15.433 INVESTMENTS

Assignment 5: Performance Attribution

MIT Sloan School of Management

Spring 2003

Example with Currency Components

All returns are calculated back into the domestic currency. The foreign exchange exposures of the different asset classes are not perfectly hedged back into the domestic portfolio currency. The upper part of the table contains the normal weights and normal returns required to calculate the passive strategy of the individual asset categories.

In the second part of the table are the effective weights and the current returns of the individual asset categories in the specific quarters.

The current weights and returns are adjusted from quarter to quarter to reflect the restructuring of the tactical asset allocation and the stock picking and result in the active over/-underweights.

In the lower part of the table are the individual performance components resulting in the individual quarters (empty). Applying the same approach as in the class notes enables you to calculate the performance components.

		x0/3	x0/4	x1/1	x1/2	x1/3	x1/4	x2/1	entire period
normal weights	FI $	57.50	57.50	57.50	57.50	57.50	57.50	57.50	
	FI Euro	12.50	12.50	12.50	12.50	12.50	12.50	12.50	
	Eq $	22.50	22.50	22.50	22.50	22.50	22.50	22.50	
	Eq Euro	7.50	7.50	7.50	7.50	7.50	7.50	7.50	
	Fx	10.00	10.00	10.00	10.00	10.00	10.00	10.00	
normal returns	FI $	-0.75	1.26	4.53	2.09	0.46	0.91	3.26	
	FI Euro	1.74	5.20	1.77	1.52	5.86	5.22	-2.54	
	Eq $	-28.62	1.39	16.02	0.85	-1.12	-2.18	7.79	
	Eq Euro	-14.46	8.81	13.78	-0.21	5.27	8.41	-2.39	
	Fx	-8.55	-1.75	12.36	7.54	-7.27	-6.23	9.82	
current weights	FI $	57.50	53.70	55.70	52.30	54.50	53.80	52.40	
	FI Euro	12.50	16.50	15.80	16.10	15.90	15.70	16.50	
	Eq $	22.50	22.10	22.30	23.60	23.50	23.10	23.20	
	Eq Euro	7.50	7.70	6.20	8.00	6.10	7.40	7.90	
	Fx	10.00	14.00	0.00	5.00	12.00	8.00	15.00	
current returns	FI $	-0.32	0.81	4.22	2.12	1.15	0.78	2.32	
	FI Euro	1.03	5.45	1.20	0.95	6.02	4.25	-1.39	
	Eq $	-26.19	1.99	16.69	0.97	0.16	-3.89	10.09	
	Eq Euro	-13.46	7.44	15.82	0.00	4.80	7.32	-0.53	
strategy									
markets									
currency									
selectivity									
interaction									
total realized									
return from active management									

Table 1: Example for performance components with currency exposure

Problem-statement: Calculate the performance components.

Solution:

		x0/3	x0/4	x1/1	x1/2	x1/3	x1/4	x2/1	entire period
normal weights	FI $	57.50	57.50	57.50	57.50	57.50	57.50	57.50	
	FI Euro	12.50	12.50	12.50	12.50	12.50	12.50	12.50	
	Eq $	22.50	22.50	22.50	22.50	22.50	22.50	22.50	
	Eq Euro	7.50	7.50	7.50	7.50	7.50	7.50	7.50	
	Fx	10.00	10.00	10.00	10.00	10.00	10.00	10.00	
normal returns	FI $	-0.75	1.26	4.53	2.09	0.46	0.91	3.26	
	FI Euro	1.74	5.20	1.77	1.52	5.86	5.22	-2.54	
	Eq $	-28.62	1.39	16.02	0.85	-1.12	-2.18	7.79	
	Eq Euro	-14.46	8.81	13.78	-0.21	5.27	8.41	-2.39	
	Fx	-8.55	-1.75	12.36	7.54	-7.27	-6.23	9.82	
current weights	FI $	57.50	53.70	55.70	52.30	54.50	53.80	52.40	
	FI Euro	12.50	16.50	15.80	16.10	15.90	15.70	16.50	
	Eq $	22.50	22.10	22.30	23.60	23.50	23.10	23.20	
	Eq Euro	7.50	7.70	6.20	8.00	6.10	7.40	7.90	
	Fx	10.00	14.00	0.00	5.00	12.00	8.00	15.00	
current returns	FI $	-0.32	0.81	4.22	2.12	1.15	0.78	2.32	
	FI Euro	1.03	5.45	1.20	0.95	6.02	4.25	-1.39	
	Eq $	-26.19	1.99	16.69	0.97	0.16	-3.89	10.09	
	Eq Euro	-13.46	7.44	15.82	0.00	4.80	7.32	-0.53	
strategy		-8.59	2.17	8.70	2.32	0.41	0.69	4.11	9.82
markets		0.00	0.17	-0.23	-0.05	0.10	0.11	-0.22	-0.12
currency		0.00	-0.07	-1.24	-0.38	-0.15	0.12	0.49	-1.21
selectivity		0.78	-0.20	0.05	-0.01	0.67	-0.66	0.26	0.90
interaction		0.00	0.02	-0.04	-0.02	0.00	-0.04	0.12	0.05
total realized		-7.81	2.10	7.24	1.87	1.04	0.23	4.76	9.43
return from active management		0.78	-0.14	-2.69	-0.83	0.48	-0.34	1.14	-0.39

Table 2: Example for performance components with currency exposure

Over the entire time period, the deviation from the strategic currency exposure reduced the performance by -1.21%. The loss has been partially compensated through stock selection.

In the third quarter, the active performance of 0.48% is calculated as following:

1. strategy: $(0.575*0.46\%)+(0.125*5.86\%)+(0.225*-1.12\%)+$ $(0.075*5.27\%)+(0.01*-7.27\%)=0.41\%$

2. markets:
   $(0.545-0.575)*0.46\%+(0.159-0.125)*5.86\%+(0.235-0.225)*-1.12\%+$

(0.061-0.075)*5.27%=0.10%

3. selectivity:

(0.12-0.10)*-7.27%=-0.15

4. total realized:

(0.545*1.15%)+(0.159*6.02%)+(0.235*0.16%)*(0.061*4.8%)+
(0.12*-7.27%)=1.04%