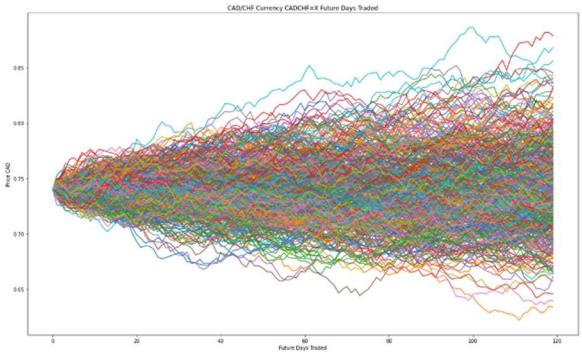


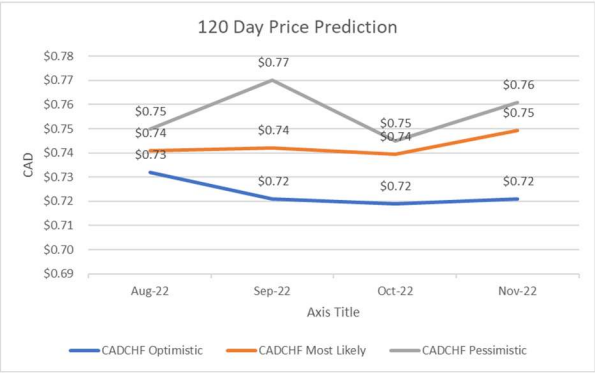
Currency Pairs

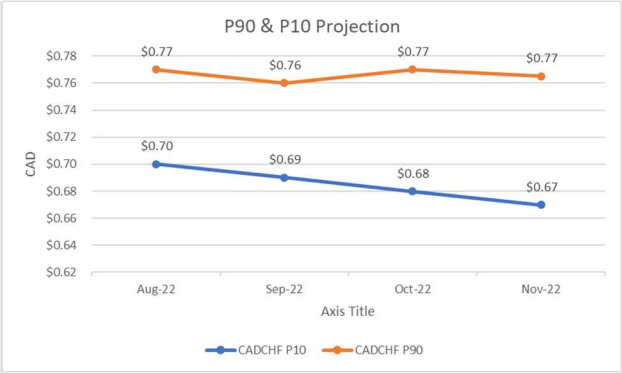
Due to inflation most countries will be trying to adjust interest rate to combat inflation. If undesired effects are reached rates will decrease to achieve those individual countries intent.

CAD/CHF

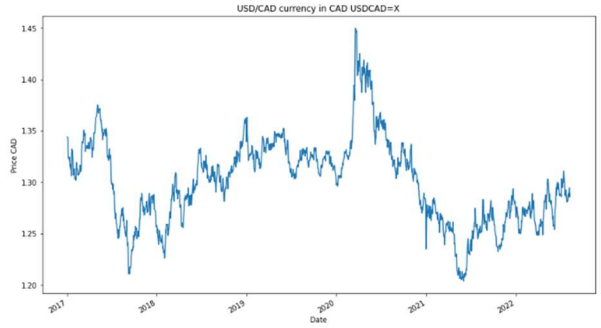


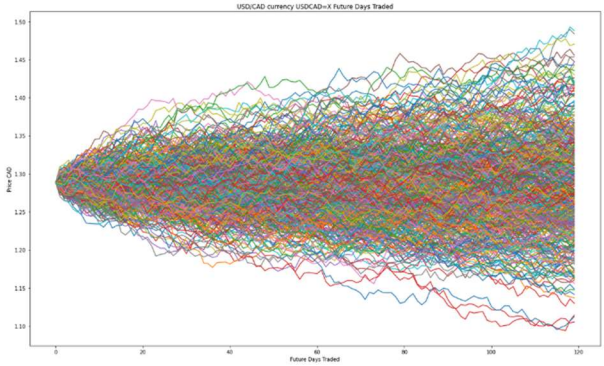


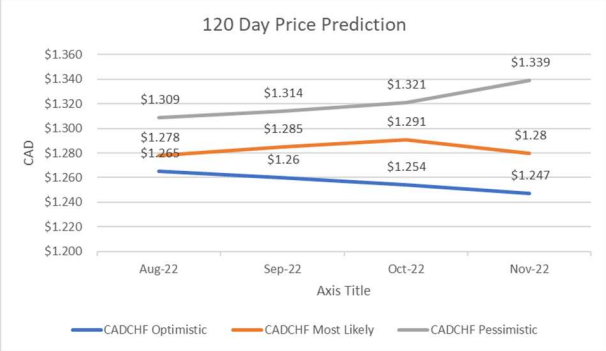


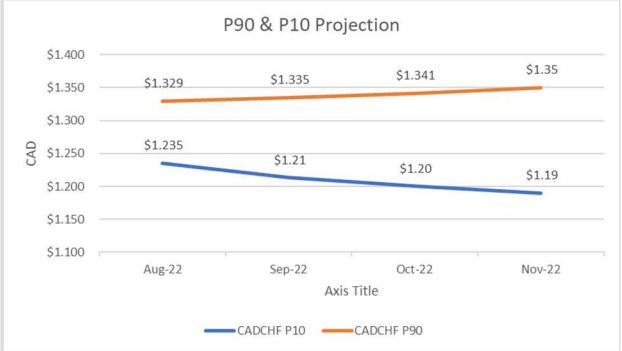


CAD/USD





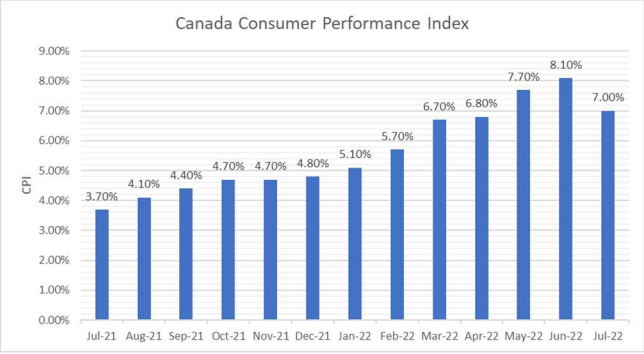


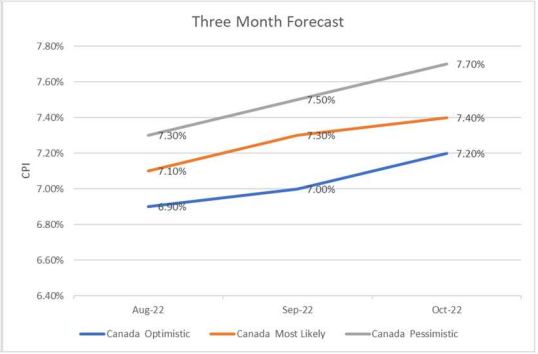


Consumer Price Index (CPI)

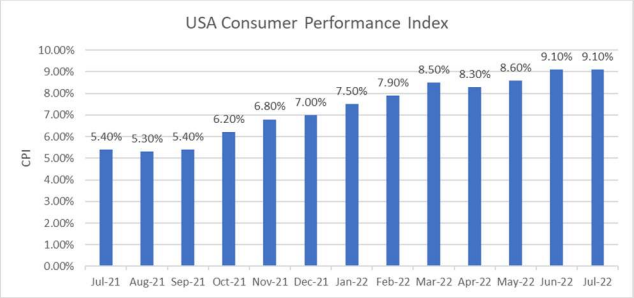
This abstract will show potential outcomes or uses for CPI in risk preparation for industrial projects. Not all countries are considered in this abstract and the same principles can be applied to other countries CPI. Due to the inflationary impacts of the last 18 months shorter review timeframes are suggested to evaluate escalation amounts for estimates if escalation is included in contingency planning and management reserves.

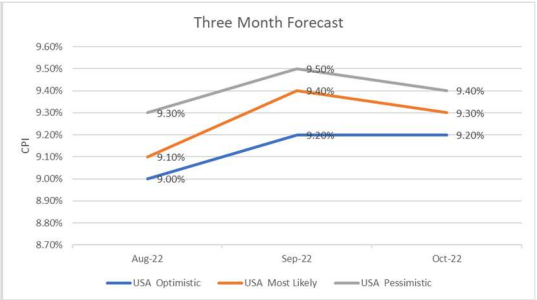
Canada CPI



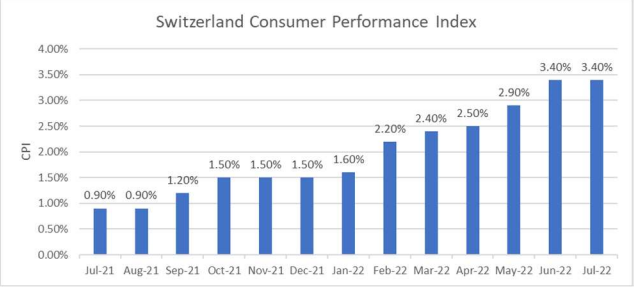


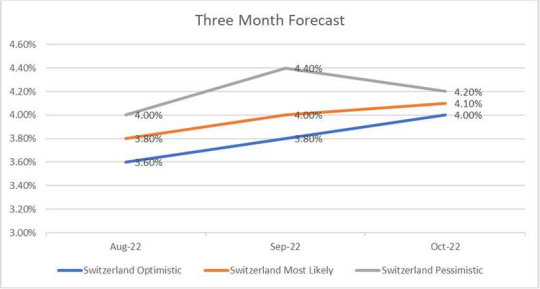
United States of America CPI



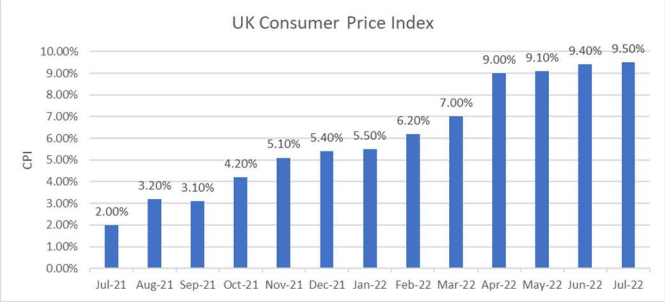


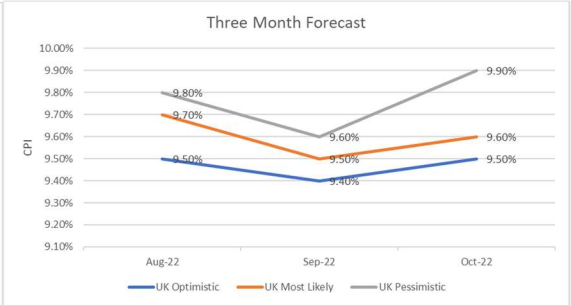
Switzerland CPI



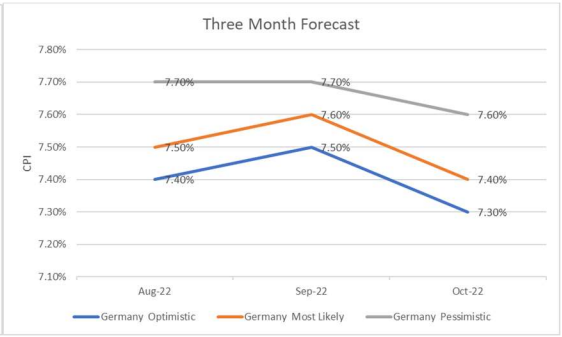


United Kingdom CPI

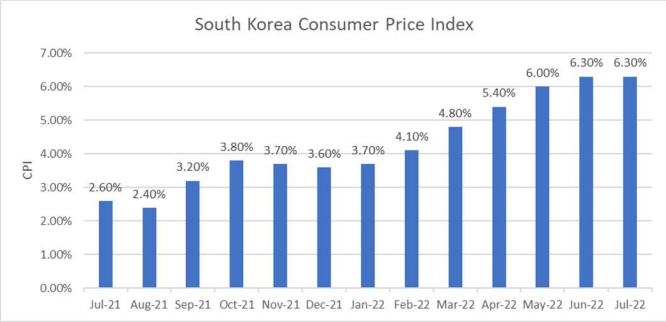


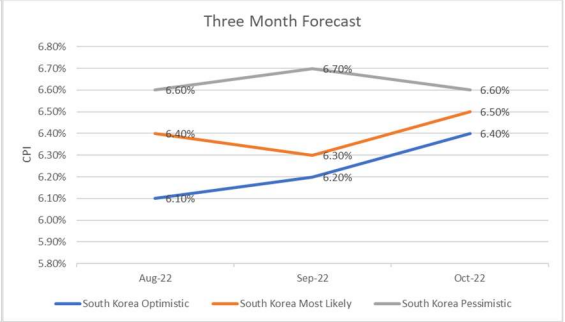


Germany CPI



South Korea CPI





How to use the CPI information:

Example:

Background information for the example:

Project must order materials from a vendor from Switzerland by the end of September 2022 and total cost for the material was estimated at $1,000,000.00 in September 2021. The escalation amount added to the contingency was 2%.

Date of Estimate	Escalation % used	Material Costs	Procurement Completed	Country of Origin	CPI	Commodity Material Price Change
Sep-21	2%	$ 1,000,000.00	NO	Switzerland	4%	15%

Threat Example

Risk	Threat	Optimistic	Most Likely	Pessimistic
	CPI	1.8%	2.0%	2.4%
	Cost Impact	$ 18,000.00	$ 20,000.00	$ 24,000.00

Used Switzerland projected CPI for September 2022. 4% CPI – 2% escalation.

Opportunity Example

Risk	Opportunity	Pessimistic	Most Likely	Optimistic
	Material Cost	0.5%	1.0%	1.5%
	Cost Impact	$ 5,000.00	$ 10,000.00	$ 15,000.00

Impact for copper was applied at a 10% impact and a 15% reduction in commodity price.

Other additional risk impacts: currency, energy, transportation, or other common risks were not included. Currency can be used in the same way and adjusted to be adapted for additional inputs.

Draft 15 August 2022

Conclusion

The information that is provided in this abstract is not provided to make financial decisions or trading decisions but to help organize how to break out potential impacts into threats and opportunities to help break down the known unknown risks. The information provided will help to understand a range of impacts to a risk and can then be calculated using triangular distribution or beta pert within a risk matrix to finalize what potential contingency amounts that would be appropriate for the risks.

The predictions provided within the Monte Carlo simulations of commodities or currency pairs demonstrate that the more time that is attempted to be predicted that the P values tend to move further apart, and the model creates more outlier data. Reenforcing the need to verify predictions and evaluate data used for these predictions. From the data evaluation a recommendation of quarterly if larger ranges are to be used and if more finite information is required weekly or monthly updates would suffice. The predictions do not include other correlated data and more accurate predictions could be achieved with additional data, but this is still a prediction and is not guaranteed to be accurate. This is a result of the core data being used is market data and market data is not guaranteed to repeat itself.

A tool could be created and used with inputs as outlined in the section how to use the CPI information and then the tool could be used to complete risks. It is recommended if there is an equal chance for a threat then a similar opportunity should be created. For contingency calculation purposes these opposing risk should negate each other in any calculations but additional funding outlined in the threat should be considered for management reserve. These actions are not to replace estimating or supply chain functions but to help identify gaps where industry best practices will have gaps due to the global supply chain issues and black swan risks that have been realized over the past two calendar years.

References:

All data and programing can be found at https://github.com/ShaneSCalder/Project_Inflation_Risk_Impacts and can be updated to current market conditions by updating programs and running with python.