

# MONETIZATION OF ATTRIBUTION

## **Dollar Earned Attribution**

Claude Giguère

*President & Co-Founder*



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# Money Talks

Portfolio vs FTSE Universe  
 2023-01-01 to 2023-12-31  
 Fixed Income Attribution  
 Exposure Decomposition Approach

Portf	Bench	Excess	Duration		Curve		Sector Allocation		Selection		Total	
Return	Return	Return	Arith.	Geo.	Arith.	Geo.	Arith.	Geo.	Arith.	Geo.	Arith.	Geo.
7.27%	6.69%	0.58%	0.35%	0.33%	-0.11%	-0.10%	0.41%	0.39%	-0.07%	-0.07%	0.58%	0.54%

Portfolio value from \$0.8B to \$1.2B

Portf		Bench		Excess		Duration		Curve		Sector Allocation		Selection		Total	
Return	\$ Earned	Return	\$ Earned	Return	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
7.27%	79,642,907	6.69%	74,025,527	0.58%	5,617,380	0.35%	3,269,227	-0.11%	-395,518	0.41%	2,508,857	-0.07%	234,814	0.58%	5,617,380

# Benchmark Dollar Earned

Let's describe the approach using a simple Brinson-Fachler Equity

Powered by Robust Technologies -			Bench TotalReturn 01-Jan-24 to 31-Jan-24 Base (USD)		Jim-Allin - Jim Allin TotalReturn 01-Jan-24 to 31-Jan-24 Base (USD)			
Issuer	Invested First	Invested Last	Weight	Time Weighted Return	Weight	Time Weighted Return		
<b>Total Sector</b>	<b>1-Jan-24</b>	<b>31-Jan-24</b>	<b>100.00%</b>	<b>6.50%</b>	<b>100.00%</b>	<b>7.60%</b>	<b>1.10%</b>	<b>49,500</b>
<b>Financial</b>	<b>1-Jan-24</b>	<b>31-Jan-24</b>	<b>50.00%</b>	<b>7.00%</b>	<b>70.00%</b>	<b>7.71%</b>		
BMO	1-Jan-24	31-Jan-24	25.00%	8.00%	60.00%	8.00%		
RBC	1-Jan-24	31-Jan-24	25.00%	6.00%	10.00%	6.00%		
<b>Technology</b>	<b>1-Jan-24</b>	<b>31-Jan-24</b>	<b>50.00%</b>	<b>6.00%</b>	<b>30.00%</b>	<b>7.33%</b>		
APPL	1-Jan-24	31-Jan-24	25.00%	2.00%	10.00%	2.00%		
IBM	1-Jan-24	31-Jan-24	25.00%	10.00%	20.00%	10.00%		

Jim Allin vs Bench  
2024-01-01 to 2024-01-31  
Sector Allocation

Powered by Robust Tech	Portfolio		Benchmark		Excess		Allocation		Selection		Total
Issuer	Return	Weight	Return	Weight	Return	Weight	Arith.	Arith.	Arith.	Arith.	
<b>Total Sector</b>	<b>7.60%</b>	<b>100.00%</b>	<b>6.50%</b>	<b>100.00%</b>	<b>1.10%</b>	<b>-</b>	<b>0.20%</b>	<b>0.90%</b>	<b>1.10%</b>		
Financial	7.71%	70.00%	7.00%	50.00%	0.71%	20.00%	0.10%	0.50%	0.60%		
Technology	7.33%	30.00%	6.00%	50.00%	1.33%	-20.00%	0.10%	0.40%	0.50%		

Portfolio value \$4.5M

Jim Allin vs Bench  
2024-01-01 to 2024-01-31  
Sector Allocation

Powered by Robust Tech	Portfolio			Benchmark			Excess			Allocation			Selection			Total		
Issuer	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	Geo.	\$ Earned	Arith.	Geo.	\$ Earned	Arith.	Geo.	\$ Earned
<b>Total Sector</b>	<b>7.60%</b>	<b>100.00%</b>	<b>342,000</b>	<b>6.50%</b>	<b>100.00%</b>	<b>292,500</b>	<b>1.10%</b>	<b>-</b>	<b>49,500</b>	<b>0.20%</b>	<b>0.19%</b>	<b>9,000</b>	<b>0.90%</b>	<b>0.84%</b>	<b>40,500</b>	<b>1.10%</b>	<b>1.03%</b>	<b>49,500</b>
Financial	7.71%	70.00%	243,000	7.00%	50.00%	157,500	0.71%	20.00%	85,500	0.10%	0.09%	4,500	0.50%	0.47%	22,500	0.60%	0.56%	27,000
Technology	7.33%	30.00%	99,000	6.00%	50.00%	135,000	1.33%	-20.00%	-36,000	0.10%	0.09%	4,500	0.40%	0.37%	18,000	0.50%	0.47%	22,500

**Added Value in % and \$**

**Benchmark \$ Earned**  
P&L of the portfolio if it was invested exactly as the Benchmark

## Let's rework the basics

Return

$$R^T = \frac{MV_1^T - MV_0^T - CF_{0..1}^T}{MV_0^T + DWCF_{0..1}^T} = \frac{\$E^T}{ACE^T}$$

$$\$E^T = R^T \times ACE^T$$

$$\$E^k = R^k \times ACE^k$$

# Benchmark Dollar Earned

Powered by Robust Tec	Portfolio			Benchmark			Excess		
Issuer	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned
<b>Total Sector</b>	<b>7.60%</b>	<b>100.00%</b>	<b>342,000</b>	<b>6.50%</b>	<b>100.00%</b>	<b>292,500</b>	<b>1.10%</b>	<b>-</b>	<b>49,500</b>
Financial	7.71%	70.00%	243,000	7.00%	50.00%	157,500	0.71%	20.00%	85,500
Technology	7.33%	30.00%	99,000	6.00%	50.00%	135,000	1.33%	-20.00%	-36,000

## Total

$$\$E_B^{Tot} = R_B^{Tot} \times ACE_P^{Tot} \times W_B^{Tot} = 6.5\% \times 4,500,000 \times 100\% = 292,500$$

## Finance

$$\$E_B^{Fin} = R_B^{Fin} \times ACE_P^{Tot} \times W_B^{Fin} = 7.0\% \times 4,500,000 \times 50\% = 157,500$$

## Technology

$$\$E_B^{Tech} = R_B^{Tech} \times ACE_P^{Tot} \times W_B^{Tec} = 6.0\% \times 4,500,000 \times 50\% = 135,000$$

## Brinson-Fachler

### Allocation

$$(W_P^k - W_B^k) \times (R_B^k - R_B^T)$$

### Selection

$$W_P^k \times (R_P^k - R_B^k)$$

Attribution calculation is multiplying a bunch of **weights** and **returns**  
i.e. calculating a bunch of **contributions**

$$W^k \times R^k = C^k \quad \text{Contribution}$$

# Let's rework more basics

## Contribution

$$W^k \times R^k = C^k$$

$$W^k = \frac{MV_0^k + DWCF_{0..1}^k}{MV_0^T + DWCF_{0..1}^T} = \frac{ACE^k}{ACE^T} \quad \text{Weight} \quad \times \quad \text{Return} \quad R^k = \frac{MV_1^k - MV_0^k - CF_{0..1}^k}{MV_0^k + DWCF_{0..1}^k} = \frac{\$E^k}{ACE^k}$$

$$\frac{\cancel{MV_0^k + DWCF_{0..1}^k}}{MV_0^T + DWCF_{0..1}^T} \times \frac{MV_1^k - MV_0^k - CF_{0..1}^k}{\cancel{MV_0^k + DWCF_{0..1}^k}}$$

$$\frac{MV_1^k - MV_0^k - CF_{0..1}^k}{MV_0^T + DWCF_{0..1}^T} = \frac{\$E^k}{ACE^T} = C^k$$



# Calculating Dollar-Earned Attribution

**Allocation**

$$(W_P^k - W_B^k) \times (R_B^k - R_B^T)$$

**Brinson-Fachler**

**Selection**

$$W_P^k \times (R_P^k - R_B^k)$$

**Financial Sector**

$$(ACE_P^{Fin} - ACE_{B^*}^{Fin}) \times (R_B^{Fin} - R_B^{Tot})$$


$$ACE_P^{Fin} \times (R_P^{Fin} - R_B^{Fin})$$

$$(ACE_P^{Fin} - ACE_P^{Tot} \times W_B^{Fin}) \times (R_B^{Fin} - R_B^{Tot})$$

$$3,150,000 \times (7.71\% - 7.00\%) = 22,500$$

$$(3,150,000 - 4,500,000 \times 50\%) \times (7.0\% - 6.5\%) = 4,5000$$

# Cascading Security Level Dollar-Earned Attribution

 <span style="float: right;">Jim Allin vs Bench 2024-01-01 to 2024-01-31 Sector Allocation</span>															
Portfolio				Benchmark			Excess			Allocation		Selection		Total	
Issuer	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
<b>Total Sector</b>	<b>7.60%</b>	<b>100.00%</b>	<b>342,000</b>	<b>6.50%</b>	<b>100.00%</b>	<b>292,500</b>	<b>1.10%</b>	<b>-</b>	<b>49,500</b>	<b>0.20%</b>	<b>9,000</b>	<b>0.90%</b>	<b>40,500</b>	<b>1.10%</b>	<b>49,500</b>
<b>Financial</b>	<b>7.71%</b>	<b>70.00%</b>	<b>243,000</b>	<b>7.00%</b>	<b>50.00%</b>	<b>157,500</b>	<b>0.71%</b>	<b>20.00%</b>	<b>85,500</b>	<b>0.10%</b>	<b>4,500</b>	<b>0.50%</b>	<b>22,500</b>	<b>0.60%</b>	<b>27,000</b>
<b>Technology</b>	<b>7.33%</b>	<b>30.00%</b>	<b>99,000</b>	<b>6.00%</b>	<b>50.00%</b>	<b>135,000</b>	<b>1.33%</b>	<b>-20.00%</b>	<b>-36,000</b>	<b>0.10%</b>	<b>4,500</b>	<b>0.40%</b>	<b>18,000</b>	<b>0.50%</b>	<b>22,500</b>

# Cascading Security Level Dollar-Earned Attribution

robust TECHNOLOGIES		Jim Allin vs Bench 2024-01-01 to 2024-01-31														
Powered by Robust Tech		Portfolio			Benchmark			Sector Allocation Excess			Allocation		Selection		Total	
Issuer	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	
<b>Total Sector</b>	<b>7.60%</b>	<b>100.00%</b>	<b>342,000</b>	<b>6.50%</b>	<b>100.00%</b>	<b>292,500</b>	<b>1.10%</b>	<b>-</b>	<b>49,500</b>	<b>0.20%</b>	<b>9,000</b>	<b>0.90%</b>	<b>40,500</b>	<b>1.10%</b>	<b>49,500</b>	
<b>Financial</b>	<b>7.71%</b>	<b>70.00%</b>	<b>243,000</b>	<b>7.00%</b>	<b>50.00%</b>	<b>157,500</b>	<b>0.71%</b>	<b>20.00%</b>	<b>85,500</b>	<b>0.10%</b>	<b>4,500</b>	<b>0.50%</b>	<b>22,500</b>	<b>0.60%</b>	<b>27,000</b>	
<b>Financial</b>	<b>7.71%</b>	<b>100.00%</b>	<b>243,000</b>	<b>7.00%</b>	<b>100.00%</b>	<b>220,500</b>	<b>0.71%</b>	<b>-</b>	<b>22,500</b>	<b>0.50%</b>	<b>22,500</b>	<b>-</b>	<b>-</b>	<b>0.50%</b>	<b>22,500</b>	
BMO	8.00%	85.71%	216,000	8.00%	50.00%	126,000	-	35.71%	90,000	0.25%	11,250	-	-	0.25%	11,250	
RBC	6.00%	14.29%	27,000	6.00%	50.00%	94,500	-	-35.71%	-67,500	0.25%	11,250	-	-	0.25%	11,250	
<b>Technology</b>	<b>7.33%</b>	<b>30.00%</b>	<b>99,000</b>	<b>6.00%</b>	<b>50.00%</b>	<b>135,000</b>	<b>1.33%</b>	<b>-20.00%</b>	<b>-36,000</b>	<b>0.10%</b>	<b>4,500</b>	<b>0.40%</b>	<b>18,000</b>	<b>0.50%</b>	<b>22,500</b>	
<b>Technology</b>	<b>7.33%</b>	<b>100.00%</b>	<b>99,000</b>	<b>6.00%</b>	<b>100.00%</b>	<b>81,000</b>	<b>1.33%</b>	<b>-</b>	<b>18,000</b>	<b>0.40%</b>	<b>18,000</b>	<b>-</b>	<b>-</b>	<b>0.40%</b>	<b>18,000</b>	
APPL	2.00%	33.33%	9,000	2.00%	50.00%	13,500	-	-16.67%	-4,500	0.20%	9,000	-	-	0.20%	9,000	
IBM	10.00%	66.67%	90,000	10.00%	50.00%	67,500	-	16.67%	22,500	0.20%	9,000	-	-	0.20%	9,000	

# Multi Periods and Effect of Cash Flows

Powered by Robust Technologies -

Base (USD)

**Jim Allin**  
Invest all money  
on first day

Issuer	Invested First	Invested Last	Begin Market Value	End Market Value	Cash Flows	\$ Earned	Time Weighted Return	Money Weighted Return
Jim Allin	1-Jan-24	31-Jan-24	4,500,000	4,842,000	-	342,000	7.60%	7.60%
Jim Allin	1-Feb-24	29-Feb-24	4,842,000	4,656,960	-	-185,040	-3.82%	-3.82%
<b>Jim Allin</b>	<b>1-Jan-24</b>	<b>29-Feb-24</b>	<b>4,500,000</b>	<b>4,656,960</b>	<b>-</b>	<b>156,960</b>	<b>3.49%</b>	<b>3.49%</b>

**Joe Safe**

Invest half the money  
and the other half the  
following month

Issuer	Invested First	Invested Last	Begin Market Value	End Market Value	Cash Flows	\$ Earned	Time Weighted Return	Money Weighted Return
Joe Safe	1-Jan-24	31-Jan-24	2,250,000	2,421,000	-	171,000	7.60%	7.60%
Joe Safe	1-Feb-24	29-Feb-24	2,421,000	4,656,960	2,421,000	-185,040	-3.82%	-3.82%
<b>Joe Safe</b>	<b>1-Jan-24</b>	<b>29-Feb-24</b>	<b>2,250,000</b>	<b>4,656,960</b>	<b>2,421,000</b>	<b>-14,040</b>	<b>3.49%</b>	<b>-0.60%</b>

Same Manager  
Same Investment Decisions

Different \$ Earned

Different MWRR

Same  
TWRR

# Multi Periods and Effect of Cash Flows

Jim Allin vs Bench  
2024-01-01 to 2024-02-29  
Sector Allocation

Powered by Robust Technologies -

Issuer	Invested First	Invested Last	Portfolio			Benchmark			Excess			Allocation		Selection		Total	
			Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
<b>Total Sector</b>	<b>1-Jan-24</b>	<b>31-Jan-24</b>	<b>7.60%</b>	<b>100.00%</b>	<b>342,000</b>	<b>6.50%</b>	<b>100.00%</b>	<b>292,500</b>	<b>1.10%</b>	<b>-</b>	<b>49,500</b>	<b>0.20%</b>	<b>9,000</b>	<b>0.90%</b>	<b>40,500</b>	<b>1.10%</b>	<b>49,500</b>
Financial	1-Jan-24	31-Jan-24	7.71%	70.00%	243,000	7.00%	50.00%	157,500	0.71%	20.00%	85,500	0.10%	4,500	0.50%	22,500	0.60%	27,000
Technology	1-Jan-24	31-Jan-24	7.33%	30.00%	99,000	6.00%	50.00%	135,000	1.33%	-20.00%	-36,000	0.10%	4,500	0.40%	18,000	0.50%	22,500
<b>Total Sector</b>	<b>1-Feb-24</b>	<b>29-Feb-24</b>	<b>-3.82%</b>	<b>100.00%</b>	<b>-185,040</b>	<b>-3.29%</b>	<b>100.00%</b>	<b>-159,354</b>	<b>-0.53%</b>	<b>-</b>	<b>-25,686</b>	<b>-0.09%</b>	<b>-4,123</b>	<b>-0.45%</b>	<b>-21,563</b>	<b>-0.53%</b>	<b>-25,686</b>
Financial	1-Feb-24	29-Feb-24	-3.86%	70.07%	-130,950	-3.50%	50.23%	-85,246	-0.35%	19.84%	-45,704	-0.04%	-2,052	-0.25%	-12,036	-0.29%	-14,088
Technology	1-Feb-24	29-Feb-24	-3.73%	29.93%	-54,090	-3.08%	49.77%	-74,108	-0.66%	-19.84%	20,018	-0.04%	-2,071	-0.20%	-9,526	-0.24%	-11,598

Same Decisions Different \$  
Same TWRR Earned

Joe Safe vs Bench  
2024-01-01 to 2024-02-29  
Sector Allocation

Same Basis Points

Different \$ Earned

Powered by Robust Technologies -

Issuer	Invested First	Invested Last	Portfolio			Benchmark			Excess			Allocation		Selection		Total	
			Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
<b>Total Sector</b>	<b>1-Jan-24</b>	<b>31-Jan-24</b>	<b>7.60%</b>	<b>100.00%</b>	<b>171,000</b>	<b>6.50%</b>	<b>100.00%</b>	<b>146,250</b>	<b>1.10%</b>	<b>-</b>	<b>24,750</b>	<b>0.20%</b>	<b>4,500</b>	<b>0.90%</b>	<b>20,250</b>	<b>1.10%</b>	<b>24,750</b>
Financial	1-Jan-24	31-Jan-24	7.71%	70.00%	121,500	7.00%	50.00%	78,750	0.71%	20.00%	42,750	0.10%	2,250	0.50%	11,250	0.60%	13,500
Technology	1-Jan-24	31-Jan-24	7.33%	30.00%	49,500	6.00%	50.00%	67,500	1.33%	-20.00%	-18,000	0.10%	2,250	0.40%	9,000	0.50%	11,250
<b>Total Sector</b>	<b>1-Feb-24</b>	<b>29-Feb-24</b>	<b>-3.82%</b>	<b>100.00%</b>	<b>-185,040</b>	<b>-3.29%</b>	<b>100.00%</b>	<b>-159,354</b>	<b>-0.53%</b>	<b>-</b>	<b>-25,686</b>	<b>-0.09%</b>	<b>-4,123</b>	<b>-0.45%</b>	<b>-21,563</b>	<b>-0.53%</b>	<b>-25,686</b>
Financial	1-Feb-24	29-Feb-24	-3.86%	70.07%	-130,950	-3.50%	50.23%	-85,246	-0.35%	19.84%	-45,704	-0.04%	-2,052	-0.25%	-12,036	-0.29%	-14,088
Technology	1-Feb-24	29-Feb-24	-3.73%	29.93%	-54,090	-3.08%	49.77%	-74,108	-0.66%	-19.84%	20,018	-0.04%	-2,071	-0.20%	-9,526	-0.24%	-11,598

# Cumulating Multi Periods Attribution Effects

Jim Allin vs Bench  
2024-01-01 to 2024-02-29  
Sector Allocation

Powered by Robust Technologies -

Issuer	Invested First	Invested Last	Portfolio			Benchmark			Excess			Allocation		Selection		Total	
			Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
<b>Total Sector</b>	<b>1-Jan-24</b>	<b>29-Feb-24</b>	<b>3.49%</b>	<b>100.00%</b>	<b>156,960</b>	<b>3.00%</b>	<b>100.00%</b>	<b>133,146</b>	<b>0.49%</b>	<b>-</b>	<b>23,814</b>	<b>0.10%</b>	<b>4,877</b>	<b>0.39%</b>	<b>18,937</b>	<b>0.49%</b>	<b>23,814</b>
Financial	1-Jan-24	29-Feb-24	3.56%	70.00%	112,050	3.25%	50.00%	72,254	0.31%	20.00%	39,796	0.05%	2,448	0.22%	10,464	0.27%	12,912
Technology	1-Jan-24	29-Feb-24	3.33%	30.00%	44,910	2.74%	50.00%	60,892	0.59%	-20.00%	-15,982	0.05%	2,429	0.18%	8,474	0.23%	10,902

Joe Safe vs Bench  
2024-01-01 to 2024-02-29  
Sector Allocation

Same Decisions Different \$  
Same TWRR Earned

Powered by Robust Technologies -

Issuer	Invested First	Invested Last	Portfolio			Benchmark			Excess			Allocation		Selection		Total	
			Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
<b>Total Sector</b>	<b>1-Jan-24</b>	<b>29-Feb-24</b>	<b>3.49%</b>	<b>100.00%</b>	<b>-14,040</b>	<b>3.00%</b>	<b>100.00%</b>	<b>-13,104</b>	<b>0.49%</b>	<b>-</b>	<b>-936</b>	<b>0.10%</b>	<b>377</b>	<b>0.39%</b>	<b>-1,313</b>	<b>0.49%</b>	<b>-936</b>
Financial	1-Jan-24	29-Feb-24	3.56%	70.00%	-9,450	3.25%	50.00%	-6,496	0.31%	20.00%	-2,954	0.05%	198	0.22%	-786	0.27%	-588
Technology	1-Jan-24	29-Feb-24	3.33%	30.00%	-4,590	2.74%	50.00%	-6,608	0.59%	-20.00%	2,018	0.05%	179	0.18%	-526	0.23%	-348



# Fixed Income Attribution – Yield Curve Decomposition

Powered by Robust Technologies -

Issuer	Level	Duration	Convx	Term End
Total		6.21	0.85	9.7
Non-Agency		6.21	0.85	9.7
Corp		6.28	0.86	9.7
Communication		7.07	0.95	10.8
Energy		7.25	1.07	11.5
Financial		3.20	0.26	4.0
Industrial		6.06	0.78	8.9
Infrastructure		9.91	1.63	16.9
Real Estate		3.80	0.23	4.4
Securitization		1.72	0.05	1.8

\$3.2B

Contribution								
Ccy	Carry	Roll	Shift	Twist	Carry Specific	Trade	Specific	Total
-	0.43%	0.00%	0.97%	0.08%	-0.36%	-	-0.71%	0.43%
-	0.33%	-0.02%	1.19%	-0.00%	-	-	-	1.49%
-	0.10%	0.04%	-2.22%	0.18%	-	-	-	-1.91%
-	0.00%	-0.00%	0.16%	-0.01%	-0.03%	-0.02%	0.03%	0.13%
-	0.00%	-0.00%	0.65%	0.02%	-0.09%	-0.14%	0.05%	0.48%
-	0.00%	0.00%	0.33%	-0.19%	-0.11%	-0.08%	-0.66%	-0.70%
-	0.00%	-0.00%	0.18%	-0.04%	-0.03%	-0.02%	0.03%	0.12%
-	-0.01%	-0.01%	0.64%	0.15%	-0.06%	-0.11%	-0.20%	0.40%
-	0.00%	0.00%	0.06%	-0.03%	-0.04%	-0.01%	0.04%	0.02%
-	0.00%	0.00%	-0.01%	0.01%	-0.00%	-0.00%	0.00%	-0.01%
\$ Earned								
Ccy	Carry	Roll	Shift	Twist	Carry Specific	Trade	Specific	Total
-	14,094,460	79,626	31,975,259	2,695,320	-11,691,236	-	-23,133,108	14,020,321
-	10,730,966	-686,165	38,897,618	-68,602	-	-	-	48,873,817
-	3,205,113	1,228,020	-68,567,074	6,332,612	-	-	-	-57,801,329
-	32,699	-31,393	4,775,241	-284,745	-836,780	-706,255	1,041,313	3,990,080
-	146,007	-142,227	20,079,562	262,329	-3,085,946	-4,557,540	1,569,028	14,271,213
-	103,511	15,816	10,182,620	-5,812,910	-3,497,890	-2,718,157	-21,559,782	-23,286,791
-	20,373	-43,051	5,586,444	-1,202,854	-1,022,353	-698,657	885,134	3,525,035
-	-287,887	-300,516	19,544,541	4,171,912	-1,920,242	-3,720,742	-6,449,875	11,037,191
-	138,423	36,028	1,664,036	-883,198	-1,165,282	-424,265	1,291,710	657,453
-	5,254	3,114	-187,729	180,777	-162,742	-129,930	89,363	-201,893

# Approach works for all types of attribution

- Equity
- Multi-Currency
- Fixed Income - Exposure Decomposition
- Fixed Income - Yield Curve Decomposition
- Currency Overlay Attribution
- Top-Down and Bottom-Up
- Multi Level Cascading
- Security Level



# Questions?

Claude Giguère

+1 514-802-0977

[cgiguere@RobustTechnologies.com](mailto:cgiguere@RobustTechnologies.com)

[www.RobustTechnologies.com](http://www.RobustTechnologies.com)

