Practical Pointers for Implementing Transaction-based Performance Measurement

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Transaction-based Performance Measurement

- Definitions: What do we mean by that?
- Motivations: Why do we want it?
- Requirements: What should it do for our business?
- Prototyping: Can it be done?
- Evaluation: Where do we get it?
- Aftermath: What comes next?

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Definitions: Performance Measurement

- Analytic (not regulatory) in purpose
- Contribution, weight and return
- At a finer level of detail than portfolio
  - position
  - segment
- Flexible segmentation/re-aggregation (“slice and dice”)
- As contrasted with GIPS compliance tools

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Definitions: Transaction-based

- Includes transactions in the calculation of contribution, weight and return
  - trades
  - non-trade transactions
- Continuum of transaction-based methods
  - completeness of transactions that are included
  - methodology of accounting for transactions
  - periodicity
- As contrasted with Holdings-based
  - periodic market values are only inputs

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Motivations: Accuracy vs. Residual

- Residual is the difference between:
  - the sum of the segment contributions in the performance measurement system, and
  - the official portfolio return from the accounting system
- Residual varies and has a statistical distribution
  - across portfolios
  - over time

The primary motivation for implementing a transaction-based performance methodology is to increase accuracy/reduce residual.

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Motivations: Why Does Accuracy Matter?

- When the residual is significant relative to the portfolio return (and, at some point, it will be)
  - an explanation will be asked for,
  - this explanation, and the time it takes to make it will distract from the actual point that the performance analysis is intended to make,
  - the explanation, each time it is proffered, will generate dissatisfaction,
  - and the dissatisfaction so generated will cumulate over time.

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Requirements: 1st Key Element of Success

- A formal Business Requirements Document (BRD) answers all of the following:
  - Who are the business stakeholders?
  - What is the performance methodology?
  - What input data are required?
  - What are the acceptable limits on residual?
  - What segmentation and aggregation are required?
  - What are the periodicity and timing of reporting?
  - How much historical data is required?
  - What are the requirements for delivery of the analysis?

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Requirements: Who Are the Business Stakeholders, and What Do They Need?

Portfolio Management	•Daily, with MTD and YTD •Flexible drill-down •High accuracy/low residual
Marketing	•Flexible benchmark construction •Flexible account groups, with GIPS •Long history
Client Services	•Summarized results •Presentation quality delivery •High accuracy/low residual
Data Integrity	•Daily •Detailed drill-down

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Requirements: Elements of a Methodology

- Calculations for return, weight and contribution
- Granularity – lowest level of calculation
- Aggregation upward to higher levels (segment, portfolio, aggregate)
- Periodicity – frequency of calculations
- Time-period linking of multiple periods
- Ancillary calculations
  - gross/net of fees
  - annualized
  - before/after tax

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Requirements: Tips for a Good Methodology

- Simplicity: everyone should be able to understand it
  - It should have as few “except...” rules as possible
- Intuitiveness: everyone should agree with the results
- Completeness
  - security types
  - long/short
  - leverage
- Tips:
  - Start with contribution (not return)
  - Separate long from short
  - Build a spreadsheet with worked-through examples
    - Include as many security types/transactions/situations as possible

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Requirements: Input Data Specification

- A detailed list and specification of all the input data items required to feed the methodology's calculations
- Don't worry about mapping these to actual database tables & columns yet – that will come later.

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Requirements: Limits on Residual

- +/- how many bps?
- Per which period?
- What % of portfolios?
- What % of periods?
- Absolute max?

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Requirements: Segmentation and Aggregation

- Segmentation:
  - definition of segment attributes/dimensions
  - specification of hierarchy flexibility/dynamic capabilities
  - treatment of dynamic segments
- Aggregation
  - specification of aggregate definitions
  - Tip: treat this as an input from a separate (presumably GIPS-oriented) system or module.

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Requirements: Periodicity and Timing

- What is the periodicity of the calculations?
  - Tip: keep this separate from the periodicity of the report delivery
  - Tip: the answer is “daily”
- How soon after the end of the previous period will calculations be available for reporting?
  - Tip: the answer is “real soon”

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Requirements: Historical Depth

- How much history do we need to keep?
  - Tip: make history back-filling a separate project
    - Can be tedious and expensive
    - Don’t impede progress on a solution “going-forward” with this issue
    - Justify the “How far back do we backfill?” decision separately on its own merits and cost.

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Requirements: Delivering the Product

- Locate your requirements on the continuum between batch/pre-defined reports and fully interactive
  - Drill-down segmentation
  - Start/end dates
  - Flexible aggregation
- Delivery technology
  - Tip: piggy-back on existing report delivery mechanisms, if available

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Prototyping: 2nd Key Element of Success

- Design a database that represents the input and output requirements
- Build a complete working version of the data and calculations
- Feed it with test input datasets from live systems
- Verify the results
- Iterate

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Prototyping: How to Design it

- Begin with multi-dimensional normality as a rule
  - positions, transactions, securities, accounts
  - segments and aggregates
  - time periods
- Separate processing into two stages:
  - Normalization: massaging the actual input data into the form of the methodology inputs
  - Calculation: generating the methodology outputs

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Prototyping: How to Build it

- Build it rapidly with a cheap, ubiquitous technology
  - MS SQL Server
  - Access (if you're familiar with its limitations)
  - Excel, if you must.
    - Tip: Works OK until you get to multiple time-periods

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Prototyping: How to Feed it

- Define an ascendingly complex set of test input datasets
  - security types
  - currencies
  - transaction types
  - number of periods
- Extract these from live accounting data systems

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Prototyping: How to Run it

- Calculate – and store - the performance results from the input test datasets
- Verify the results with all stakeholders
- Discrepancies
  - Correct, iterate
  - Or, identify and document input data gap

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Prototyping: What You Get for the Effort

- Proof that the BRD methodology works
- Input data gap analysis:
  - ***I cannot emphasize this enough. This will be the most important determinant of project size, risk and ultimate success.*** Your input data is inadequate. You may need to initiate another project to fix it before you can implement performance measurement.
- A test-bed for vendor evaluation, implementation and enhancement

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Evaluation

- Identify a list of likely solution providers
- Structure the BRD as an RFI, and distribute
  - Add technology, support and going-concern criteria
- Use initial evaluations to get down to short list
- Send test datasets to short list; compare results vs. the prototype

You've probably noticed that we haven't yet addressed the "Buy vs. Build" question. That's because it is not relevant to the two prior and necessary steps: BRD and Prototype. "Build" is, in the Evaluation step, simply another option in the vendor list.

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Implementation

- What's to worry? You've done everything right so far...

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Aftermath: What about Attribution?

- Measurement tells you where and how much; Attribution links this to what decisions you made to generate value.
- Use the same sequence of planning tools: requirements, prototype, evaluation
  - Enhance and use the measurement prototype/test-bed

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Attribution: Input Data

- Performance measurement inputs to Attribution should already be very clean...
- But now you need benchmarks!
  - constituent level
  - finding and purchasing the data
  - collecting and storing the data
  - cleaning the data
  - reconciling benchmark vendor data to methodology
    - pricing
    - analytics
    - segmentation classifications
    - in/out of benchmark securities and segments

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Conclusions

- Accuracy – in the form of minimal residual – is the primary motive for implementing transaction-based performance measurement
  - Specify how much you need
  - Don't take your eyes off of it
- The inadequacy of your existing data is impossible to overestimate. Therefore, don't estimate it, prototype it.
- A disciplined approach will minimize project size and risk, maximize ultimate success:
  - Requirements
  - Prototyping
  - Evaluation

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For More Information…

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