RUSSELL INVESTMENTS RESEARCH

Portfolio emulation

The next evolution in portfolio implementation to reduce costs and improve portfolio returns with centralized portfolio management

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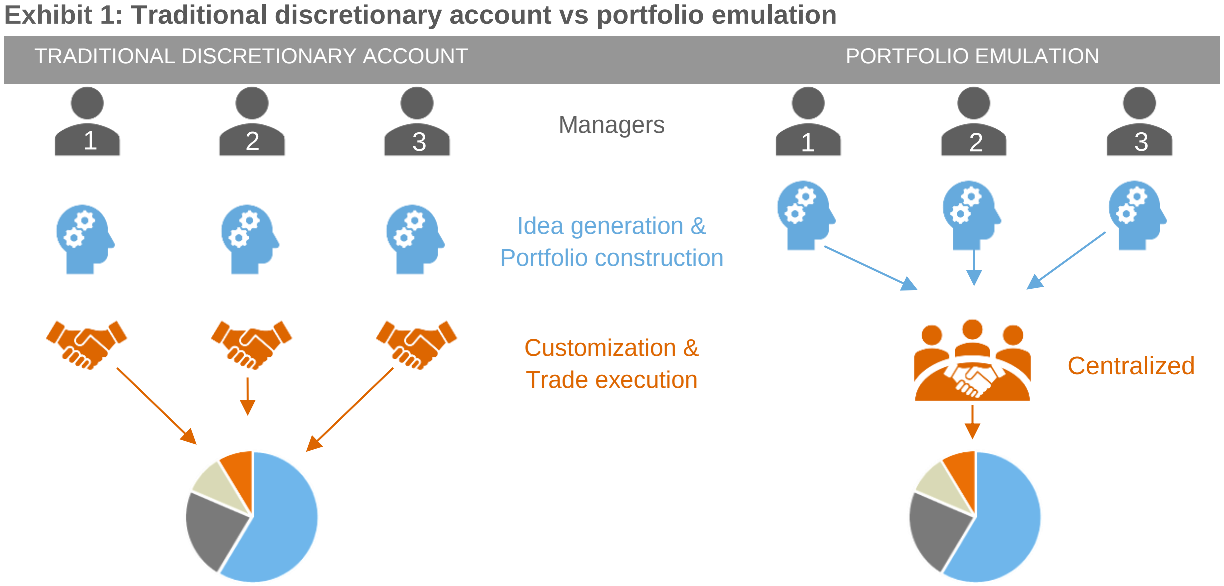
By reducing costs to deliver better performance outcomes, portfolio emulation is a key innovation for active institutional investing. The emulation strategy is designed to deliver improved investment performance, but also provides investors with more control over the implementation process while reducing many of the burdens of the standard discretionary account structure.

What is portfolio emulation?

Portfolio emulation is an implementation model specifically designed to improve investing outcomes through the centralization of investment implementation. Rather than using separate discretionary account structures, portfolio emulation seeks to harness manager insights and consolidates them into a single portfolio.

Exhibit 1: Traditional discretionary account vs portfolio emulation



Source: Russell Investments

Key benefits for investors

The goal of portfolio emulation is to track the performance of single or multiple model portfolios in the same asset class within a single account, which includes the following benefits:

Eliminating offsetting trades

In the traditional discretionary account structure, you can observe the conflicting buy and sell transactions of the same securities by the individual investment managers. In a portfolio emulation strategy, however, the centralized approach seeks to avert underlying managers' execution of offsetting trades (i.e., trades that add costs without materially altering the composition of the fund's holdings). Managers buying and selling the same security incur negative results from transaction costs and incur unnecessary realization of capital gains for taxable accounts.

Our portfolio emulation research found that managers may not trade against each other at exactly the same time in exactly the same securities. However, wait a day, a week or a month – and the amount of cross-trading increases dramatically. The emulation process of netting managers' offsetting trades results in a meaningful reduction in portfolio turnover (relative to the traditional fragmented discretionary account structure). The emulation process typically implements once a week, or on a fortnightly basis, to benefit from the managers' insight, while minimizing transaction costs and custody fees.

Eliminating trivial positions and inconsequential trades

Small positions and trades may be meaningful to an individual manager; however, in a large institutional investor's portfolio they may have an insignificant impact. By eliminating small holdings and trades, the portfolio's custody fees and trading costs are reduced with virtually no impact on the overall pre-cost return expectation of the portfolio.

Additional benefits of emulation relative to traditional discretionary accounts include:

- Reduced operational costs with centralized custody and accounting, particularly for international mandates where account registrations can be burdensome with time delays
- Potential for reduction in headline active management fees
- Access to a broader range of managers that might otherwise have either been prohibitively expensive or only available for larger mandates
- Simplified regulatory reporting (e.g., MiFID[1] II reporting) in some jurisdictions
- Pre-implementation analytics and risk management at the total fund level, providing actionable insight before implementation
- Taxable clients can have tax-efficient strategies employed in the centralized emulation account level, minimizing the tax implications of ever-changing manager insights
- Transparency and control of portfolio trading costs

These cost reductions provided by emulation strategies are designed with the goal of providing ***superior performance outcomes*** than the traditional fragmented discretionary account model. They also offer the investor an additional level of customization (e.g., ESG[2] filters) that is not easily implemented within a traditional structure.

How are emulation strategies evaluated?

Emulation strategies are measured by evaluating the performance of the actual account relative to the transaction free target composite of all manager model portfolios. Then the turnover reduction and subsequent cost savings from the emulation strategy are incorporated into the comparison to quantify the net performance differential between the model portfolios and the actual emulation account. Additionally, the tracking error is monitored to ensure that the emulated portfolio is closely tracking the target composite.

Exhibit 2: Excess returns versus target composite

	3-YEAR
Excess returns vs. Target composite (post cost)	0.63%
Holdings alpha (emulated portfolio – transaction free model portfolios)	-0.07%
Implicit/explicit cost savings (cost reduction with emulation relative to discretionary account management)	0.70%
Turnover reduction (reduction in value traded with emulation relative to discretionary account)	-38%
Tracking error (emulation portfolio vs target model composite)	**0.59%**

Source: Russell Investments. For illustrative purposes only.

[1] MiFID II is a legislative framework instituted by the European Union to regulate financial markets. It replaces MiFID which was a European Union law which standardizes regulation for investment services across member states of the European Economic Area. Source: Investopedia.com

[2] ESG stands for environmental, social and governance factors considered in responsible investing.

Russell Investments' experience and track record with portfolio emulation

Russell Investments pioneered multi-manager funds in the 1980s, and we believe this heritage gives us a unique advantage in creating an emulation solution. We combine our knowledge and understanding of investing with our global implementation capabilities to create a unique emulation process that our clients can employ, which seeks to improve investment results. With nearly 13 years of emulation research and 10 years of client experience, Russell Investments' emulation strategy strives to consistently provide:

- Reduced turnover
- Reduced total commissions
- Reduced spread and impact
- Reduced service provider fees
- Improved after-tax outcomes
- Preservation of manager insights

Emulation can be efficient in all equity asset classes, from U.S. equity to emerging markets. For example, higher transaction cost markets (e.g., small-cap, U.K. equity and emerging markets) have experienced significant savings thanks to the emulation model cost and fee structure. Future improvements in market structure and technology will allow almost all asset classes to benefit from emulation strategies. As of June 2018, Russell Investments covers 91 unique external managers and 245 model-driven manager mandates in our emulation platform.

Who manages the relationships with the various investment managers?

The investment managers can be engaged by Russell Investments on behalf of the client. Or, the client can directly engage with the investment managers and request that their mandate be implemented via the emulation process. Some investors prefer that Russell Investments manage the individual investment managers, while others choose to directly contract with their managers. Either option works for the emulation process.

What's the cost of an emulation program?

A basis point asset management fee is received by Russell Investments for the emulation platform. This fee will vary depending on the size and type of mandate. In general, the fee is much lower than active manager fees and should provide the investor with a net cost benefit (when all the savings of emulation are compared to the emulation fee).

Why should investors consider adopting the emulation strategies?

- The potential for improved performance – The improved performance potential can be compelling arguments to move to an emulation investment process; however, there are several other factors investors should consider when contemplating if emulation is the right strategy for them.
- Managers' intra-day trading generally has added little value – The most frequent argument against emulation is that investment managers add value through intraday trading of portfolios, and the emulation process prevents managers from making "fast-twitch" decisions on the portfolio. Russell Investments researched this argument[3] and found that any additional value created by investment managers with intraday trading was 9 bps compared to the cost savings effects of the emulation process of 27 bps.[4] Russell Investments has a long heritage of evaluating managers' trading capabilities. We have consistently found during the period examined that the costs of traditional discretionary account exceeded any value added through manager trading acumen.
- Attitudes are changing as the regulatory burden increases – Additionally, investment managers' attitudes on trading are changing, particularly with MIFID II regulatory changes that are now affecting trading structures around the globe. Bundled research and execution have come under scrutiny and the economics of internal trading desks have become less attractive for investment managers. With advancements in technology, we believe the properties of emulation are becoming even more appealing for investors.
- Operational burden is reduced – Lastly, one major benefit for investors is the reduced operational burden relative to the traditional fragmented discretionary account structure. For instance, setting up international sub-accounts only once regardless of managers that come and go. Envision never needing to set up a transition account, transfer securities between managers or resolve reconciliation issues between the custodian and investment managers. This reduction in required resources provided by the emulation process allows investors to focus resources on other higher value-added priorities that could improve performance results.

Russell Investments portfolio emulation case studies

The following are real-life examples of emulation strategies Russell Investments has managed on behalf of clients since June 2014. The emulation strategies have

[3] Source: Pritamani, M. (2010). Emulating multi-manager equity portfolios," *Russell Investments Research*

[4] Past performance is no guarantee of future results. Performance is gross of fees. If fees were applied, the performance would have been lower.

had net performance improvements (inception-to-date or ITD) of:

- Emerging market equities — 48 basis points
- Global equities — 17 basis points

Exhibit 3: Emerging Markets global case study example[5]

Emulation portfolio versus target composite (annualized)

	ITD	3-YEAR	2-YEAR	1-YEAR
Excess returns vs. target composite[6] (post cost)	0.48%	0.63%	0.54%	0.40%
Holdings alpha	-0.18%	-0.07%	-0.27%	-0.31%
Implicit/explicit cost savings	0.66%	0.70%	0.81%	0.71%
Commissions per annum	*0.05%*	*0.05%*	*0.06%*	*0.05%*
Spread & impact	*0.61%*	*0.65%*	*0.75%*	*0.66%*
Turnover reduction (relative)	-36%	-38%	-42%	-43%
Tracking error (emulation portfolio vs. target composite)	**0.61%**	**0.59%**	**0.62%**	**0.25%**

Four model portfolios, inception June 12, 2014, ending December 31, 2017. Case study based on U.S. funds. Past performance is no guarantee of future results.

Exhibit 4: Global Equity case study example[3]

Emulation portfolio versus target composite (annualized)

	ITD	3-YEAR	2-YEAR	1-YEAR
Excess returns vs. target composite[6](post cost)	0.17%	0.15%	0.06%	0.10%
Holdings alpha	-0.15%	-0.21%	-0.33%	-0.17%
Implicit/explicit cost savings	0.32%	0.36%	0.39%	0.27%
Commissions per annum	*0.07%*	*0.08%*	*0.10%*	*0.07%*
Spread & impact	*0.25%*	*0.28%*	*0.29%*	*0.19%*
Turnover reduction (relative)	-33%	-32%	-41%	-46%
Tracking error (emulation portfolio vs. target composite)	**0.36%**	**0.36%**	**0.36%**	**0.24%**

Six model portfolios, inception June 10, 2014 ending December 31, 2017. Case study based on U.S. funds. Past performance is no guarantee of future results.

Why consider portfolio emulation now?

Apart from the material cost reduction benefits that emulation can deliver at a time when the asset management industry is under enormous pressure to reduce costs, the best way to understand the question, “Why now?” is to examine the philosophy of emulation relative to the traditional fragmented discretionary account structure. Imagine an alternative universe where the first institutional investors implemented a centralized emulation model and thus emulation became the standard approach. Now envision the introduction of a concept to break a portfolio into fragmented parts, which increases costs, operational burden and complexity, and all this to allow investment managers to add value through intraday trading. Although, there may be some value in discretionary manager trading; the additional costs of a fragmented implementation can overwhelm the additional return potential of trading in a vacuum. We strongly doubt the fragmentation discretionary account strategy would have a fighting chance to displace emulation in any universe. The question is better stated, “Why ***not*** now?” Maybe the discomfort of breaking with tradition will prevent some investors from moving to portfolio emulation, but remaining comfortable will come with a cost.

“*The arrogance of success is to think that what you did yesterday will be sufficient for tomorrow.” – William Pollard*

[5] Case studies provided for discussion purposes only. Individual client results will vary based on individual circumstances and market events. There is no guarantee that all clients will experience the same positive results.

[6] The target composite (post cost) represents the return of the collective model portfolios adjusted for transaction costs.

ABOUT RUSSELL INVESTMENTS

Russell Investments is a global asset manager and one of only a few firms that offers actively managed multi-asset institutional investors, financial advisors and individuals working with their advisors—using our core capabilities that extend across capital market insights, manager research, asset allocation, portfolio implementation and factor exposures to help investors achieve their desired investment outcomes.

FOR MORE INFORMATION:

Contact Russell Investments at **866-737-2228** or **russellinvestments.com/ca**

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