Transaction Cost Analysis – a brief overview

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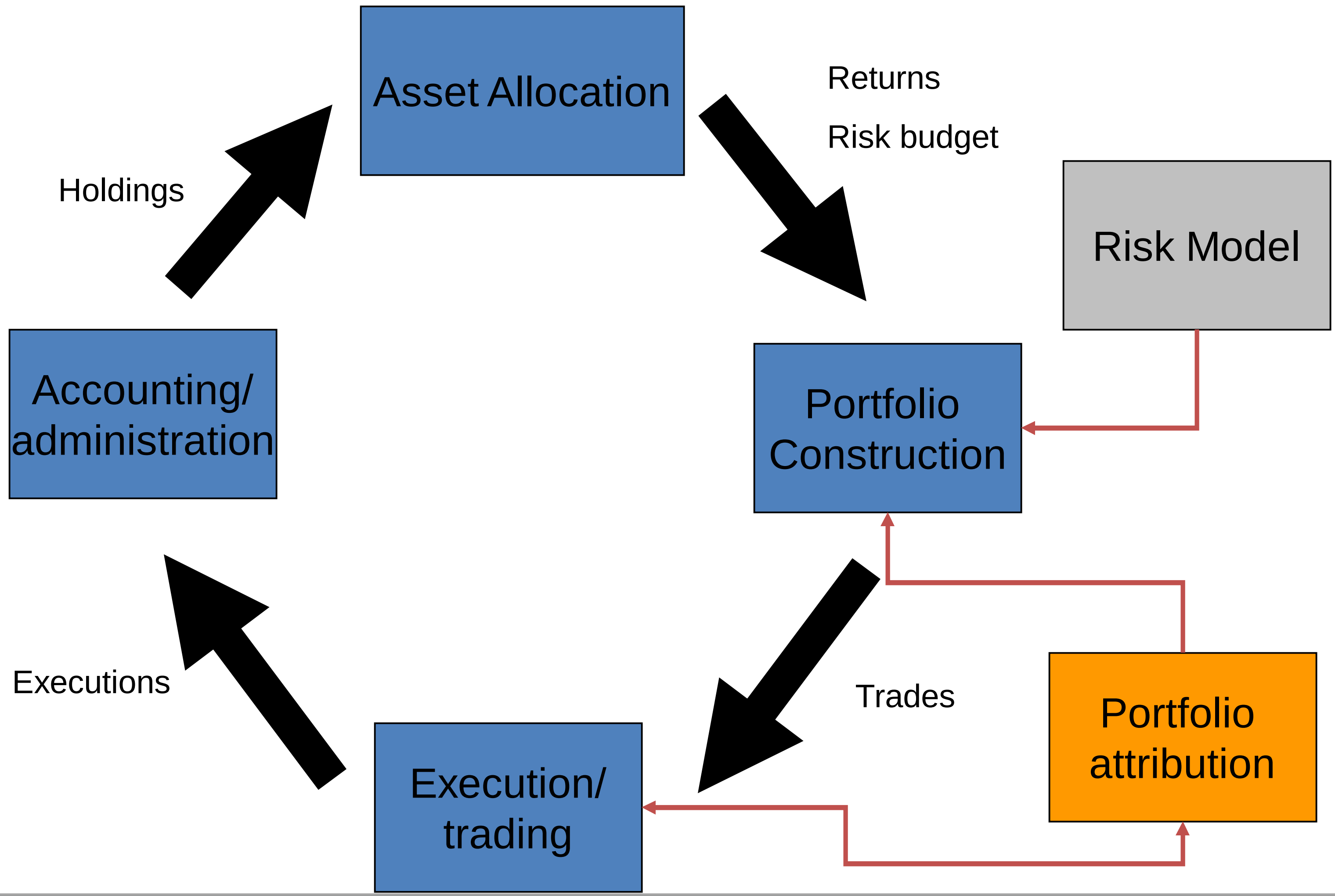
A. What is Transaction Cost Analysis ("TCA")?

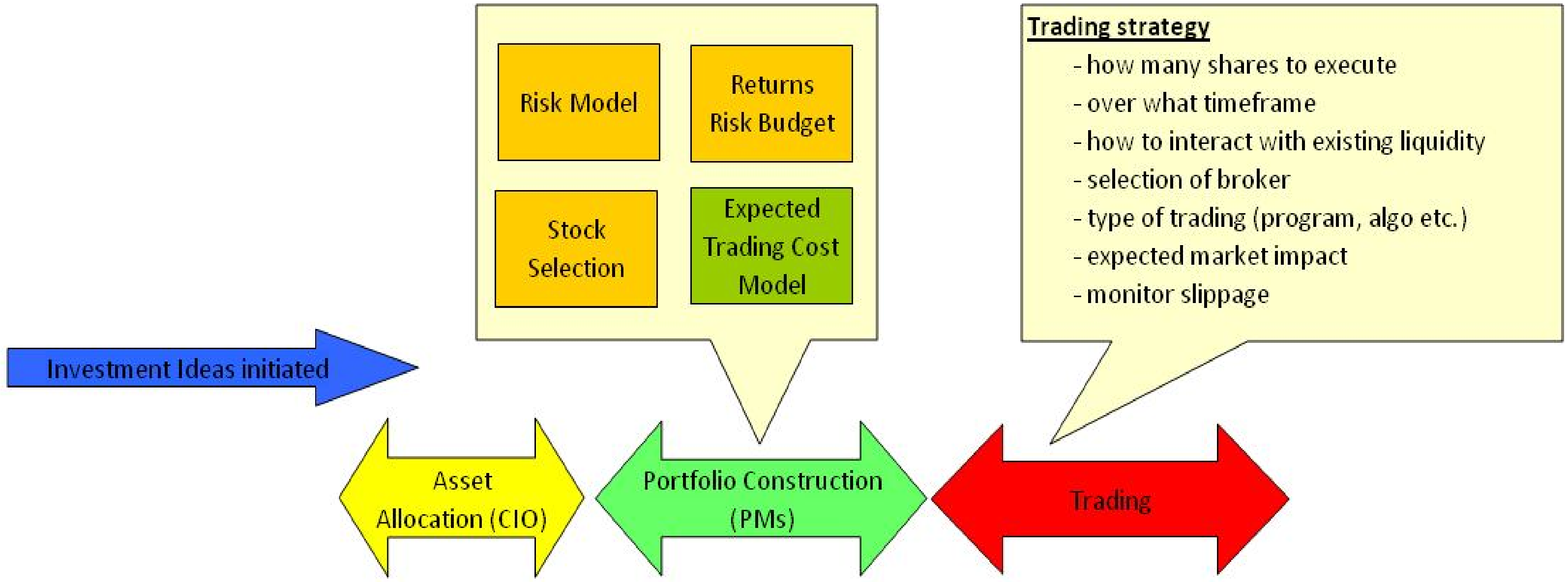
- Most financial research is devoted to asset allocation, portfolio construction and performance attribution
- All investment models are worthless unless ideas can be captured on actual portfolios
- For the total performance of a portfolio, the quality of the implementation is as important as the decision itself
- Implementation costs usually reduce portfolio returns with limited potential to generate upside potential
- Costs can turn high-quality investments into moderately profitable investments or low-quality investments into unprofitable investments
- Investment managers must manage transaction costs proactively, because lower transaction costs mean higher portfolio returns
- The aim of transaction cost analysis (TCA) is to provide a scorecard that helps investment managers assess understand how well their decisions have been acted on and how they can improve

B. The investment process/trading cycle

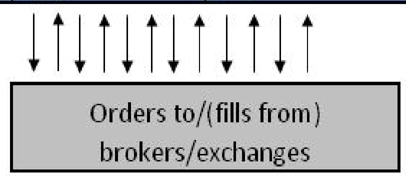


Function	Role	Time
Asset Allocation	Distribution of funds across investment classes • Equities • Bonds • cash, • commodities • derivatives • hedge funds, • real estate Risk diversification Specified Target Tate of Return	Transaction Cost Analysis
Portfolio Construction	Security selection Securities to buy/ sell in each investment class Trade list	
Execution/ trading	Implement trades Decide trading strategy • speed of execution • broker • method of execution • choice of algorithm Monitor trading	
Accounting/ administration	Trade settlement Position monitoring Administration etc.	

C. The trading timeline



Days before Trading initiated	....	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	Trading starts	1	2	3	4	5	6	7	8	9	10	....
											Trade Analytics												
											Pre-	Intra		Post									



D. Questions TCA has to answer – CIOs and PMs

- Shed light on areas where the investment process can be improved
- Assist in assessing portfolio performance and analysing reasons for missing the targeted return
- Additional metrics to identify thematic style
- Shed light on "added value" of different parts of the investment process
- As different trading strategies correspond to different risk-cost tradeoffs, investment managers need to know the real cost of implementing a given trading strategy

D. Questions TCA has to answer – traders

- Compare execution results by
  - Model
  - Broker
  - Execution destination
  - Sector
  - Trader
  - portfolio manager or any other grouping criteria

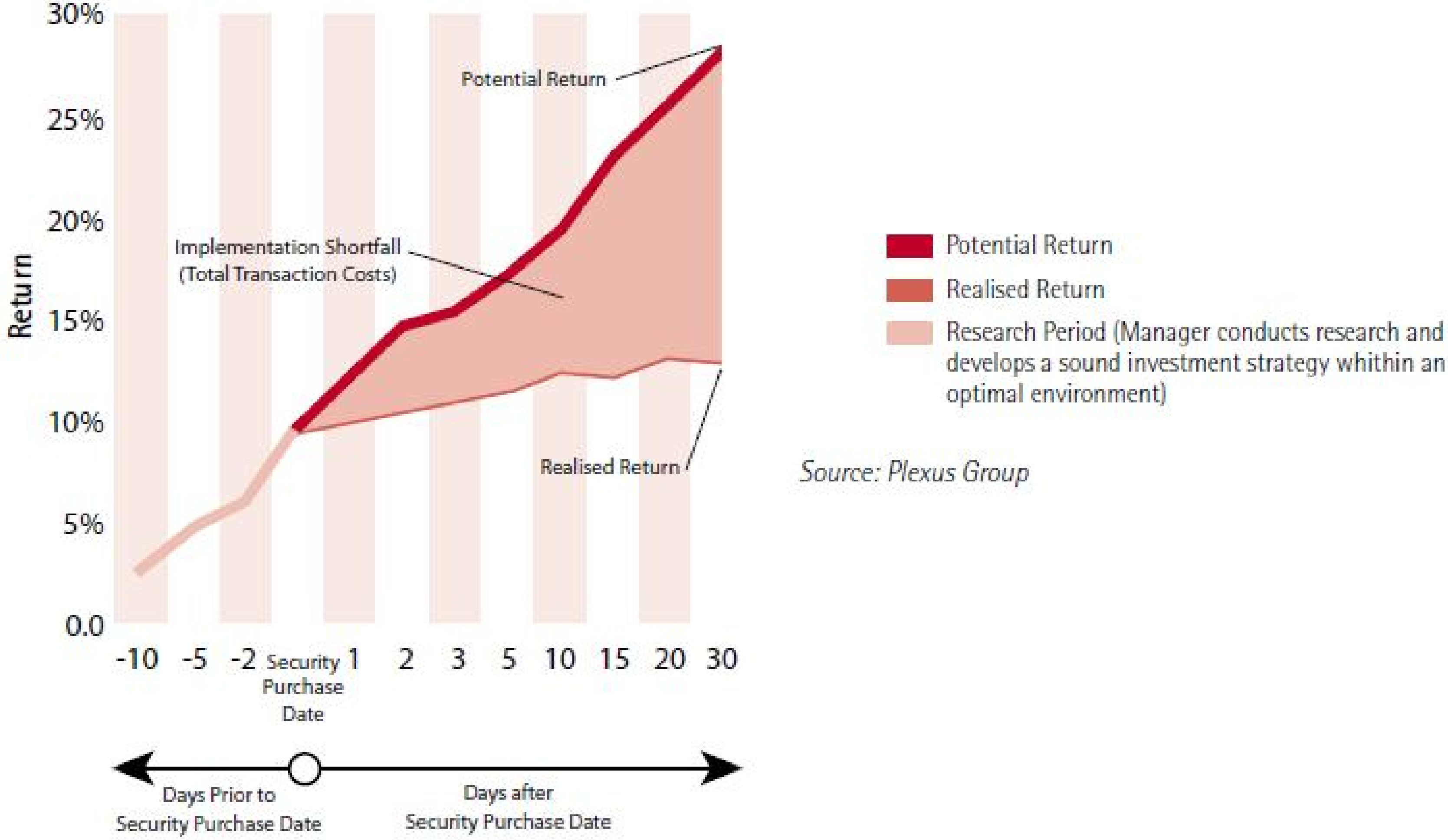
  … against pre-defined benchmarks in real-time
- Monitor 'slippage' by providing a snapshot of the market every time an order is sent for execution.
- Simultaneously benchmark executed and expected fills
- Integrate broker and independent pre-trade cost estimates and post-trade analytics

E. Types of trading cost

Cost	Level of Visibility	Ease of calculation
Brokerage commission	High	Easy
Market Fees	High	Easy
Clearing and Settlement fees	High	Easy
Taxes	High	Easy
Bid-Ask Spread	High	Easy
Market Impact	Low	Difficult
Opportunity Costs		
- Missed Trade	Medium	Moderate
- Market Timing	Medium	Moderate
- Operational	Medium	Moderate

Explicit costs (rows Brokerage commission to Taxes) — Implicit costs (rows Bid-Ask Spread to Operational)

F. Benchmark comparisons – implementation shortfall



Source: Plexus Group

Benchmark comparisons – ‘market’ driven

- Pre-trade benchmarks
  - Previous night’s close
  - Opening price on the trading day
  - ‘Arrival’ price (e.g. bid, ask, last, mid-market)
- Intra-day benchmarks
  - Volume weighted average price
  - Time weighed average price
  - Participation of volume
  - Average of open, high, low, close
- Post-trade benchmarks
  - Trading day’s close

G. Importance of quantitative analysis, technology

- The conceptual framework of TCA is well-understood
- Theory of underlying quantitative analysis is not difficult
- Numerical analysis is simple arithmetic
- Major challenges in the technology platform arising from data capture/collection, organisation and storage –
  - Investment decisions have to be time-stamped
  - ‘Hypothetical’ portfolios have to be tracked and maintained
  - Analysis has to be done in real-time
    - Market data
    - Trade and fill data
  - Global data, often across different timezones

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