Portfolio Analytics

Introduction to LP Forecasting

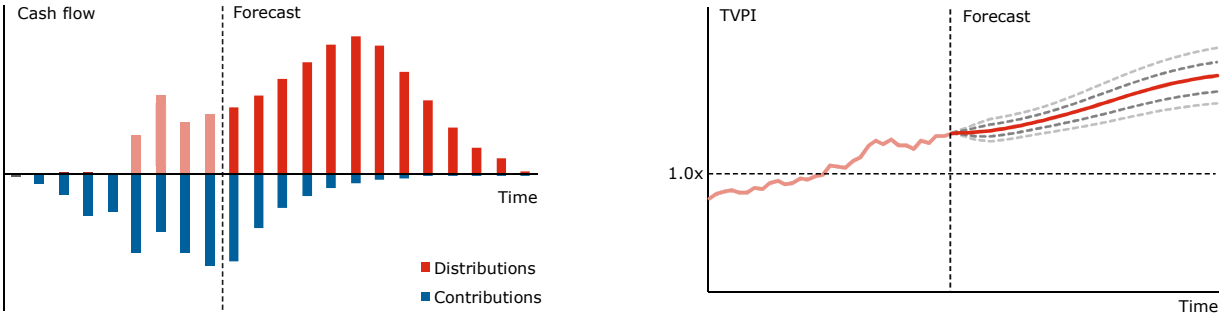
1. Purpose

The analytics module LP Forecasting provides a sound basis for planning and expectations management. LPs are able to **plan returns and cash flows** of their private capital portfolios to

- receive valuable input for their investment and liquidity planning process,
- calculate and model future returns, and
- improve expectation management and gain greater acceptance of private illiquid investments across their organization.

The cash flow and NAV forecasting of the portfolio is an **aggregation of forecasts based on every underlying fund of the portfolio**. The model takes the individual status of each fund (e. g. fund's age, call ratio, distributions to date, etc.) into account and combines it with a statistical model based on historic observations of comparable vehicles (with respect to private capital segment, region, vintage year, etc.).

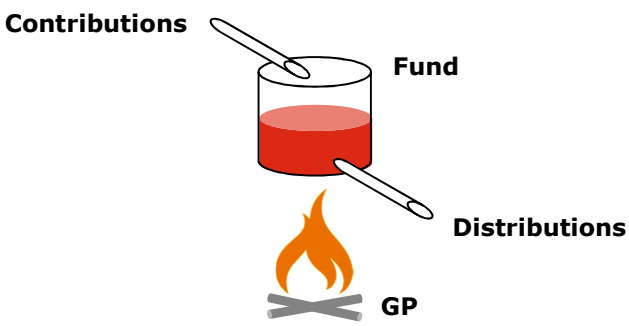
Figure 1: Cash Flow and Performance Forecasts



2. Basic Approach

Pouring money into a private capital fund, buying assets with these contributions, installing a general partner (GP) to increase the assets' values, and selling off the assets after value appreciation in order to distribute profits, suggests a **physical analogy to the working machinery of an apparatus** imagined as follows: The process resembles a bucket (fund) with influx and outflux (contribution and distribution), and an additional volume modification during the stay of the liquid (money) in the bucket (the asset appreciation).

Figure 2: Physical Analogy of a Private Capital Fund



For such a system, it should be possible to find a **set of equations that describes the dynamics of the flows**. In the end, we are interested in finding a mathematical specification that governs the time behavior of influx into (contributions to) and outflux from (distributions from) the fund, where the net asset value (NAV) serves as a storage cache that increases both by money inflow and by value appreciation, and decreases through money outflow. Value appreciation is not an extra inflow, but an internal growth mechanism (like a volume increase by heating), ideally modelled as a yield on the NAV itself.

3. Model Overview

The forecast model for private capital funds captures all major elements by analytical expressions and estimates the driving parameters for these on the grounds of a comprehensive historical data set. The cash flow forms are based on fundamental economic insights into the industry on the one hand, and backed up by statistical analysis of observed cash flow patterns on the other. Applying the model to real fund data provides the possibility to forecast contributions, distributions, and NAVs on individual fund or on aggregated funds-portfolio level. Based on these estimates, all resulting performance measures are derived, showing the typical J-curve of net cash flows in such kinds of funds.

The forecast model consists of a **cohesive set of equations** that govern the time behavior of a private capital fund's cash flows, ensuring that all outcome components are consistent and no constellation might lead to implausible or even contradictory results.

Forecasts are made at fund level, where each individual fund is broken down into its major components:

- Contributions
- Distributions
- NAV

Since any forecasting deals with uncertainty, and the correct way of specifying this uncertainty is by the means of statistics, each relevant modelling element can be forecasted across the whole possible range of values. To estimate expected fund lifetimes a statistical survival model is applied, and the future cash flow path is governed by the combination of a square root diffusion process and a generalized additive model. These statistical models depend on both private capital fund specific and macroeconomic covariates.

The stochastic nature of this approach **enables us to provide estimates with their full statistical properties**:

- Average
- Standard deviation
- Median (P50) and all other commonly used percentiles (P5, P10, P25, P75, P90, P95)
- Correlations with other asset groups
- All other lower partial moments

All parameters for the cash flow patterns are derived from statistical analyses of a **comprehensive data set of over 4,500 funds**. Because parameter estimates are accompanied by error terms, this naturally gives forecast spreads for any predicted quantity. In summary, development over time is derived from analytic forms, where parametrization of these forms is taken from statistical models.

Written by **Marcus Pietz**, Head of Analytics

For more information on LP Forecasting, please contact us at info@asset-metrix.com or +49 89 543 28 80 0.

About AssetMetrix

AssetMetrix is Europe's leading **next generation asset servicer**. We offer modular outsourcing solutions for private capital investors: front-, middle- and back-office solutions for Limited Partners and General Partners.

Our services enable private capital investors to free up their own resources for making investment decisions, benefit from our secure IT system and state-of-the-art analytics, and increase in-house transparency for optimal decision-making.

AssetMetrix has more than 20 years of experience as a service provider in institutional capital investment and operates without conflicts of interest. AssetMetrix is not an investor, an investment consultant, or a placement agent, but currently administers portfolios with a total volume of over €12 billion and more than 1500 funds.

www.asset-metrix.com