

SBOPT naming convention

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The notation for the interface variables (e.g., class method outputs) is

$$dt_dim_1 \dots dim_n_name,$$

where dt is the data type, $dim_1 \dots dim_n$ is the dimensionality of the variable, and $name$ provides a name, e.g, corresponding to mathematical notation. Examples:

Variable	Data type	Dimensionality	Meaning
A2_MD_R	2-dimensional array	$m \times d$	returns r of assets
A3_MDD_SIGMA	3-dimensional array	$m \times d \times d$	covariances Σ in m macro-scenarios

There are some exceptions in notation, e.g., for brevity. List of mathematical notation is below.

K	$= \{1, 2, \dots, m\}$	Set of macro-scenarios
I	$= \{1, 2, \dots, mn\}$	Set of micro-scenarios, n micro-scenarios from each macro-scenarios
$I_k,$	$I_k \cap I_{k'} = \emptyset \forall k \neq k',$	Sets of micro-scenarios i in each macro-scenario k .
J	$= \{1, 2, \dots, d\}$	Set of assets
w	$= (w_1, w_2, \dots, w_d)^T$	Vector of asset weights
W	$= \{w \in \mathbb{R}^d \mid \sum_{j \in J} w_j = 1\}$	Feasible asset weights ($w_j \geq 0 \forall j$ if no shorting)
r_{ij}	$\in \mathbb{R}$	Return of asset j in micro-scenario i
r_i	$= (r_{i1}, r_{i2}, \dots, r_{id})$	Vector of asset returns in micro-scenario i
$R(w, r_i)$	$= \sum_{j \in J} w_j r_{ij}$	Return of the portfolio in micro-scenario i
p	$= (p_1, p_2, \dots, p_m)^T$	Vector of macro-scenario probabilities
P	$= \{p \in \mathbb{R}_+^m \mid Ap \leq B\}$	Set of incomplete macro-scenario probabilities
L	$= \{1, 2, \dots, s\}$	Indices of the extreme points of P
q_l	$= (q_{l1}, q_{l2}, \dots, q_{ml})^T$	An extreme point of P
q_l	$\in ext(P) = Q_P$	Set of extreme points of P
r	$\in \mathbb{R}^d$	Random variable of the returns of the assets
$R(w, r)$	$= \mathbb{R}$	Random variable of the return of the portfolio