`Portfolio` Class Cheat Sheet

The `Portfolio` call signature is straightforward. `spec_list` is a DecL program, list of `Aggregate` objects or kwargs, or names known to the Underwriter, or a pandas DataFrame sample.

(m) `Portfolio(self, name, spec_list, uw=None)`

The following tables show all (m) `methods`, (s) `static methods`, and fields or properties (used interchangeably). Comments elucidate the meaning of more obscure entries. Internal methods and fields are not shown.

1. Specification & creation

`name`, `n_units`, `agg_list` (list of `Aggregate` objects), `line_names`, `line_names_ex`, `unit_names` (unit ← line), `unit_names_ex`, `line_name_pipe`, `program` (DecL program), `pprogram` (pretty printed), `spec` (constructor kwarg dictionary; `Aggregate(**spec)` re-creates the object), `spec_ex` (adds meta information), (m) `nice_program`, (s) `from_DataFrame`, (s) `from_dict_of_aggs`, (s) `from_Excel`, (s) `create_from_sample`

2. Update

`log2`, `bs`, `sev_calc` (discrete=round, forward, backwards), `discretization_calc` (distribution, survival, both), `normalize`, `padding`, `tilt_amount`, `approx_freq_ge`, `approx_type` (exact, slognorm, sgamma), (m) `best_bucket`, (m) `recommend_bucket`, (m) `update`, (m) `add_exa`, (m) `add_exa_details`, (m) `add_exa_sample`, (m) `trim_df`, (m) `ft` & (m) `ift` (FFT and inverse FFT), (m) `remove_fuzz`, (m) `set_a_p`

3. Moments

`est` prefix=estimated from FFT approximation

`agg_m`, `agg_cv`, `agg_sd`, `agg_var`, `agg_skew`, `est_m`, `est_cv`, `est_sd`, `est_var`, `est_skew`, `ex`

4. Statistical functions

(m) `cdf`, (m) `sf` (survival), (m) `pdf`, (m) `pmf`, (m) `q` (lower quantile=VaR), (m) `tvar`, (m) `tvar_threshold`, (m) `var`, (m) `var_dict`, (m) `density_sample`, (m) `percentiles`, (m) `sample`, (m) `sample(_density)_compare`,

5. Validation

`describe` (validation statistics),
`valid` (true=all components and total "not unreasonable" or false),
`validation_eps` (validation epsilon threshold 1e-04),
(m) `audits`, (m) `uat`, (m) `uat_differential`,
(m) `uat_interpolation_functions`

6. Output dataframes

`density_df`[1] (main output),
`report_df` (component, mixture & empirical stats),
`statistics`, `statistics_df`, `audit_df`,
`augmented_df`, `independent_audit_df`,
`independent_density_df`, `priority_analysis_df`,
(m) `make_audit_df`, (m) `make_all`, (m) `report`

7. Reinsurance

None – applies at the component level

8. Visualization & exhibits

(m) `plot`, (m) `scatter`, (m) `twelve_plot`,
(m) `biv_contour_plot`,
(m) `analyze_distortion_plots`,
(m) `natural_profit_segment_plot`,
(m) `profit_segment_plot`, `figure` (return last figure),
(m) `limits`, `line_renamer`,
`premium_capital_renamer`, `renamer`,
(m) `short_renamer`, `stat_renamer`, `tm_renamer`,
(m) `show_enhanced_exhibits`,
`EX_accounting_economic_balance_sheet`,
`EX_multi_premium_capital`, `EX_premium_capital`

9. Risk and pricing

(m) `accounting_economic_balance_sheet`,
(m) `analysis_collateral`, (m) `analysis_priority`,
(m) `analyze_distortion(s|_add_comps)`,
(m) `apply_distortion(s)`, `assets_2_epd`,
(m) `bodoff`, (m) `calibrate_blends`,
(m) `calibrate_distortion(s)`, (m) `cotvar`,
`dist_ans`, `distortion`, `distortion_df`, `dists`,
`epd_2_assets`, (m) `equal_risk_epd`,
(m) `equal_risk_var_tvar`, (m) `gamma`, (m) `gradient`,
(m) `merton_perold`, (m) `multi_premium_capital`,
(m) `premium_capital`, (m) `price`, (m) `price_ccoc`,
(m) `pricing_bounds`, `priority_capital_df`,
(m) `stand_alone_pricing`,

10. Approximations

(m) `approximate`, (m) `as_severity`, (m) `collapse`

11. Meta

`audit_percentiles`, `hash_rep_at_last_update`,
`info` (text meta info), (m) `json` (persist to json),
`last_update`, (m) `more(regex)` (print all methods and fields matching `regex`), (m) `save`, (m) `snap`[1] (snap argument to index)

Notes:

[1]: matches `Aggregate`

Any vectorizable input accepts numeric or iterable datatypes.

Abbreviations: gcn=gross (subject), ceded, and net; stats: m=mean, cv=coefficient of variation, sd=standard deviation, var=variance, skew(ness); VaR=value-at-risk

`aggregate 0.18.0`
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