

MONETIZATION OF ATTRIBUTION

Dollar Earned Attribution

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Barcelona

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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 -

Issuer	Invested First	Invested Last	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)		1.10%	49,500
			Weight	Time Weighted Return	Weight	Time Weighted Return		
Total Sector	1-Jan-24	31-Jan-24	100.00%	6.50%	100.00%	7.60%		
Financial	1-Jan-24	31-Jan-24	50.00%	7.00%	70.00%	7.71%		
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%		
Technology	1-Jan-24	31-Jan-24	50.00%	6.00%	30.00%	7.33%		
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.	
Total Sector	7.60%	100.00%	6.50%	100.00%	1.10%	-	0.20%	0.90%	1.10%		
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
Total Sector	7.60%	100.00%	342,000	6.50%	100.00%	292,500	1.10%	-	49,500	0.20%	0.19%	9,000	0.90%	0.84%	40,500	1.10%	1.03%	49,500
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
Total Sector	7.60%	100.00%	342,000	6.50%	100.00%	292,500	1.10%	-	49,500
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

 Jim Allin vs Bench 2024-01-01 to 2024-01-31 Sector Allocation															
Portfolio				Benchmark			Excess			Allocation		Selection		Total	
Issuer	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
Total Sector	7.60%	100.00%	342,000	6.50%	100.00%	292,500	1.10%	-	49,500	0.20%	9,000	0.90%	40,500	1.10%	49,500
Financial	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	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

Cascading Security Level Dollar-Earned Attribution

robust TECHNOLOGIES		Jim Allin vs Bench 2024-01-01 to 2024-01-31 Sector Allocation Excess														
Powered by Robust Tech		Portfolio			Benchmark			Excess			Allocation		Selection		Total	
Issuer	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	
Total Sector	7.60%	100.00%	342,000	6.50%	100.00%	292,500	1.10%	-	49,500	0.20%	9,000	0.90%	40,500	1.10%	49,500	
Financial	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	
Financial	7.71%	100.00%	243,000	7.00%	100.00%	220,500	0.71%	-	22,500	0.50%	22,500	-	-	0.50%	22,500	
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	
Technology	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	
Technology	7.33%	100.00%	99,000	6.00%	100.00%	81,000	1.33%	-	18,000	0.40%	18,000	-	-	0.40%	18,000	
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%
Jim Allin	1-Jan-24	29-Feb-24	4,500,000	4,656,960	-	156,960	3.49%	3.49%

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%
Joe Safe	1-Jan-24	29-Feb-24	2,250,000	4,656,960	2,421,000	-14,040	3.49%	-0.60%

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
Total Sector	1-Jan-24	31-Jan-24	7.60%	100.00%	342,000	6.50%	100.00%	292,500	1.10%	-	49,500	0.20%	9,000	0.90%	40,500	1.10%	49,500
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
Total Sector	1-Feb-24	29-Feb-24	-3.82%	100.00%	-185,040	-3.29%	100.00%	-159,354	-0.53%	-	-25,686	-0.09%	-4,123	-0.45%	-21,563	-0.53%	-25,686
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
Total Sector	1-Jan-24	31-Jan-24	7.60%	100.00%	171,000	6.50%	100.00%	146,250	1.10%	-	24,750	0.20%	4,500	0.90%	20,250	1.10%	24,750
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
Total Sector	1-Feb-24	29-Feb-24	-3.82%	100.00%	-185,040	-3.29%	100.00%	-159,354	-0.53%	-	-25,686	-0.09%	-4,123	-0.45%	-21,563	-0.53%	-25,686
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			Sector Allocation Excess			Allocation		Selection		Total	
			Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
Total Sector	1-Jan-24	29-Feb-24	3.49%	100.00%	156,960	3.00%	100.00%	133,146	0.49%	-	23,814	0.10%	4,877	0.39%	18,937	0.49%	23,814
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

Powered by Robust Technologies -

Issuer	Invested First	Invested Last	Portfolio			Benchmark			Sector Allocation Excess			Allocation		Selection		Total	
			Return	Weight	\$ Earned	Return	Weight	\$ Earned	Return	Weight	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned	Arith.	\$ Earned
Total Sector	1-Jan-24	29-Feb-24	3.49%	100.00%	-14,040	3.00%	100.00%	-13,104	0.49%	-	-936	0.10%	377	0.39%	-1,313	0.49%	-936
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

Same Decisions Different \$
Same TWRR Earned

Fixed Income Attribution – Yield Curve Decomposition

Portfolio
December 2023

Powered by Robust Technologies -

Sec Id	Issuer	Level	Duration	Conv	Term Begin	Term End
Total			16.31	3.13	25.1	25.1
YCD2-Non-Agency			16.31	3.13	25.1	25.1
YCD2-Alberta			15.45	3.22	24.4	24.3
YCD2-British_Columbia			16.37	3.63	26.1	26.1
YCD2-Manitoba			16.02	3.48	25.8	25.8
YCD2-Ontario			15.86	2.75	23.7	23.6
YCD2-Quebec			16.91	3.28	27.1	27.0

Portfolio value \$5B

Contribution								
Ccy	Carry	Roll	Shift	Twist	Carry Specific	Trade	Specific	Total
-	0.39%	-0.01%	3.44%	-0.00%	-0.38%	-	0.09%	3.53%
-	0.31%	-0.01%	3.18%	-0.01%	-	-	-	3.45%
-	0.01%	-0.00%	0.04%	-0.01%	-0.04%	-	-0.01%	-0.01%
-	0.00%	-0.00%	0.00%	0.00%	-0.01%	-	-0.02%	-0.02%
-	0.00%	-0.00%	0.01%	-0.00%	-0.01%	-	0.03%	0.03%
-	0.04%	0.00%	0.13%	0.00%	-0.19%	-	0.09%	0.07%
-	0.03%	0.00%	0.09%	0.02%	-0.13%	-	0.00%	0.01%

\$ Earned								
Ccy	Carry	Roll	Shift	Twist	Carry Specific	Trade	Specific	Total
-	19,220,334	-548,422	163,830,109	120,863	-19,028,192	-	4,890,995	168,485,688
-	15,258,630	-708,095	150,313,418	-488,253	-	-	-	164,375,701
-	447,899	-5,523	1,907,861	-329,601	-2,150,424	-	-490,114	-619,902
-	127,440	-2,092	261,729	36,040	-598,582	-	-971,214	-1,146,680
-	111,141	-3,054	598,152	-191,725	-476,086	-	1,350,139	1,388,567
-	1,938,418	71,550	6,438,112	93,927	-9,442,282	-	4,575,867	3,675,593
-	1,336,805	98,793	4,310,837	1,000,475	-6,360,818	-	426,316	812,409

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?

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