1. Inputs:

* df\_vol\_inputs
* df\_vol\_inputs\_proteus
* df\_correl\_inputs
* df\_sharpe\_inputs
* overrided\_sharpe
* df\_sharpe\_type
* df\_sharpe\_pop

Full history

* df\_vol\_inputs\_full\_history
* df\_correl\_inputs\_full\_history
* df\_tail\_loss\_inputs

Constraints inputs

* x\_2
* L
* U
* B
* sigma
* df\_gamma

Others

* Df\_penalty
* display
* df\_breakdown\_list
* ticker\_map
* notes\_map
* analytical\_ub
* sigma\_tail\_euro

2. Remove existing lin combs [full history]

* Function: delete\_lin\_comb\_names()

* Used Data:



lin\_comv\_names

* Remove lin combs from initial data
* Create new correlation matrix

3. Create inputs for the optimization[full history]

* Used Data:

df\_vol\_output

df\_correl\_output

list\_factor

* Results:

r\_Lt

factor\_correl\_old

4. Remove existing lin combs [Recent]

* Function: delete\_lin\_comb\_names()
* Used Data:



lin\_comv\_names

* Remove lin combs from initial data
* Create new correlation matrix

5. Create inputs for the optimization[Recent]

* Used Data:

df\_vol\_output

df\_correl\_output

list\_factor

* Results:

r\_Lt

factor\_correl\_new

6. Blent 50/50 recent and full history

* Used Data:

factor\_correl\_new

factor\_correl\_old

* Results:

factor\_cov

7. Projection

* Used Data:

M=[‘GBF’]

df\_tail\_loss\_acc

df\_tail\_loss\_factor

r\_LT

* Results:

df\_projection\_active

8. Load structural asset allocation and tactical asset allocation

* Used Data:

df\_rv

df\_tactical

df\_freeze

* Results
  + Structural asset allocation: x\_structural\_all
  + tactical\_asset\_allocation: x\_tactical\_aa
  + freeze\_allocation: a\_structural\_freeze, a\_timing\_freeze, a\_rv\_freeze

9. Rebalancing of structural

* Used Data:

df\_spread\_ts

df\_oas\_ts

df\_cmbx\_abs

Market\_oas

* Results:

x\_structural\_all

10. Overrides

* GOF Overrides
* GBF Overrides
* DBF Overrides

11. Optimization

* Preliminary processing
  + Creating correlation matrix

factor\_correl -> factor\_cov

factor\_correl\_new -> factor\_cov\_new

* + Replacement in factor\_vol
* Inputs:
  + Dimension inputs
  + Universal inputs
  + Mandate specific inputs
* Create storage space
* Constraints:
  + upper/lower bound
  + Other constraints
  + Standalone constraints on portfolio
* Functions use in optimization
  + X\_beta
  + X\_beta\_bis
  + X\_beta\_dmfx
* Add constraints on rv sleeve
* Add objective function

-> Define with the help of functions

* Solve with the help of Scipy
* Position breakdown

Strategic beta allocation

Total portfolio

* Display Statistics

Final Results: df\_1, df\_2

12. Format output

* Make more readable
* Rounding the output
* Add lower/upper table bound
* Make table with the help of PrettyTable and PimReport

13. Create input summary Table

14. Barplot

14. Summary Table for presentation

15. Save to excel and send email