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Transition Management

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CONTRIBUTORS
Mika Malone, CAIA
Frank Benham, CFA, CAIA
Bradley Gretsch

When an institutional investor adds a new asset class, rebalances, or hires or fires a manager, assets will need to be moved from one or more portfolios to other, potentially new, portfolios. These assets may stay within the same asset class (e.g., when one small cap stock manager is replaced with another) or they may move across asset classes (e.g., when a new allocation to TIPS is being funded from equities). Increasingly, institutional investors use the services of "transition managers" to conduct these portfolio transitions. Transition managers provide professional management of the transition of assets.

History of transition management

Transition management evolved in the 1980s and early 1990s, when some investment managers utilized trading services offered by large brokerage firms to complete portfolio transitions. Transition management has since emerged as an effective way to rebalance portfolios and change asset allocations. Brokers and large index fund managers dominate the current transition management market.

The industry developed from a small group of firms that used simple models to estimate and control risk during the transition to a much larger group that use complex and detailed models to analyze and manage overall portfolio risk. The understanding that implicit trading costs[1] largely determine performance during transitions has shifted focus away from simply cutting commission fees and bid-ask spreads.

[1] Please refer to the appendix for a definition of the term.

Types of trading

Two different types of trading are used in transition management: agency trading and principal trading. In the most common type, agency trading, a broker executes the needed transactions to his best ability, and the institutional investor bears the risk of the outcome. This method is often less expensive than a principal trade, but there is also more risk involved because transaction costs can be higher or lower than the average.

In a principal trade, the executing broker accepts the execution risk, by guaranteeing a total value to the client for all trades executed. This allows for a pre-defined total transaction cost, and the transition is often completed in one day. However, with principal trading, there is the risk of conflicting interests if transition managers use

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their own brokerage organizations to trade. When acting as a fiduciary, under ERISA law, transition managers cannot make principal trades through their own affiliate brokers, so they usually will not perform trades on a principal basis.

Thus, the institutional investor should choose the type of transition on a case-by-case basis determined by their objectives and risk tolerances at the time the transition needs to be completed.[2]

[2] Fogg, Fred, "Choosing the Right Method for Implementing a Transition" January 2004.

Benefits of transition management

Whether transferring assets to a new manager, liquidating assets from a terminated manager, or simply re-allocating fund assets, the potential benefits associated with utilizing a transition manager are numerous. Note that transition management does not apply to most alternative asset portfolios including private markets or hedge funds, as these assets are not publicly traded.

Frequently, transition management moves marketable securities from a "legacy portfolio," from which a manager has been terminated, to a "target portfolio," in which the new manager will take over. The outmoded model for this type of transition was to instruct the legacy manager to sell all their securities, and transfer the resulting cash to the new manager to invest. The key shortcomings of this method are that commission costs can be high, opportunity costs may be massive, and trade execution costs will be significant. In addition, it may not be appropriate to instruct a terminated manager to continue to trade assets.

> A good transition manager conducts a pre transition analysis of the anticipated costs, liquidity concerns, market impact, and opportunity costs associated with each transition.

The first failing results from the high volume of trades that occurs as an entire portfolio of securities is sold, and then an entirely new portfolio of securities is purchased. There are a host of problems associated with a high volume of trades, with pooled fund transaction fees, custody fees, and taxes and exchange fees being among the most important explicit costs. Additionally, transition managers often charge a fee based on the number of securities traded. The second risk, opportunity costs, relates mostly to the potential for the investor to miss a market gain while these assets are

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temporarily in cash. Finally, because the outgoing manager may hold no loyalty to a client who has terminated their services, they may not work as diligently to seek best execution on their trades.

Using a third party transition manager can reduce or eliminate these risks. For example, the transition manager typically transfers as many assets "in-kind" as possible. In-kind assets are found in the legacy portfolio and are needed by the new manager to create the target portfolio; therefore, they can be transferred directly to the new portfolio. Cross-trading of securities by the transition manager between the institutional investor's account and other accounts also avoids transaction costs while maintaining market exposure. Further, the transition manager seeks to minimize market impact while conducting external trades, thus ensuring that opportunity costs are minimized. Finally, a transition manager is more likely to search for the best execution than the terminated manager, as their performance during the transition is being scrutinized. This is especially the case when a transition manager is willing to take on specific fiduciary responsibility for the transition, offering a layer of added protection.

The value that a transition manager adds also includes the expertise of being able to engage in better timing execution and to ensure a transition that is timely, cost efficient and controls unnecessary risk.[3] A good transition manager conducts a pre transition analysis of the anticipated costs, liquidity concerns, market impact, and opportunity costs associated with each transition. Transition managers can also prepare a post-trade analysis that outlines the actual transition costs, and compares them to the estimated costs in the pre-trade analysis. The post-trade analysis should also evaluate the other objectives of the transition, such as market exposure and the duration of the transition period. Ideally, the numbers match closely, and the fund has achieved a smooth transition in which the savings outweigh any fee paid to the transition manager, the fund maintains full market exposure, and has minimized risk.

[3] Morris, Margaret, "The Burgeoning Business of Transition Management" *Pensions & Investments*, January 2004 (pp. 4-5).

Risks involved in transition management

Most large transition management firms disclose legacy portfolio holdings to brokers in a "blind" setting, which allows brokers to see, ahead of time, only the security *types* being traded, not the specific securities to be transitioned. This control of information helps prevent brokers from using knowledge of a future transition to trade for their own benefit, or for the benefit of other clients. Nonetheless, there remains a risk of information leakage between the transition team, traders, and crossing networks, especially when a transition manager acts as a principal. For this reason, many institutional investors prefer that a transition manager take on a legal fiduciary responsibility, and act as an agency-only trader.

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Even when acting as an agency-only trader, transition manager mandates are particularly vulnerable to conflicts of interest. Among the myriad risks noted in the Financial Conduct Authority's 2014 review of Transition Management, all stem from a lack of transparency and a transition manager's attempt to increase their margins. Per industry standards, investors compensate transition managers for the number of transactions they perform. Thus, transition managers may seek to increase the volume of trades by not looking for substitution opportunities that are in the client's best interests. Additionally, transition managers may direct the transactional flow from transition management mandates towards particular execution venues (e.g. multi-lateral trading facilities or dark pools) in which they have a commercial interest. Not only are there conflicts of interest between the transition manager and a given institutional investor, internal crossing can give rise to conflicts of interest between different investors as well. If trading is delayed to allow the buy and sell orders in the same securities to be matched (crossed) with another client, this may result in a worse price than could have been obtained in the open market.

Quantifying value added

How does an institutional investor know whether their transition manager has done a good job? Many firms use different approaches to measuring performance, and it is key for an investor and advisors to be able to measure the performance of the portfolio effectively during the transition.

Transition managers usually prepare a pre-trade analysis and estimated schedule for a client along with the price proposal. These estimates give an indication of the ease with which transition managers feel they can trade. In addition, when using a pre-defined performance benchmark, a transition manager generally seeks to minimize the transition period, as a long transition period increases the risk of exposure to large price movements. With illiquid securities, there can be a lag in selling or buying assets. If transition managers are transparent in their reporting, investors can prudently monitor trading.

Many transition managers use a calculation called "implementation shortfall," which compares the actual value of the portfolio to a theoretical value if the transition had occurred instantaneously and without trading costs. It is defined in basis points of the performance of the target portfolio versus the legacy portfolio during the transition period. A point in time must be chosen when the portfolio is officially "turned over" to the transition manager, and at that point, performance calculation begins. However, there is room for manipulation with this approach, as every manager has a perspective on which day and time are best from which to begin calculating transition performance.

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Some transition management firms have been encouraging the industry to adopt the "T Standard" for measuring performance during transitions. The T-Standard uses the implementation shortfall method, while specifying the closing price on the day *before* the transition begins as the starting point for measurement.[4]

Naturally, not all managers are comfortable with a hard date on which performance has to begin. The T-Standard has become the most prevalent standard by which investors measure their transition managers' performance. Almost every transition manager embeds the principles of the T-Standard into their Transition Management Agreements (TMAs). As of 2013, 86 percent of institutional investors required that a TMA always be in place to govern the transition.[5] The increasing prevalence of TMAs and thus the T-Standard has helped assuage institutional investors' fears of conflicts of interest and have instilled them with confidence in their transition manager's ability to deliver best execution. As a result, 75 percent of investors in 2017 either "mostly or completely trust" the industry, a notable three-fold increase from 2011.[6]

[4] Crawford, Gregory, "Measurement Mixed Bag for Transition Management Firms" *Pensions and Investments*, May 3, 2004 (p. 31).

[5] PLANSPONSOR. 2013 PLANSPONSOR Transition Management Survey. 2013.

[6] Chief Investment Officer. 2015 Transition Management Survey. October 2015.

The table and figure below illustrate how a transition manager might evaluate and present their implementation shortfall to a client. In this example, we can see the performance slippage, as measured by the actual return of the portfolio, compared to the target portfolio under the assumption that all trading had occurred instantaneously and without any costs. Although the value of all the portfolios waxed and waned over the course of trading, the implementation shortfall stayed within a range of 0 to 50 basis points due to the costs of trading, market impact, bid ask spread, FX spread costs, taxes and fees, and opportunity costs. After this analysis, a transition manager will likely go more in-depth to break out the attribution of all these factors to the overall implementation shortfall.

TABLE 1

Mock Implementation Shortfall Summary

	Starting Value	Ending Value	Gain / Loss	Performance
Actual Return	500,000,000	502,850,000	2,850,000	0.57%
Target Portfolio	500,000,000	505,000,000	5,000,000	1.00%
Legacy Portfolio	500,000,000	505,750,000	5,750,000	1.15%
Implementation Shortfall (Target Return—Actual Portfolio Return)				0.43%

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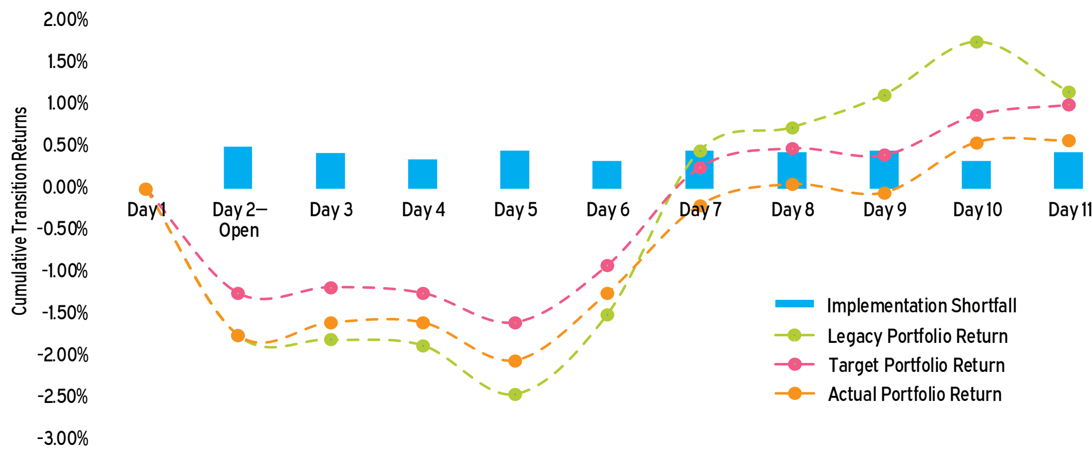

FIGURE 1
Mock Implementation Shortfall Summary

Another method of evaluating transaction costs involves the so-called Volume Weighted Average Price approach, or VWAP. In its basic form, VWAP is a simple calculation: add up the dollars traded for every security transaction (price times shares traded) and then divide by the total shares of that security traded for the day

To measure trading costs, VWAP again makes it simple: if the price of a purchase falls below the VWAP for the day, it was a good trade; if the price was higher, it was not, and vice versa for sales.[7] The VWAP method does not take into consideration several implicit factors, such as determining *best execution*[8] for a trade at a given point in time during the day or across days. Additionally, VWAP is an inadequate measure of performance if a given trade dominates market volume, as it could potentially be gamed. Recently, there has been a transition away from the use of VWAP in measuring the performance of a transition manager, with only one out of five institutional investors selecting it is their benchmark to gauge transition costs.

Fixed income transitions differ considerably from equity transitions. As bonds generally do not trade on an exchange, compared with equities there is less liquidity and price discovery. The ability of transition managers to call upon a vast array of liquidity providers and having access to the right platforms and technologies has increased their value-add in transitioning fixed income portfolios. For this reason, some transition managers focus solely on this sector. The typical method of evaluating fixed income transition costs is to compute a total cost estimate that includes the bid/ask spread for the portfolio, an estimate of market impact during the transition, opportunity costs, and occasionally, an explicit fee. Unless an agency trader is used, it is almost impossible to evaluate how much a transition manager/broker profits on a fixed income transition.

Usually, a fixed income transition manager's pre-trade analysis will identify which of the bonds held are very liquid, somewhat liquid, or relatively illiquid, and provide a trading cost estimate for each group.

[7] "Volume Weighted Average Price: Evaluation or Evasion?" PlexusGroup.com. Commentary #59. August 1999.

[8] Best execution is an SEC mandate that legally requires brokers to evaluate the order they receive from all customers in the aggregate and periodically assess which competing markets, market makers, or electronic communication networks offer the most favorable terms of execution. Additionally, brokers must consider the opportunity to get a better price than what is currently quoted, the speed of execution, and the likelihood the trade will be executed.

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Regardless of the performance evaluation method used, it is important that all transactions be well-documented, and that the transition manager has a clear understanding of the performance standard expected. With these expectations in place (and ideally, in writing) before a manager is hired, then, after the transition is complete, the investor will have a complete record of the process, including the costs to their portfolio over that period.

TABLE 2
Explicit vs. Implicit Costs

Explicit Costs	Implicit Costs
Commissions	Bid / Ask Spread
Taxes	Market Impact
Exchange Fees	Foreign Exchange
Custodial Fees	Timing Delays Information Leakage Opportunity Costs (Missed Trades) Adverse Selection / Price Movement

When to use transition managers

Investors should decide to use a transition manager on a case-by-case basis. They should use transition management only for specific and defined situations, after weighing the costs and benefits of hiring a transition manager. Some factors to consider when determining whether or not to use a transition manager include the market value of the total transition, complexity of the transition, and "out-of-market" risk tolerance of the institutional investor. The following are examples of when a transition manager is largely not used.

- → Investments held in commingled funds or mutual funds are generally not eligible for transition manager services as investment managers usually require cash for investment and return cash upon redemption.

- → Fixed income securities are less liquid than equities, as they typically do not trade on exchanges. Depending on the number of issues and the market values of the individual holdings, it may not make sense to utilize a transition manager. However, with defined benefit plans de-risking at an increasing rate, some firms are specializing in solely handling fixed income transitions for clients. The rise of technology in bond trading has allowed transition managers to have access to higher levels of liquidity in the bond market than a client could on their own. An important caveat to note is that the lack of fixed income inventory held by banks, due to their high regulatory capital cost, still proves a challenge for transition managers who are constrained by time and balancing risk. As such, the value-add of a given transition manager should be evaluated on a case-by-case basis depending on the characteristics of the fixed income portfolio.

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An alternative to using a transition manager is to transition all assets "in kind" from the legacy manager to the new manager. The new manager will know which, if any, of the current holdings they will continue to hold, thus there is no need for the legacy manager to sell the securities and the new manager to "re-buy" them. The new manager also has a greater incentive (compared to the terminated manager) to achieve best execution on the trades, as interests are aligned.

Defined benefit transitions vs. defined contribution transitions

Defined benefit (DB) plans are still the largest user of the transition management industry, and as a result, most of the preceding information applies to them. However, the use of transition managers in Defined contribution (DC) plans is expanding in tandem with the ubiquity of Defined contribution plans offered by corporate pensions. While DC and DB transitions share many of the same fundamental objectives, they vary in the challenges encountered. In DC transitions, the transition manager cannot directly take control of the assets. Instead, it works through a platform provider who acts on behalf of the transition manager. The insertion of an intermediary in transactions, which rely on quick reactions to changes in market conditions, greatly complicates and slows down the transition. As a result, the planning process for DC can take upwards of three to six months with most of the emphasis being on project management. While the logistics and planning are more intensive in DC transitions, the transitions themselves are often more straightforward. Rather than physically trade the assets, transition managers coordinate trading in unitized funds to build a new target structure. As a result, the explicit fee structures for DC plans fall short of DB plans, but still share the same implicit costs and risks noted earlier.

With the general shift from DB plans to DC plans offered in the marketplace, regulatory scrutiny has followed suit. Service level agreements govern DC plans, which are often more involved and restrictive than agreements in DB plans. In a DC plan, individuals must be able to access their accounts and trade freely, so end of day market values are generally a requirement of Transition Management Agreements for DC transitions. The added level of required transparency helps diminish implicit costs associated with transition management, resolves potential conflicts of interest, and keeps the managers accountable for acting in the best interest of their clients.[9]

[9] Global Investor Group. Transition Management Guide 2018. October 2018.

Selecting transition managers

While the industry was previously large and heterogeneous, there has been increased concentration at the top with transition managers. Clients recognize that in an industry with thin margins, the larger firms benefit from economies of scale and can provide services that are more comprehensive. In the UK, The Financial Conduct Authority (FCA) found that the top five firms reviewed accounted for "68% of transitions by number and nearly 80% by volume of assets traded."[10] Since this report

[10] Financial Conduct Authority. Transition Management Review. February 2014.

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in 2014, the industry consolidated further, with the total number of firms offering transition management services cut in half in the following four years.

Effective transition management requires good communication among the investor, the transition manager, and the custodian. Therefore, it is important to hire a transition manager with superior communication skills. An institutional investor can evaluate communication skills by checking references, polling industry participants through surveys, and by sending out Requests for Proposal.

An investor should seek several elements in a transition manager agreement, including: a clear benchmark, stated explicitly in the transition agreement, along with how transition costs will be monitored; a disclosure of all profits and spreads from proprietary trading; a statement that a transition manager will only act as an agency trader (unless the client has directed otherwise); and any compensation received from outside brokers. By evaluating transition managers carefully, and ensuring that the agreement discloses all pertinent information in, institutional investors ensure that they have fulfilled their fiduciary duty to participants by choosing the most capable and suitable transition manager.

All else being equal, costs are an important factor, but choosing a transition manager with the highest quality reporting and track record should be considered first.

Costs are generally comparable among the larger transition managers, with internal crossing providing a virtually free method of trading, external crossing incurring commission costs of one quarter of a cent to one cent per share, open market domestic trades costing approximately two cents per share, and international trades averaging commissions of four cents per share. However, based on the needs of each investor, including whether fiduciary responsibility and, therefore, agency-only trading is required, costs (and services offered) can vary. Generally, transition managers will quote no explicit "fee" associated with a transition, as they make the majority of their revenues from the trades. Commission based compensation make up the vast majority of the fee structure for transitions (~70%), while flat fees alone only make up 15% of the total.[11]

[11] Chief Investment Officer. 2016 Transition Management Survey. October 2016.

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When comparing bids for transition management services, it is important to know the investor's most sensitive and specific requirements. For instance, is there a strong preference that no principal trading take place? Alternatively, is hiring a manager who accepts fiduciary responsibility required? All else being equal, costs are an important factor, but choosing a transition manager with the highest quality reporting and track record should be considered first.

TABLE 3

Comparison of Transition Managers[12]

	Russell	State Street	Northern Trust	CITI	Macquarie	Abel Noser
U.S. Equity Assets Transferred (MM)	$323,753	$50,212	$32,493	$185,855	$15,029	$16,440
Non U.S. Equity Assets Transferred (MM)	$311,804	$86,609	$26,125	$319,918	$19,509	$2,220
Fixed Income Assets Transferred (MM)	$87,791	$19,869	$9,761	$90,286	$0	$4,360
Total Number of Transitions	691	378	220	1,131	119	181
Average Pre-trade Cost Estimate (in bps)	-36.50	24.81	9.68	19.20	25.40	17.60
Average Post-trade Actual Cost (in bps)	38.90	38.91	10.51	19.30	26.20	16.00
Percentage of Transitions Falling Outside of Expected Range of Cost	6.1%	6.1%	1.3%	3%	0%	2%

[12] Data as of 12/31/2017.

Some firms accept the shortfall risk (the difference between the "perfect" transition, with no costs, and the actual costs associated with an investor's transition) and guarantee zero shortfall for a set fee. However, this fee is, more often than not, higher than the industry standard, and it still does not account for the problem of choosing a start date for performance evaluation. In addition, the fee could exceed the portfolio's implementation shortfall in the end. Other managers will guarantee a specific VWAP, but again, this may not be the most cost-effective option, as the manager receives a pre-determined fee regardless of whether best execution was achieved.

Creating an open-ended contract with a transition manager is often the most cost-effective and expedient way to prepare for the future transition needs of an institutional investor. Finding a transition manager the investor is comfortable with, hiring them for a particular transition need, and then keeping them "on call" for future transitions, provides stability for the investor. This provides Trustees the knowledge that, if they need to terminate a manager suddenly, the investor retains a transition manager with a contract in place.

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Investors should treat searches for transition managers like any equity or fixed income manager search. For instance, hiring a single transition manager to oversee all future transitions might be prudent for one investor, while more complex investors with multi-asset class transitions, terminations, and restructurings might hire more than one transition manager.

Summary and recommendation

The use of transition managers in the institutional marketplace is growing for many reasons: they add a layer of fiduciary protection for Trustees, control risks, and minimize costs when consolidating portfolios or restructuring assets.

Investors should make the decision to use a transition manager on a case-by-case basis, depending on their needs and the liquidity of the portfolios being transitioned. Transition management should be used only for specific and defined situations, after weighing the costs and benefits of hiring a transition manager. In addition, requiring a manager to accept fiduciary responsibility often adds to the expense of the transition, so each situation must be evaluated to determine the level of accountability a transition manager should accept.

When considering the risks associated with transition management, institutional investors should also consider the risks of selling a legacy portfolio, then transferring cash to a new portfolio manager. This traditional method, in many circumstances, has a much higher probability of hurting performance. Transition management has become a viable way to efficiently transfer assets between portfolios, if investors are informed and armed with the necessary tools for comparison and the guidelines within which to evaluate transition managers.

Meketa Investment Group prefers transition managers willing to evaluate transition performance based on implementation shortfall, preferably with the T-Standard as a benchmark, as this is the most comprehensive method of calculating performance, including implicit costs, over the entire transition period.

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Glossary

Agent When acting as agent, a transition manager takes responsibility to act in the client's best interests. The alternative to agency trading is a principal transaction, where the transition manager commits capital to what a client needs to sell and vice versa.

Crossing A "cross" trade is one in which buyer and seller meet without disclosing their intentions to the general marketplace. The confidentiality of a cross trade reduces market impact and eliminates the need to pay some or all of the bid/ask spread. There are many mechanisms for achieving crosses. Many managers' preeminent franchise in equity block trading is founded on the ability to "find the other side" of trading needs without having to release information to the general marketplace.

Derivatives Derivatives can be used to maintain, increase, or decrease exposure to the asset classes included in the transition. Subject to determining the authority, suitability, and willingness of the client to enter into derivatives transactions, a transition manager may use Index Futures, Bond Futures, Swaps, and/or Exchange Traded Funds, depending on anticipated cost versus tracking error and usefulness in providing economic value to the implementation of the overall plan.

Explicit costs Commissions and taxes generated from a portfolio transition. Because they are easily identifiable, one can measure them more easily than implicit costs. These costs can be viewed as the iceberg that sits above the waterline—highly visible, but usually the smaller element of the cost of a transition.

External crossing Transition managers utilize external crossing networks when they are unable (or prohibited) to use internal sources of liquidity (such as in-house index funds, or other client portfolios making trades) to prevent having to sell or buy securities in the open market, at a higher price.

Fiduciary According to the CFA Institute, a fiduciary is defined as a person acting with responsibility on behalf of a client as a trusted advisor, with a duty of loyalty ensuring that reasonable care will be exercised in relation to a client's investment assets, and that all investment actions should be carried out for the sole benefit of the client, in the client's best interest. All investment managers, consultants, and other advisors, such as transition managers, have fiduciary responsibility towards acting in a client's best interests, but not all are willing to be a "named fiduciary", accepting total responsibility for the making (and accepting the outcome) of investment decisions. Some transition management providers, who also are registered investment advisers, may not be a named legal fiduciary with respect to transitions.

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Implementation shortfall Captures all aspects of cost (implicit and explicit) and is, therefore, the most comprehensive measure of performance in a portfolio transition. Assumes that the portfolio restructuring is undertaken instantaneously at the outset and at zero cost. The value of each individual transaction is compared to this benchmark, as are the mark-to-markets for all transactions not completed. The implementation shortfall is the sum of these calculations. While it does not consider what happens to the target securities after they are purchased, it does measure the true cost of getting from point A to point B (at the time point B is reached) for each individual security.

Implicit costs Execution and trading costs associated with a Transition, including:

- → Opportunity cost—refers to the price movement that occurs while executing the transition. It is the cost/gain associated with the time gap in transferring from the legacy portfolio to the target portfolio. This cost can be minimized via transaction optimization.
- → Market impact—the amount by which you move the price of a security by placing an order in the market. Crossing can minimize market impact.
- → Bid/Ask spread—the cost of being a liquidity demander rather than a provider.

Internal crossing Internal crossing refers to the ability of a transition manager to trade securities during a transition through their own internal index funds, or other client portfolios, reducing trading costs because there is no need to buy or sell the security in the open market.

Legacy portfolio Portfolio from which the securities are being transitioned.

Open market trading Open market trading should be thought of as the "round trip" effect of selling a security in the marketplace, at its current market value, and then buying whatever new security one needs in its place, again, in the market. The explicit disadvantage of open market trading is the much higher cost of commissions, with commissions paid for every one security sold and every new one purchased. Open market trades also leave a portfolio vulnerable to opportunity costs and market impact costs.

Pre-trade analysis Specific reports that can be generated prior to a transition that include liquidity, bid/ask, sector, currency, country, theoretical risk bid, exchange, market cap, market impact, performance, style risk, trading pattern and index tracking reports. These reports should estimate the risks involved in the transition. The magnitude of those risks, and their sources, are compared with market impact costs estimated by the transition manager's proprietary models. The pre-trade analysis represents a game plan for the transition that is later used for comparison with actual results.

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Post-trade analysis The total costs of the transaction are measured versus a pre-specified benchmark in a report. Within this analysis, expectations of commissions, taxes, and duties and in many cases bid/ask spreads are compared and contrasted versus the results.

Target portfolio Portfolio to which the securities are being transitioned.

Transparency The transition process that provides for a clear, transparent, and auditable process through every stage and results in a full audit trail.

VWAP Volume Weighted Average Price, or VWAP, is a measure of evaluating transaction costs. Simply put, to calculate the VWAP, add up the dollars traded for every transaction (price times shares traded) and then divide by the total shares traded for the day. Another way of making an approximate VWAP calculation is to take the open, close, high, and low prices for a security for the day, and then divide by four. Some brokers will guarantee a VWAP price to investment managers, but do not take into account the need for timeliness, or best execution, for a particular client.

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