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Performance Attribution using a Decision Hierarchy Approach

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Brinson et al¹ were the first to provide a systematic framework to quantify (what they called) allocation and selection decisions. Their framework has become the cornerstone of performance attribution and has ruled the performance profession for over two decades. Unfortunately, the model has inherent flaws and has put analysis often on the wrong track. What is conceived on an academic's blackboard rarely mirrors the investment decision process of today's products and portfolios: the increasingly dynamic nature of asset allocation and the combination of internal and external management of the total assets requires a bespoke model for deeper insight on the organization's results. For this reason Ortec Finance, in conjunction with a major Dutch pension scheme, introduced in 2001 what we call the IDP (Investment Decision Process) model². It provides a generic approach to evaluating investment performance that applies to virtually all asset classes and investment styles.

¹ Brinson G.P., L.R. Hood, and G.L. Beebower, "Determinants of Portfolio Performance", Financial Analyst Journal, July/August 1986

² Geenen J., M. Heemskerk, Heerema M., Decision Based Performance Evaluation: Evaluating the Performance of a Hierarchally Structured Investment Process, Journal of Performance Measurement, Fall 2001.

INVESTMENT DECISION PROCESS

The most important difference between the IDP and Brinson approaches is that the latter is based on bottom-up data mining, whereas the IDP approach starts from the management structure and follows the flow of the investments from top-down without sacrifice to the goals set for micro attribution. Each investment management process can be visualised by a hierarchy of investment decisions, with each decision contributing to the overall profit or loss. It is important to realise that when money is allocated top-down, decisions on lower levels should have no impact on the value of the higher level (earlier made) decisions. For example, the added value of allocating money to a given manager should not depend on the alpha of that specific manager.

In the IDP framework benchmarks naturally follow from decisions layers. Each decision serves as reference for the subsequent decision and the value added is measured by the difference in results between the layers precisely reflecting the actual process of managing the assets. This yields an important feature of the IDP approach: the sum of added values of all decisions is equal to the overall profit or loss of the investment strategy. A simple example can be used to illustrate our hypothesis. An institutional investor has a strategic asset allocation and benchmark returns as shown in Panel 1.

Panel 1 - Strategic asset allocation and benchmark returns

Strategic benchmark	Weight	Return	Contr. (bps)
Equity	35%	7.40%	259
Fixed Inc	50%	4.20%	210
Property	10%	6.00%	60
Alternatives	5%	9.20%	46
Fund	100%		575

We expect a portfolio return of approximately 5.75%. And the performance records of its 11 investment managers, shown in Panel 2 reveals indeed a portfolio return of 5.75%. But they also claim a collective out-performance of 75 basis points. How to explain the two apparently contradictory statements?



Panel 2 - Managers' performance records

MANAGERS	Weight	Actual return	Contr. (bps)	Benchmark return	Contr. (bps)	Excess (bps)
Equity						
Quality growth	3.3%	8.96%	30	8.54%	28	1
Fundamental value	17.2%	8.70%	150	6.56%	113	37
Quantitative	2.5%	13.44%	34	9.84%	25	9
Dividend growth	9.0%	10.24%	92	7.14%	64	28
Fixed income						
Government	38.4%	3.52%	135	3.67%	141	-6
Global credit	13.6%	3.68%	50	4.35%	59	-9
Property						
Commercial property	4.1%	7.90%	32	5.58%	23	10
Reits	7.9%	4.13%	33	2.17%	17	15
Alternatives						
Infrastructure	2.0%	0.31%	1	5.44%	11	-10
Absolute return	0.8%	12.18%	10	11.29%	9	1
Private equity	1.2%	8.03%	10	8.40%	10	0
Total			575		500	75

A classical Brinson return attribution is given in Panel 3. The analysis does not provide sufficient insight. The asset allocation effect of minus 11 basis points is offset by the other effects. Due to the reported 75 basis points out-performance by the managers, 64 basis points remain unaccounted for.

Panel 3 - Brinson model

	Weights		Return		Attribution (bps)			Total
	PF	BM	PF	BM	AA	SS	IA	
Equity	32.0%	35.0%	9.53%	7.40%	-5	75	-6	63
Fixed Inc	52.0%	50.0%	3.56%	4.20%	-3	-32	-1	-37
Property	12.0%	10.0%	5.42%	6.00%	1	-6	-1	-6
Alternatives	4.0%	5.0%	5.00%	9.20%	-3	-21	4	-20
Fund			5.75%	5.75%	-11	16	-5	0

Panel 4 illustrates the IDP approach. The investment process consists of four decisions: strategic asset allocation (SAA), the tactical asset allocation (TAA), style selection, and managers' stock picking. The value of each decision is the sum of contributions from the investments made, which result from allocations to the various benchmarks. This is the case for all but the lowest level, at which the actual results are used to quantify the decision. The SAA, compared with a zero gain, yields a return of 575 basis points. The TAA has a value of 564 basis points, equalling to a loss of 11 basis points, as previously illustrated. The style allocation is 500 basis points and therefore representing a loss of 64 basis points against the TAA – precisely the result previously unaccounted for. The managers add 75 basis points to the style allocation decision, completely offsetting the tactical losses.

Panel 4 - IDP approach

SAA					
Level	Equity	Fixed Inc	Property	Alternatives	
Weight	35.0%	50.0%	10.0%	5%	
Return (bps)	740	420	600	920	
Contribution	259	210	60	46	575
Value added	259	210	60	46	575
TAA					
Level	Equity	Fixed Inc	Property	Alternatives	
Weight	32.0%	52.0%	12.0%	4.0%	
Return (bps)	740	420	600	920	
Contribution	237	218	72	37	564
Value added	(22)	8	12	(9)	(11)
STYLE					
Level	Equity	Fixed Inc	Property	Alternatives	
Weight	32.0%	52.0%	12.0%	4.0%	
Return (bps)	719	385	333	750	
Contribution	230	200	40	30	500
Value added	(7)	(18)	(32)	(7)	(64)
MANAGERS' SKILL					
Level	Equity	Fixed Inc	Property	Alternatives	
Weight	32.0%	52.0%	12.0%	4.0%	
Return (bps)	953	356	542	500	
Contribution	305	185	65	20	575
Value added	75	(15)	25	(10)	75



The Brinson model has long dominated the toolset of performance analysts. However, in today's asset management it falls short of providing a comprehensive analytical framework. Due to the accurate modelling of the investment management structure, the IDP methodology reveals the active investment decisions. This is a crucial benefit of correct and insightful performance evaluation, focused on continued improvement of the results. As the analysis mimics **the actual** investment process, the IDP approach is equally applicable across all asset classes and investment styles. It will resolve most of the problems perceived by today's performance professionals, including:

Allocation effect of illiquid investments.

Weights of illiquid asset classes are often set as a target but they are difficult to manage. Hence an over- or underweight cannot be considered an active bet. The unintentional allocation effect is easily measured by adding a decision layer, reflecting the difference between intention and reality.

Benchmark inconsistency and risk-adjusted performance measures.

The Brinson model requires benchmark consistency. In the IDP model each decision layer is valued independently from the subsequent layer, proceeding top down rather than bottom up.

Multi-asset class portfolios.

Because the IDP approach mimics the investment management structure and separates this from the actual calculations, it allows for correct modelling of multi asset class portfolios and allows for different treatment of different asset classes within the same framework.

Overlays, absolute return, hedge funds, leveraged investments.

Because the IDP approach is based on investment flows and gains, it does not suffer from the usual pitfalls when weights and returns are not well defined.

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