Transparency, Risk Control & Return Enhancement

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Introduction

Effective implementation and understanding costs:

› Foreign Exchange Management
  › Return Enhancement:

› Portfolio change management
  › Transition Management

› Ongoing portfolio risk management
  › Risk Reduction:
  › Cash overlay / liquidity management
  › Passive rebalancing & hedging
Where are returns and risk coming from?

Expected return is driven by:

- Asset Allocation
- Portfolio Structure
- Implementation Efficiency

For illustrative purposes only.
Where are returns and risk coming from?

Implementation is a critical yet hidden component of portfolio management.
Investment staff are faced with a variety of challenges

**Execution Oversight**
- Managing hidden costs
- Trading transparency and oversight
- Alignment of interests

**Change management**
- Implementation delays
- Manager changes/terminations
- Interim portfolio assignments

**Policy Deviations**
- Delay in obtaining desired beta exposures
- Cash exposure due to manager timings
- Need immediate changes based on funding thresholds
- Undesired foreign currency exposure
The Implementation Gap

The gap between theoretical insight and actual portfolios

How the world SHOULD BE

How the world ACTUALLY IS

CAUSES
• Time & Process
• Market Friction
• Systems
• Conflicts of Interest

The solution to these problems is CONTROL

› Who has control at each stage of the process
› How easy is it for the process to be managed
› Who is accountable for each stage of the process
Some Possible Questions?

› How do you monitor conflicts of interest when your fund is interacting with the market?

› How do you go about managing changes to your plan?

› How do you manage rebalancing your plan?
Opportunities Integrated Implementation Brings

Risk Management
- Reduce impact from unintended tracking error
- Maximize exposure to rewarded risks
- Full transaction chain management
- Strategic hedging

Return Enhancement
- Lower transaction costs
- Lower opportunity costs
- Dual registration – agency only allows maximum liquidity access
- Integrated liquidity management
- Economies of scale from providers

Value Added Strategies
- Taking positions to capture tactical insight
- Integrated completion strategies
- Access to greater range of insight producers in single process

These issues affect every stage of the process – from design, through construction and into ongoing management
Foreign Exchange Execution
Why does a pension fund need foreign exchange?
Asset class breakdown of a typical portfolio

- Eurozone Equities 20%
- Fixed Interest 15%
- Alternatives 20%
- Global Equity 45%

For a fund manager to settle the purchase / sale of foreign securities.
Investment manager receives dividends in foreign denominations.

Making lump sum investments into a non-Euro based mandates.

Hedging plan level currency exposure

Source: Russell Investments. For illustrative purposes only.
Our observations of the FX environment
Avoiding fraud and unnecessary expense

› Negative publicity regarding custodian charges for FX seems to have peaked, causing clients to question their FX strategy
› Publicity about trading at popular fixing times alleges collusion and manipulation
› But clients still ask
  › How much have we been / are we paying
  › Who should manage our currency trading

Exclusive: Bank probes find manipulation in Singapore’s offshore FX market

Bloomberg: Aug. 27, 2013
Traders Said to Rig Currency Rates to Profit from Clients

Reuters: Nov. 12, 2014
Regulators fine global banks $4.3 billion in currency investigation
Foreign Exchange
Researching currency trading costs

Expected Results

Typical Results

Source: Theoretical distribution based upon Russell’s expectation of results.
Typical results are for illustrative purposes only; distributions based on actual analyses can differ.
For illustrative purposes only.
Are you overpaying for your FX trades?
Most investors are grossly overpaying and may not even know

Estimated trading fees and costs

You may be overpaying for FX trades by 90% - effective strategies save significant amounts

For illustrative purposes only. Source: Russell Implementation Services Inc. FX trading and analyses for 2013. Past performance is not a guarantee of future results.
Foreign Exchange Transactions
Why the wide range in costs?

› No central exchange

› Transaction cost analyses is not standard

› Asset managers have varying degrees of expertise

Using an agent to trade currencies can improve the manager’s performance
## Ways to trade FX

<table>
<thead>
<tr>
<th>Trading Aspect</th>
<th>Principal Trading</th>
<th>Investment manager direct trading</th>
<th>Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fee</td>
<td>10 – 30 bp</td>
<td>None</td>
<td>2 to 4 bp</td>
</tr>
<tr>
<td>Netting</td>
<td>Sometimes</td>
<td>In market buys &amp; sells</td>
<td>Yes</td>
</tr>
<tr>
<td>Operational risk</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Settlement risk</td>
<td>None</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Counterparty risk</td>
<td>Concentrated</td>
<td>Concentrated to diversified</td>
<td>Diversified</td>
</tr>
<tr>
<td>Reporting</td>
<td>Depends on custodian</td>
<td>Unlikely</td>
<td>Likely</td>
</tr>
</tbody>
</table>

For illustrative purposes only.
Risks in today’s FX environment
Avoiding a range of unnecessary risks

It’s not just about cost – risks need to be managed, too

**Operational risk**
Trading processes without transparency and oversight can result in mistakes, leading to misunderstandings and costly trade errors.

**Counterparty and settlement risk**
Trading counterparties might not be able to fulfil their obligations after a trade is made.

**Headline risk**
News about high investment costs or lawsuits can tarnish a fund’s image.

**Regulatory risk**
Dodd-Frank has presented even more regulations and bureaucratic procedures that must be handled throughout the FX process.
Transparency, Governance, Reducing costs

- Fully transparent reporting
  - Transaction costs and fees
  - Counterparty exposure
  - Time stamp every trade
- Reducing costs
  - Trade netting and matching
  - Competitive trading
  - Improved performance
- Strong Governance
  - Reduce counterparty, operational and settlement risk
  - Enhanced management of FX
  - Comprehensive reporting
Portfolio Change Management
Measurement creates the incentive for a disciplined approach to transitioning assets.

**Measurement = Accountability**

- You must first have transparency to the performance impact in order to assign accountability – “what gets measured, gets managed”

- T standard implementation shortfall is the performance metric for transition management

- A transition manager should provide transparency and accountability,

Measurement creates the incentive for a disciplined approach to transitioning assets.
When could you need transition oversight?

Manager Change

Pooled fund Coordination

Cash-flow Management

Strategy Change

Interim Management

For illustrative purposes only.
## Costs in changing managers

<table>
<thead>
<tr>
<th>Mandate</th>
<th>Benchmark</th>
<th>Tracking Error</th>
<th>Target annual alpha&lt;sup&gt;1&lt;/sup&gt;</th>
<th>3 year average “IS”&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Transition costs as at % of target alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Equities</td>
<td>Russell Global Developed Equity Index</td>
<td>350 bps</td>
<td>200 bps</td>
<td>43 bps</td>
<td>22%</td>
</tr>
<tr>
<td>Global Fixed Income</td>
<td>Barclays Global Aggregate Bond Index</td>
<td>175 bps</td>
<td>100 bps</td>
<td>35 bps</td>
<td>35%</td>
</tr>
</tbody>
</table>

1 – Estimated based on alpha expectations of Russell Funds.
2 – Avg. TM costs from Russell Implementation Services Inc. performance database 3 years to December 31, 2011
What’s the cost of an hour?

Unmanaged intraday exposures on a cash flow of €500mm:

› Market volatility of 1.1% introduces benchmark risk of €5.5mm.
› Active implementation strategies can minimise this risk.

A robust risk and exposure management strategy is critical in volatile, liquidity constrained markets.

Source: Bloomberg. For illustrative purposes only. Data is historical and not an indication of future performance. Does not represent an actual client or investment.
Commissions are not the whole picture

Source: Investment Technology Group. U.S. Trading costs: Commissions and implementation shortfall based on ITG’s peer group (Q4 2013 peer data are preliminary). Data are as of Dec. 31, 2013.
Bond transactions cost you more *alpha* than equities

<table>
<thead>
<tr>
<th></th>
<th>US Large Cap</th>
<th>Developed Intl. Equity</th>
<th>Emerging Market Equity</th>
<th>US Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Round Trip Transaction Costs</strong></td>
<td>17 bps</td>
<td>43 bps</td>
<td>58 bps</td>
<td>32 bps</td>
</tr>
<tr>
<td><strong>Expected Annual Excess Return</strong></td>
<td>115 bps</td>
<td>150 bps</td>
<td>175 bps</td>
<td>75 bps</td>
</tr>
<tr>
<td><strong>Cost to Excess Return Ratio</strong></td>
<td>0,15</td>
<td>0,29</td>
<td>0,33</td>
<td>0,43</td>
</tr>
</tbody>
</table>

*Source: Equities ($250mm portfolio) - ITG transactions cost model (Dec 31, 2013) Fixed income – Barclays LCS for US Credit TCX (Dec 31, 2013)

**Source: Russell Forecasts for Excess Return, Tracking Error, and Alpha-Beta Correlations - May2013*
Foreign Exchange can have a significant effect

<table>
<thead>
<tr>
<th>Given Currency</th>
<th>Alternate Currency</th>
<th>Total IS</th>
<th>% IS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUD Australian Dollar</td>
<td>AUD Australian Dollar</td>
<td>(117)</td>
<td>0.00%</td>
</tr>
<tr>
<td>CAD Canadian Dollar</td>
<td>CAD Canadian Dollar</td>
<td>144</td>
<td>0.00%</td>
</tr>
<tr>
<td>EUR Euro</td>
<td>EUR Euro</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>GBP British Pound</td>
<td>GBP British Pound</td>
<td>(10,465)</td>
<td>-0.02%</td>
</tr>
<tr>
<td>HKD Hong Kong Dollar</td>
<td>HKD Hong Kong Dollar</td>
<td>(2,398)</td>
<td>0.00%</td>
</tr>
<tr>
<td>JPY Japanese Yen</td>
<td>JPY Japanese Yen</td>
<td>7,495</td>
<td>0.01%</td>
</tr>
<tr>
<td>KRW South Korean Won</td>
<td>KRW South Korean Won</td>
<td>(289)</td>
<td>0.00%</td>
</tr>
<tr>
<td>USD US Dollar</td>
<td>USD US Dollar</td>
<td>(179,746)</td>
<td>-0.34%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>(185,376)</td>
<td>-0.35%</td>
</tr>
</tbody>
</table>

Source: Russell Investments, Bloomberg – Actual Transition Event September 2014.

For illustrative purposes only.
Why should you use a transition Manager?

**Without Transition Manager**
- Performance holiday
- Potential for information leakage
- No holistic risk management
- Potential loss of value through less competitive execution
- Less detailed reporting and insight into process, performance and fees
- No dedicated project management processes introducing additional risk

**Transition Manager**
- Accountability for performance
- Confidentiality of flow
- Risk managed implementation
- Protection of value for asset owner
- Transparency of process, performance and fees
- Project Management
Managing liquidity — cash equitization

- Cash has a limited role in a long-term policy, yet is a necessary aspect of plan management
  - Purchases and redemptions
  - Benefit payments
  - Capital calls and distributions

- We reduce the unintended impact of cash by overlaying with futures
  - Captures desired risk premium
  - Provides immediate liquidity
  - Reduces transactions costs

For illustrative purposes only
Cash Equitisation
Overlaying frictional cash can have a positive impact on performance

Overlaying 2% cash to target exposure results in a gain of 13bps (£2m) p.a.

Source: Russell Investments. Analysis conducted using data from Jan 1994 to December 2013. Assumed plan asset value: £1.5bn. Target asset allocation used: 32% Global Equity (MSCI World), 42% Global Fixed income (BarCap global agg, unhedged), 26% Alts (HFRI Fund Weighted Hedge Fund Index). Average cash level assumed was 2%. For illustrative purposes only. Does not represent any actual investment. Indexes are unmanaged and cannot be invested in directly. Data is historical and not a guarantee of future results.
Portfolio Rebalancing
Significant reduction in Tracking Error relative to SAA

A derivative overlay could reduce your plan level volatility relative to SAA by more than 75%

Cost of more frequent rebalance c.69% lower than cost of physical rebalance

Source: Russell Investments. Analysis conducted using data from Jan 1994 to December 2013. Assumed plan asset value: £1.5bn. Target asset allocation used: 32% Global Equity (MSCI World), 42% Global Fixed income (BarCap global agg, unhedged), 26% Alts (HFRI Fund Weighted Hedge Fund Index). Assumptions: 5% policy rebalance range, 50bp futures/total exposure rebalance range) For illustrative purposes only. Does not represent any actual investment. Indexes are unmanaged and cannot be invested in directly. Data is historical and not a guarantee of future results.
## Cost comparison – Physicals vs Derivatives

<table>
<thead>
<tr>
<th></th>
<th>S&amp;P 500 Equities</th>
<th>MSCI ACWI</th>
<th>Barclays Agg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Est. trading costs for physicals (bp)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>6,5</td>
<td>13,8</td>
<td>17</td>
</tr>
<tr>
<td>ETF cost</td>
<td>4,5 (9,45 mgmt fee)</td>
<td>21,94 (34 mgmt fee)</td>
<td>67 (24 mgmt fee)</td>
</tr>
<tr>
<td>ETF tracking error</td>
<td>1,34%</td>
<td>3,27%</td>
<td>1,08%</td>
</tr>
<tr>
<td>Derivative used</td>
<td>S&amp;P500 futures</td>
<td>TR Swaps/ Basket of futures</td>
<td>TR Swaps/ Basket of futures</td>
</tr>
<tr>
<td>Estimated trading costs for derivatives&lt;sup&gt;2&lt;/sup&gt;</td>
<td>3,6</td>
<td>7,2</td>
<td>1,9</td>
</tr>
<tr>
<td>Estimated tracking error</td>
<td>0,5 bp</td>
<td>Very low with swaps, slightly higher with futures</td>
<td>Medium (no credit available with futures)</td>
</tr>
</tbody>
</table>

- <sup>1</sup> €50mio trade one-way
- <sup>2</sup> Annual – includes futures rolls

Source: Russell Investments - Hypothetical example for illustrative purposes only
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