

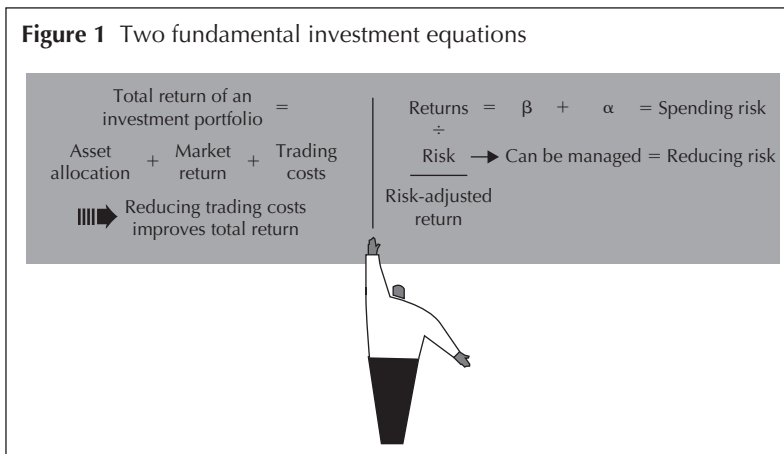
Transition Managers: the Role and Use of Risk and Performance Measurement

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Mellon Transition Management Services

Asset managers are tasked with generating investment returns to fund investor liabilities or to finance investment objectives. Two fundamental equations link the asset/liability and risk/return frameworks within which asset managers operate (see Figure 1). As these equations make clear, investors have only limited control in their quest for reaping investment returns. In the first equation, the investor can construct an asset allocation but has no control over what return the market will deliver. The second equation expands on this investment axiom. Investment returns consist of that which is given by the market (β) and that which the investor earns in excess of the market (α). While the investor cannot dictate β , the investor can invest for α .

It is important to note that merely taking risks is not sufficient to generate returns. If it were that easy, investors could all skydive their way to their investment dreams. Rather, investors allocate their risk budgets to asset managers in order to take *strategic* risks. Each investor has a finite risk budget – one that it must judiciously invest. From this perspective, it is inefficient to take risks where the investor is ill positioned to generate a return. When the investor's asset management line-up is in flux, the investor must take great care not to expose their assets to raw risks for which they will not be compensated.

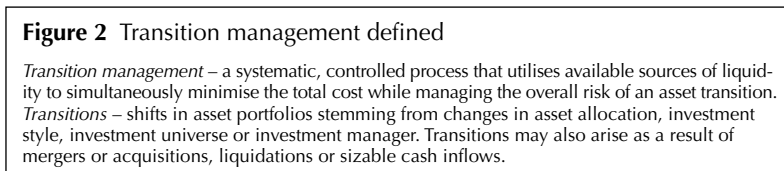


As the Figure 1 indicates, managing costs can enhance returns. Fortunately, the investor can take steps to reduce the drag of investment implementation costs. Likewise, taking measures to reduce risk in certain spheres of the budget means more risk can be spent in others. Fortunately, the investor can take steps to manage the risks associated with implementing investment decisions.

It is with these realisations in mind that institutional investors such as pension plans, endowments and foundations etc employ transition managers.

WHAT ARE TRANSITIONS, AND WHY USE A TRANSITION MANAGER?

Transitions can range from the simple (eg, the termination and hiring of different managers) to the complex (such as a global rebalance across asset classes and involving derivatives). *Global Investor* estimates that US\$2.1 trillion transitioned during 2004. Often cited reasons for transitions are as follows.



- ❑ *Shifts in asset allocation*: a foundation implements an asset allocation shift from 60% equity and 40% fixed income to 50% equity, 10% fixed income and 40% alternative investments.
- ❑ *Change in investment universe*: a corporate pension plan decides to move from domestic equity to global equity.
- ❑ *Change in investment style(s)*: a union pension plan decides to shift from an equal weight allocation between growth and value equity to an overweight allocation to growth.
- ❑ *Change in investment manager(s)*: an endowment terminates an under-performing manager and hires a new manager with a similar benchmark to take over.
- ❑ *Fund flows*: a public pension plan, in order to fund beneficiary payments, needs to raise 3% of the portfolio in cash through liquidating a portion of plan assets.
- ❑ *Merger of plans*: a corporate plan will be consolidating plans following an acquisition.

Regardless of the complexity of the restructuring, plan sponsors are using transition managers with increasing frequency. The consulting firm Greenwich Associates reports (September 2005) that 42% of all plans switching investment managers used a transition manager in 2004 (see Figure 3).

Figure 3 Utilisation rates of transition managers by asset owners

	Percentage of funds using a transition manager		
	Hiring	Firing	Switching
Corporate	33	39	39
Public	47	51	53
Endowment	28	39	39
Taft–Hartley	23	21	21
Average	35	42	42

Source: Greenwich Associates, 2005

While there may be many reasons to initiate an asset transition, none of these reasons are especially new. What then explains the recent surge in use of transition managers? Perhaps the first explanation can be attributed to better research on transactions costs.

Kavajecz and Keim estimated the average realised transaction costs on some 83 different packaged or portfolio trades in mid-cap

ranged from 67.2 to 149.4 bps depending on the trading styles used. Given that the study evaluated trades totalling over US\$7.32 billion, this implies that the total transaction costs may be well over US\$50 million.

Going back to the estimate, high transaction costs are not isolated just to US mid- or small-cap securities. After reviewing trading data from 700 global managers, 1,000 brokers and 42 countries, Domowitz, Glen, and Madhavan estimate that the average transaction cost for an equity trade was about 60 bps. Going back to our estimate of US\$2 trillion in assets being transitioned annually, this would suggest that, in aggregate, plans are incurring incremental drag of billions of dollars annually as they move from one manager to the next.

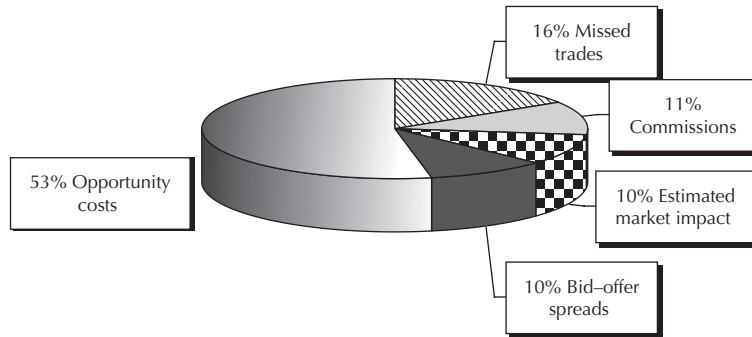
Perhaps it is not better research on transactions costs but a renewed focus on managing costs and managing risks in post-bubble capital markets that has sparked the recent increased utilisation of transition managers. In either case, it is clear that transitions are an expensive proposition in both hard dollars and in terms of the administrative resources consumed. That is because transition costs greatly exceed trading commissions. In fact, commissions are just the tip of the iceberg when it comes to eroding portfolio value.

Figure 4 Component costs of trading

- Commissions* – the most familiar trading expense is also the easiest to manage.
- Taxes* – fees and stamp taxes vary according to the particular tax laws of the registering country.
- Bid-offer spreads* – these represent the liquidity and volatility concessions given to a dealer or specialist on a standard size trade when purchasing or selling securities.
- Market impact* – this is a function of the supply and demand for a security. Market impact can be viewed as an additional price concession necessary to execute shares above the market maker's standard size. Although this market impact is persistent (in that a series of large orders will have a cumulative impact on price), breaking up a large order into smaller transactions placed over time can significantly lower the overall market impact of a trade.
- Opportunity costs* – these are the costs associated with delaying a transaction in the hope of receiving a better price later. Opportunity costs tend to increase over time.
- Missed trades* – these represent the "frictional" costs of trading due to delays in implementing trading decisions.

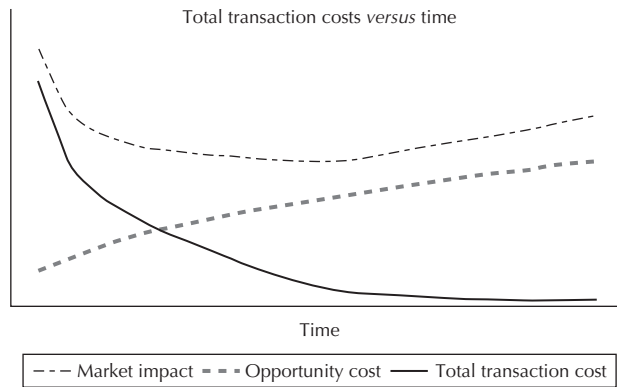
The component costs (excluding taxes, see Figure 4) are distributed approximately as shown in Figure 5. As Figure 5 indicates, opportunity costs tend to dominate transition costs. As opportunity costs are inversely related to market impact, they can be especially difficult to manage and usually require that the transition manager

Figure 5 The average distribution of component costs of trading



Source: Mellon Transition Management Services (MTMS) 2001

Figure 6 The inverse relationship between market impact and opportunity cost



Source: Mellon Transition Management Services (MTMS)

solve an optimisation problem. That is, taking more time to trade tends to reduce market impact but increase opportunity costs (see Figure 6). Skilled transition managers identify this cost/benefit problem and manage towards preserving total portfolio value.

The actual costs of a transition will vary depending on the size of the transition, the type of securities and the individual markets in which the securities are traded. Using multiple factor models it is possible to estimate the potential transaction costs faced by a plan across different market capitalisations (see Figure 7).

Figure 7 Component costs of trading across capitalisation tiers

Estimated by MTMS		Commissions (%)	B/O & market impact (%)	Opportunity costs (%)	Total (%)	OC as % of total
Small Cap	S&P 600 – US\$10 Million	0.07	0.09	0.29	0.45	64.4
Mid Cap	S&P 400 – US\$10 Million	0.07	0.05	0.28	0.40	70.0
Large Cap	S&P 500 – US\$10 Million	0.07	0.02	0.17	0.26	65.4
Small Cap	S&P 600 – US\$50 Million	0.07	0.24	0.31	0.62	50.0
Mid Cap	S&P 400 – US\$50 Million	0.07	0.12	0.29	0.48	60.4
Large Cap	S&P 500 – US\$50 Million	0.07	0.03	0.18	0.28	64.3
Small Cap	S&P 600 – US\$100 Million	0.07	0.36	0.32	0.75	42.7
Mid Cap	S&P 400 – US\$100 Million	0.07	0.19	0.30	0.56	53.6
Large Cap	S&P 500 – US\$100 Million	0.07	0.05	0.18	0.30	60.0

Source: MTMS 2004

In addition to substantial potential costs and significant portfolio risks, transitions can also generate complex operational risks. Transitions involve numerous parties, require close communication and can consume a tremendous amount of time to ensure a smooth event for the client. Although the average transition may only take about two to three weeks to complete (from the final decision to terminate managers to the disbursement of assets to the new managers), a particularly complex restructuring such as plan merger may take six months of strategy sessions before the actual trading begins to take place. As many in the industry recognise, true transition management combines comprehensive project management with expert portfolio management.

PRE-TRADE PROJECT MANAGEMENT

While preservation of asset value is critical during the transition and is readily quantifiable, sometimes it is the intangibles that make or break the success of the transition. If a transition manager does not or cannot handle and coordinate all of the operational, custody, portfolio management, trading and trade settlement issues, the Plan faces undue risk and often, unnecessary expense. Communication during a transition is vital and expert project management requires plotting a critical path of tasks that need to be completed in order for the transition to be deemed a success. Consider the operational and administrative challenges that even the simplest transition poses (see Figure 8).

Figure 8 Project management in asset transitions

Time line	
Target completion	Action item
Week of May 20th	Contract completion: Trading agency agreement between transition manager and client Direction letter specifying transition details Transition manager to open transition accounts with plan's custodian Transition manager to finalise transition strategy with plan and its consultant
May 23rd	Client to notify terminated managers
May 24th	Custodian begins certification process
May 26th	Assets certified by custodian to transition manager
May 27th	Internal cross; evening commitment to internal cross for next day's closing prices
May 30th	MEMORIAL DAY HOLIDAY; US MARKETS CLOSED
May 31st	Trade residual securities utilising external crossing networks and open market Transition manager to provide daily client reporting throughout trading Transition manager to provide guaranteed asset lists and preliminary cash amounts
June 6th	Transition manager to provide final cash amounts Transition manager to instruct custodian of asset and cash transfers
Week of June 13th	Final report issued to client and consultant Transition manager to initiate client and consultant meeting to review transition results

For transitions involving global assets, there is a heightened sense of urgency to manage operational risks. Given the dynamic nature of markets and the ever-changing security regulations in the international arena, global transitions raise specific operational concerns that must be given special consideration. It is critical for the transition manager to identify and understand the complexities of all asset types and the individual country's regulatory environments involved in a transition event. We will now look at some of the areas that require special consideration when executing a multi-country transition.

Sub-custodian accounts: prior to trading in a global market, a transition manager must confirm with the client's custodian that the appropriate sub-custodian accounts are open on behalf of the client in the transition account. Some countries require longer account opening periods than others. Examples of countries that require a custodian more than one day to open a sub-custodial account are given in Figure 9.

Settlement period for global securities: the regular settlement periods for global securities vary by country. A skilled transition manager

Figure 9 Sample countries with multi-day requirements for sub-custodian account openings

Brazil	(5–7 business days)
Chile	(5–8 business days)
China	(3–5 business days)
Egypt	(5–7 business days)
Hungary	(3–5 business days)
Malaysia	(5–7 business days)
Poland	(3–8 business days)
Slovakia	(3–5 business days)

will be conscious of regular settlement periods and monitor for global holidays through the duration of the transition period.

In the event of a settlement failure, some countries are subject to “buy-ins” (see Figure 10). A “buy-in” can occur if a broker or dealer does not deliver a promised security to a purchaser. The purchaser can notify the agent and within 48 hours of the notification the purchaser can buy the security on the open market and charge the delinquent agent with any losses incurred. In some cases, the “buy-in” is accompanied by draconian penalties that could be detrimental to the overall plan. For example, a “buy-in” in Hong Kong occurs automatically on trade date + 3 at which point the delinquent party is required to give up any profit and is subject to a fine.

Non-transferable securities: while some securities in global markets pose a challenge to transfer, others are considered outright non-transferable. To reduce operational risk, it may be preferable to receive or deliver cash in lieu for securities such as Greek, Taiwanese or South Korean stocks or bonds. Global trading environments are constantly changing so transition managers must remain vigilant for changes in global market conventions.

Temporary cash vehicles: the transition manager should confirm with the custodian that the appropriate temporary cash vehicles are open and available as directed by the client. The custodian should confirm the temporary cash vehicle’s sweep deadline.

Global securities on loan: global securities on loan can take longer to recall than US securities. For this reason, the transition manager should evaluate the need to initiate the early return of securities in order to meet the client’s transition objectives.

Figure 10 A survey of countries with buy-in provisions

Australia	notification sent SD + 4.
Austria (very rare)	For equity not governed by
Bahrain (very rare)	CCP: buy-in)
Bangladesh (automatic on settlement date (SD))	Japan (rarely enforced)
Belgium (very rare on SD + 8)	Jordan (broker initiated)
Bermuda (automatic on trade date (TD) + 7)	Kenya (rarely enforced)
Brazil (on T+4 plus there are trade fail penalties)	Korea (broker initiated)
Canada (SD + 6)	Lebanon (automatic on TD + 2 or TD + 4 depending on book-entry or physical)
China-Shanghai (automatic on TD + 6)	Luxembourg (rarely enforced)
China-Shenzhen (automatic on TD + 6)	Malaysia (automatic on TD + 2 or TD + 3 depending on ISS or FDSS clearing system)
Croatia (on TD + 3 but it is not strictly enforced)	Mauritius (automatic if failed on contractual SD)
Czech Republic (automatic on SD + 6)	Mexico (There are 3 options: 1) buy in/sell out; 2) fail penalties; and 3) suspension)
Denmark (broker initiated)	Morocco (strictly enforced on SD + 7 for buy-in and SD + 4 for sell-out)
Egypt (automatic on TD + 5 plus there are fail trade penalties TD + 3 onward)	Netherlands (very rare on SD + 8)
France (automatic on SD + 8)	New Zealand
Germany (very rare)	Norway (very rare)
Ghana	Pakistan (initiated by the clearing house)
Greece (initiated by broker on TD + 3)	Panama (very rare)
Hong Kong (automatic on TD + 3)	Peru (on SD + 1)
Hungary (automatic on TD + 5 for defaulting broker)	Philippines
India	Portugal
Indonesia (the KPEI enforces alternate cash settlement that equals 125% of the highest market value between TD and TD + 3)	Romania
Israel (broker initiated)	Singapore (automatic on SD + 1)
Italy (for equity governed by CCP: buy-ins will occur on SD + 8 and	Slovenia (automatic if failed on CSD)
	South Africa
	Spain (automatic on TD+4)
	Switzerland (very rare)
	Taiwan (yes with potential of 3-year suspension)
	Thailand (automatic on TD + 5)
	Turkey (automatic on SD + 1)
	Uganda (on TD + 5)
	United Kingdom (very rare)
	Venezuela (rare as brokers generally extend the SD)
	Zambia

Derivatives

An experienced transition manager will determine whether the legacy portfolio holds any derivative instruments such as currency forwards, futures, swaps or TBAs. If so, the transition manager must evaluate whether the derivatives are being used to hedge the underlying securities involved in the transition. After conferring with the client, the transition manager will advise the responsible

counterparty to close the derivatives position. As the derivatives may not actually settle until some future date, the client may need to reserve cash to cover any unrealised losses.

PROJECTING PRE-TRADE TRANSITION COSTS AND RISKS

Clearly, the decision to hire a transition manager is one that is driven not only by the potential trading costs a plan could incur during a transition but also by the operational and administrative complexity of the transition. The complexity of a transition is a function of the number of legacy and target managers, the sector and asset class exposures, the number of countries and the possibilities for hedging. In sorting through these complexities, investors may wish to solicit proposals from a number of transition specialists. In completing such a search, plans often cite pre-transition cost estimates, trading capabilities, capacity of the transition manager to act as a fiduciary and demonstrated capability of the transition manager to facilitate communication as the primary criteria in the selection of a transition manager. An excerpt from a pre-transition estimate for a global market, multiple asset class transition appears in Figure 11.

In the example in Figure 11, the client considers shifting a significant pool of assets across ten investment managers with mandates that span asset classes in countries around the world. The analysis summarises the nature of the asset restructuring and forecasts total trading costs.

Understanding the estimated costs surrounding a transition may seem straightforward when viewed in isolation. However, pre-trade cost estimates can look extremely varied when compared across different firms. The primary reason for a wide range of transition cost estimates stems from the very fact that they *are* estimates. We will now consider the inputs that transition managers use when generating an analysis.

Portfolio composition: are the portfolio holdings known, unknown or partly known? If known, are all providers analysing the same list at the same point in time? Did the plan sponsor or consultant ask different transition managers to evaluate the same basic portfolios at different points in time? Small differences in composition may be magnified in the larger transition analysis. If portfolio composition is unknown, then the plan sponsor or consultant may ask

Figure 11 Sample pre-transition analysis

Manager					
Manager/portfolio	Asset class	Legacy		Target	
		Asset size (MM's)	%	Asset size (MM's)	%
Balanced mandate #1	Multiple asset classes	234.9	26.6	–	0.0
Balanced mandate #2	Multiple asset classes	225.6	25.5	–	0.0
Balanced mandate #3	Multiple asset classes	226.0	25.6	–	0.0
Balanced mandate #4	Multiple asset classes	196.8	22.3	–	0.0
UK Alpha	UK equities	–	0.0	193.6	21.9
UK value II	UK equities	–	0.0	152.1	17.2
Global equity	Global equities	–	0.0	222.3	25.2
Emerging value	Emerging markets	–	0.0	21.4	2.4
Fixed income	Fixed income	–	0.0	239.9	27.2
Property manager	Property	–	0.0	54.0	6.1
Total		£883.3	100.0	£883.3	100.0

Asset					
		Legacy		Target	
		Asset size (MM's)	%	Asset size (MM's)	%
<i>Total equities</i>		593.3	67.2	549.6	62.2
	United Kingdom	352.4	39.9	310.4	35.2
	North America	64.9	7.3	72.7	8.2
	Europe ex UK	76.5	8.7	71.5	8.1
	Japan	54.5	6.2	50.5	5.7
	Asia Pacific ex Japan	26.6	3.0	23.3	2.6
	Emerging markets	18.4	2.1	21.2	2.4
<i>Total fixed income</i>		195.3	22.1	239.8	27.2
	Corporate bonds	49.9	5.6	88.2	10.0
	Government bonds	145.4	16.5	139.1	15.8
	Mortgages	–	0.0	12.5	1.4
<i>Total property</i>	Property funds	48.3	5.5	54.0	6.1
<i>Cash & cash equivalents</i>		46.4	5.2	39.9	4.5
Total		£883.3	100.0	£883.3	100.0

The bar chart displays the asset size in millions for Legacy, Target, and Net across various asset classes. The Y-axis ranges from -£100 to £400. The X-axis categories are UK, North America, Europe ex UK, Japan, Asia Pacific ex Japan region, Emerging markets, Fixed income, Property, and Cash. Legacy is represented by light grey bars, Target by dark grey bars, and Net by black bars.

Asset Class	Legacy (MM's)	Target (MM's)	Net (MM's)
UK	352.4	310.4	42.0
North America	64.9	72.7	7.8
Europe ex UK	76.5	71.5	5.0
Japan	54.5	50.5	4.0
Asia Pacific ex Japan region	26.6	23.3	3.3
Emerging markets	18.4	21.2	2.8
Fixed income	195.3	239.8	44.5
Property	48.3	54.0	5.7
Cash	46.4	39.9	6.5

Summary of trading		
Commission	(645,938)	–0.07%
Spread & impact	(2,206,001)	–0.25%
Taxes	(437,190)	–0.05%
Impact (fixed income)	(148,369)	–0.02%
Fixed income trading fees	(97,920)	–0.01%
Overlay fee	(30,000)	0.00%
Total	–£3,565,418	–0.40%

the transition manager to estimate holdings based on a broad benchmark or based on their own composite portfolios. For indexed strategies this may be perfectly acceptable, but trying to replicate the portfolio characteristics of an active portfolio by using a passive benchmark can be fraught with peril. The transition manager's cost estimates will only be as good as their assumptions, and the temptation exists for the transition manager to make the transition costs appear as low as possible.

Cost variables: even in cases where transition managers are starting from the exact same point with respect to portfolio composition, the cost variables themselves are subject to interpretation. Many transition managers will use multiple factor models to estimate transactions costs. These models rely on historical data that can be tweaked using different trading horizons. For example, much like in option pricing, a different volatility input can generate a very different output. Should a transition manager be using a 1-day, 10-day, 63-day or 252-day volatility in their cost estimates? Different transition managers will give you different answers. Should they be modelling volatility using historical or option-implied numbers? Auto-regressive conditional heteroskedastic (ARCH) models or generalised auto-regressive conditional heteroskedastic models (GARCH)? Different transition managers will give you different answers. Do these answers conservatively represent potential costs or are they formulated only with the intention of winning new business? Unfortunately, these are the hard questions each plan sponsor or consultant must ask a prospective provider.

When soliciting multiple transition proposals, the temptation exists to tabulate commissions and fees, spreads, and market impact, disregard the opportunity cost estimates (under the belief that this is only a potential cost) and rank the candidates from lowest total cost to highest. However, comparing proposals in this manner is akin to soliciting bids from investment managers and selecting the manager who projects the highest total return for the portfolio. While lowest cost/highest performance may be what you desire in either case, the mere promise of it does not necessarily mean you will obtain it.

Plan sponsors and consultants frequently convey frustration that they cannot compare transition proposals from various providers on the same event because the estimates are so varied. However,

such variation is commonplace in virtually every financial endeavour that relies on modelling. Another way to think about the assumptions and estimates used in a transition proposal might be in the broader terms of pension accounting. For financial reporting, plans must disclose a projected rate of return on plan assets and present value that return with a projected discount rate. As has been widely reported, by tweaking the return assumption or the discount rate even slightly a plan can materially impact its bottom line.

In a study conducted at the end of 2004, UBS Investment Research attributed roughly US\$2 of the US\$55 earnings per share for companies in the S&P 500 index in 2003 from aggressive pension return assumptions.

A more aggressive return assumption does not necessarily generate a higher return. As Arnott has neatly summarised, “Neither the need for a particular rate of return nor the hope for performance that can sustain outsized spending allows us to expect that return”. Transition proposals should be examined with a similarly critical eye.

Figure 12 shows the impact on cost estimates run on the same day using nine different models (all of which are currently used on Wall Street). This informal survey suggests that even on simultaneously disclosed portfolios in the most liquid segments of the capital markets, there is no consensus on trading costs.

Given the fundamental variability among good faith estimates and the inherent temptation for transition managers to low-ball estimates in order to win transition mandates, it is incumbent on plans to take such estimates with a grain of salt. Investors should also demand an estimate of the potential opportunity costs or the range of possible costs around the mean expected value. Opportunity costs often represent the single largest component in the total cost of the transition. Ignoring the potential biases of models and the potential risks of relative performance during the transition can be dangerous. Plan sponsors should be especially careful when assessing transaction cost estimates between providers. These estimates should be based on realistic expectations rather than optimistic forecasts that may not come to fruition.

Regardless of the relative uncertainty involved in projecting costs prior to the transition, there are several readily identifiable

Figure 12 Sample trading cost estimates for Large Cap US Equity

Total								
	Model	Notional (in US\$)	Shares	Average PX (in US\$)	B/O and market impact (in US\$)	In bps	Volatility est. used (%)	Day count
Portfolio	1	499,278,659	15,212,400	32.82	0.031	0.09	14.28	100
S&P 500	2	499,576,952	14,997,717	33.31	0.052	0.16	19.53	63
Notional	3	500,000,000	15,026,300	33.27	0.029	0.09	14.43	60
US\$	4	499,230,690	14,985,227	33.31	0.057	0.17	11.00	60
500,000,000	5	500,021,312	15,117,400	33.42	0.045	0.14	14.76	252
	6	500,000,279	15,235,600	32.82	0.054	0.16	12.80	60
	7	500,000,009	15,070,521	33.18	0.065	0.20	12.65	60
	8	500,000,000	14,784,151	33.82	0.055	0.16	18.40	100
	9	500,000,000	14,979,029	33.38	0.030	0.09	14.06	100
Mean						0.14		
Median						0.16		
Standard deviation						0.04		
High						0.20		
Low						0.09		

tools that transition managers have at their disposal to minimise these costs. The first is a low-cost commission structure. As specialist transition managers handle enormous volumes of trading activity, they generally have negotiated commission rates that are typically lower than what conventional asset managers can offer. Second, transition managers generally have access to low cost sources of liquidity including internal crossing networks that, when coupled with in-kind transfers between legacy and target portfolios, are commission free methods for effecting parts of the transition.

In an “in-kind” or “in-specie” transfer, shares held in common between the current and new portfolios are moved from one to the other in a book-entry accounting adjustment. A transfer of this kind is almost always optimal as no commissions are incurred, no spread is crossed and there is no market to impact. Also it is important to note that the investor preserves the appropriate asset exposure at all times. Clearly, there is no reason to sell IBM from a terminated manager’s portfolio if the newly hired investment manager also wants to own it. Naturally, however it is unlikely that a client would be able to “in-kind” a substantial part of their

portfolio from one manager to another. If this were the case, why make the manager switch in the first place?

An “internal cross” as it relates to transition management, generally takes advantage of a proprietary source of liquidity, such as the index business of a transition management affiliate. Here, rather than simply moving the client’s IBM from one of its investment managers to another, the client’s IBM might be crossed with an index fund that needs to own a certain weighting of the stock to track a given benchmark. These types of crosses, as part of a transition program, may require an exemption for the transition manager in order for them not to be viewed as prohibited transactions by certain regulatory authorities. As part of the internal crossing network, the transition manager does not benefit from the transaction and the client must receive an independent price (eg, the close) for the stock.

In addition to managing explicit costs, transition managers are also well positioned to manage transition risks. By centralising all sales and purchases related to the transition with a single provider, the client is in a much better position to address the tracking error between its sell portfolios in aggregate and its buy portfolios in aggregate. This tracking error is the primary driver of opportunity costs in transitions, which, as we have seen, dominates the total transition costs.

Sophisticated mathematical models are invaluable tools in a transition manager’s kit. Trading costs are estimated using historical volatility and trading volume statistics and a multiple-factor model can be employed to quantify portfolio risk decomposition and to identify correlation effects within the portfolio throughout each transition. Many proprietary and third-party models are used by the industry to calculate transaction costs. Non-proprietary models include Citigroup’s Stock Facts Pro, the Investment Technology Group’s Agency Cost Estimator™ and Barra®. Most models use a combination of historic volatility, correlation matrices and volume statistics to estimate potential impact and opportunity costs.

After incorporating projected transition costs into a comprehensive transition strategy, the transition manager can manage those costs in risk in a number of different ways. The recent proliferation of algorithmic trading engines has enabled transition managers to effectively target the following benchmarks.

Implementation shortfall: this type of model uses estimated transaction costs, prior close, overnight gap, a risk-aversion metric and liquidity to generate a sequence of trades.

Active pegging: such models use historical bid/offer spread against a real time bid/offer spread to identify statistical abnormalities in liquidity. It “pegs” the order to the bid or offer while utilising additional strategies through different Electronic Communication Networks (ECNs).

Modified duration volume weighted average price (VWAP): models of this type look at the historical volume smile of the securities and then determines a curve in which to trade. The component of this model that differentiates it from a “vanilla VWAP” strategy is the ability to apply a “cushion” to this curve, allowing the transition manager to take advantage of liquidity when it presents itself.

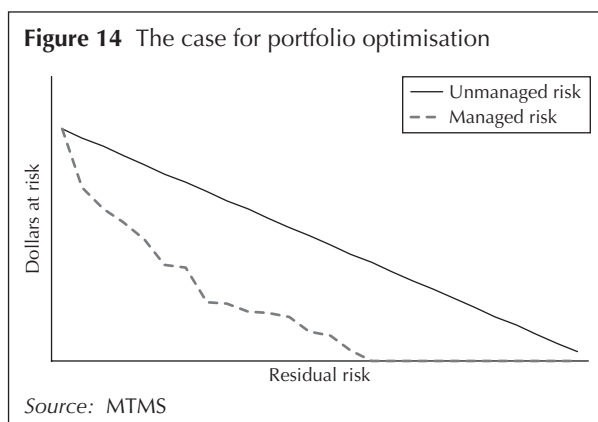
Participation strategy: here, the model looks at all trades printed in the relevant markets and sets portfolio participation as a percentage of the daily volume.

Armed with these types of powerful optimisers, a transition manager might look to manage the risk of a US\$50 million US Large-Cap Equity transition in the following way. The plan holds a portfolio worth US\$50 million and will be liquidating it and purchasing an entirely new portfolio worth US\$50 million in a single day. The tracking error between the two portfolios is 5.6% annualised, suggesting that in roughly two out of three cases one portfolio will outperform the other by almost 6% in any given year (see Figure 13).

Figure 13 Estimated active risk for a sample transition

Legacy	Target
US\$50,000,000	US\$50,000,000
5.6% annualised tracking error = 35 bps in risk for a single trade date	
US\$175,000 active risk for this transition	

A skilled transition manager will examine the two portfolios in the context of the transition and seek to identify the sources of attribution for this active risk. As we will see later, this tracking error generally stems from mis-matches across sector and country



weightings between the legacy and target portfolios. With certain algorithmic trading strategies, the transition manager can create a sequenced trading program where each sequential order placed in the market mitigates the overall tracking error risk. For example, by trading an optimised list of 10% of the notional amount of the trade, the transition manager might be able to lower the residual risk from 5.6 to 3.4% – a reduction of 40%. A non-optimised slice would only reduce the amount of the trade by 10%. It would reduce risk linearly only by reducing the amount of trading that remained.

Let us return to the sample pre-transition analysis presented in Figure 11 to see how such an approach might translate into a more cost-effective transition for the client. Carrying through on the preliminary examination of the portfolios that will be restructured, the transition manager might make the projection outlined in Figure 15.

In this restructuring, the transition manager looks to strike a balance between equity trading costs of 37 bps with equity investment risk of 69 bps. The cost-benefit analysis will focus on the liquidity of the portfolio and the attribution of the active risk due to sector misweightings between the legacy and target portfolios in aggregate (see Figure 16).

While over 80% of the equity component of this transition is extremely liquid, the transition does contain some rather thinly traded securities that, by definition, will tend to have the widest spreads and will be the most vulnerable to the deleterious effects of market impact. A transition manager will look to structure a

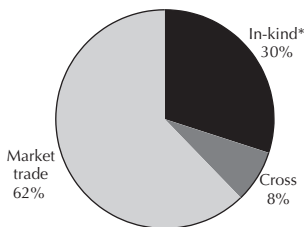
Figure 15 Sample equity transition cost analysis

Equity Transition

The estimated trading costs of the transition are £3,289,129 or 37bps, and the estimated opportunity risk is ± 69 bps. The estimated implementation shortfall range is $-106 +32$ bps, and assumes a one standard deviation difference in returns between either the actual or an implied legacy and target portfolio. Transition manager will seek to minimise the implementation shortfall associated with the transition. Both agency and principal trades may be executed with either affiliated or unaffiliated broker dealers. Transition manager will be acting as a fiduciary at all times during the transition.

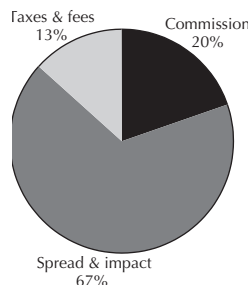
Equity cost

Transaction breakdown (MM's)	Legacy	Target	Total
In-kind*	171.3	171.2	342.5
Cross	46.6	42.2	88.8
Market trade	375.4	336.2	711.6
Total	£593.3	£549.6	£1142.9



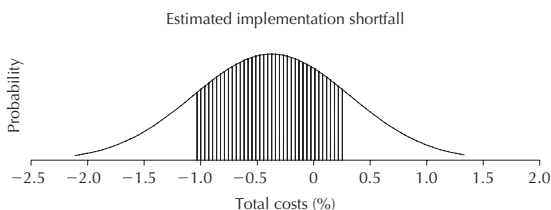
Trading costs*

Commission	(645,938)	-0.07%
Spread & impact	(2,206,001)	-0.25%
Taxes & fees	(437,190)	-0.05%
Total	£(3,289,129)	-0.37%



*In-kinds will be transitioned free of charge. The commission rate for UK and developed (non- US) equities is 7 basis points. The commission rates for US equities is 2cps for externally crossed, and 3cps for market trades. The commission rate for equities in emerging markets is 25 basis points. The costs are also represented as a percentage of the beginning value of the legacy portfolio(s). The estimated taxes may vary according to the particular tax laws of the registering countries.

Estimated annualised active risk	7.80%
Estimated opportunity risk	$\pm 0.69\%$
Estimated implementation shortfall range	$-1.06-0.32\%$

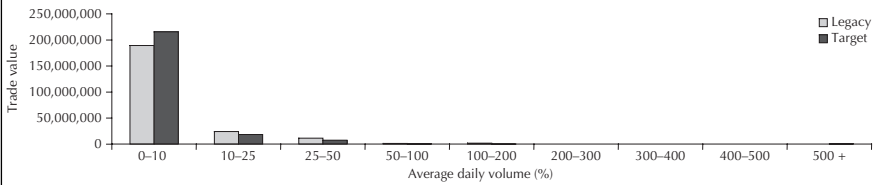


comprehensive trading program to mitigate these trading costs without letting opportunity risks to run uncontrolled. The transition specialist can control opportunity costs by identifying sector mis-matches and sequencing trading to manage risk.

Figure 16 Sample equity transition liquidity and sector analysis

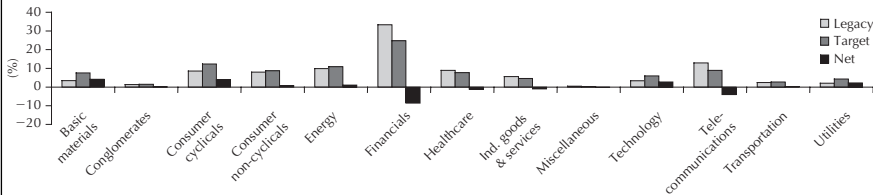
Equity liquidity analysis (Post in-kind selections)

Average daily volume (%)	Market value (in £)	Shares	Portfolio (%)	Names
0-10	376,511,937	94,905,075	80.4	1,733
10-25	45,424,948	19,724,891	9.7	102
25-50	25,756,414	11,640,910	5.5	83
50-75	7,024,476	896,327	1.5	27
75-100	9,365,969	2,444,083	2.0	38
100-150	468,298	383,325	0.1	3
150-250	936,597	63,535	0.2	4
250-500	468,298	64,666	0.1	3
500 +	2,341,492	35,437	0.5	9
Total	£468,298,429	130,158,249	100.0	2,002



Equity Sector

Sector	Legacy (%)	Target (%)	Net (%)
Basic materials	3.40	7.57	4.17
Conglomerates	1.31	1.42	0.11
Consumer cyclicals	8.50	12.34	3.84
Consumer non-cyclicals	7.98	8.74	0.76
Energy	9.83	10.87	1.04
Financials	33.33	24.73	-8.60
Healthcare	8.87	7.71	-1.16
Ind. goods & services	5.61	4.61	-1.00
Miscellaneous	0.48	0.24	-0.24
Technology	3.30	5.96	2.66
Telecommunications	12.90	8.89	-4.01
Transportation	2.42	2.68	0.26
Utilities	2.07	4.24	2.17



MEASURING TRANSITION PERFORMANCE AFTER THE TRADE

Before a plan sponsor and its investment consultant close the books on any transition, a formal recap of the event is necessary. Was the restructuring as successful as the transition manager says it is? Just how did the whole thing go anyway? It goes without saying that the barometer for success in any transition hinges on the degree of satisfaction that the client holds, but what contributes to that degree of satisfaction? While a risk-controlled quantitative process increases the probability of better investment performance, attention to detail and premium service drive qualitative performance. There are two components to evaluating the success of the transition: portfolio performance and project performance.

Gauging transition performance is in many senses a relative value assessment. As has been demonstrated, it is likely to cost the plan sponsor something to re-align asset portfolios. Is the resultant cost to the plan consistent with the expectation of the transition manager's projection? Dusting off the copy of the original transition management proposal is a good place to start before beginning to review the post-trade analysis with the transition manager.

PORTFOLIO PERFORMANCE DURING A TRANSITION

As the Chartered Financial Analyst (CFA) Institute *Trade Management Guidelines* point out: "Determining the quality of trade executions entails the evaluation of subjective, objective and complex qualitative and quantitative factors". Given this complexity, many plans and consultants look to the conventional trading benchmarks of "open", "close", "high", "low" and "volume-weighted average price" in an effort to more completely describe the myriad of ways of assessing performance. However, transition management is about much more than the simple execution of trading lists. For this reason, traditional measures may be insufficient.

If the idealised goal of the plan is to transition from the legacy strategy to the target strategy without cost, the "implementation shortfall" methodology (the arithmetical difference between the returns on the actual portfolio and the returns on the target portfolio) best measures investment performance during a transition. A transition trade consists of both explicit costs – obvious costs such as commissions and bid-offer spreads – and far greater implicit costs of market impact and lost opportunities. The "implementation

Figure 17 Implementation shortfall calculation methodology

Legacy portfolio	
Starting value – A	T – 1 closing value of the legacy portfolio plus the initial cash balance.
Ending value – B	Closing value of the legacy portfolio on the final day of trading plus the initial cash balance.
Target portfolio	
Starting value – C	T – 1 closing value of the target portfolio plus the difference between starting value – A and starting value – C.
Ending value – D	Closing value of the target portfolio on the final day of trading plus the difference between starting value – A and starting value – C.
Actual portfolio	
Starting value – A	T – 1 closing value of the legacy portfolio plus the initial cash balance.
Ending value – E	Closing value of the target portfolio on the final day of trading plus actual ending cash.

shortfall” approach integrates indirect costs difficult to quantify by comparing the actual value of the transition portfolio against its theoretical value if restructuring had been instantaneous and without cost, based on the performance of a target benchmark.

Figure 17 details the methodology used to calculate the implementation shortfall (performance of the actual transition portfolio *versus* the legacy and target portfolios). The method for a two-sided transition.

Using the methodology described in Figure 17 and the sample portfolios examined in Figures 11, 15, and 16, the implementation shortfall analysis in the post-trade report might look similar to Figure 18.

As Figure 18 summarises, had the client decided on 30th May to implement the strategies in question then by the time of implementation 31st May the change had cost the client £441,650 in combined commissions, taxes, spreads, market impact and realised tracking error. Was that £441,650 well spent or did the client pay too much to go from A to B?

Any credible post-transition analysis will provide reams of attribution but most of the information that you need to evaluate the portfolio performance of your transition is included in the implementation shortfall analysis, as viewed in the context of the

Figure 18 Sample implementation shortfall

Implementation Shortfall	Portfolio valuation	30th May 2005 Starting value (T – 1)	31st May 2005 Ending value (T)
	Legacy		£883,300,000
Target		£883,300,000	£885,684,910
Actual		£883,300,000	£882,858,350
	Portfolio performance	Percent change (%)	Value change
Legacy		-0.25	£(2,208,250)
Target		0.27	£2,384,910
Actual		-0.05	£(441,650)
	Performance <i>versus</i> target portfolio		-0.32%
	Performance <i>versus</i> legacy portfolio		0.20%

expectations given by the pre-transition proposal. In that context, this transition went about as well as the client could have hoped. The pre-transition analysis in Figure 11 had forecast an expected cost of 40 bps or £3,565,418 if markets were absolutely flat on the day of the transition. Owing to the mismatched volatilities of the old and new sets of investments, the portfolio actually significantly outperformed that projection but in a manner that was still well within the projected range of outcomes.

However, what if the client had decided to implement the strategies in question on 20th May but owing to operational delays, problems with documentation or simply misguided hopes of catching month-end crossing opportunities, the client had to wait the extra week to go from A to B? Would it still be appropriate to measure the implementation shortfall based on values from 30th May? Had the client picked another point in time to use as its benchmark, how different might the outcome have looked? These types of questions and concerns were the impetus for the recent push within the transition management industry to standardise the calculation of implementation shortfall during a transition – a crusade that has ultimately been dubbed the “T-Standard” (see Figure 19 for more about the evolution of the “T-Standard”). As the debate surrounding the formulation and adoption of this standard intensified, it became clear that while implementation shortfall analysis may be the most comprehensive way we have of measuring portfolio

Figure 19 A brief history of implementation shortfall

1988 – Harvard Professor André Perold publishes “The Implementation Shortfall: Paper *versus* Reality” in The Journal of Portfolio Management.

1999 – The Association for Investment Management and Research (now the CFA Institute) unveils the “Global Investment Performance Standards”.

2001 – The Association for Investment Management and Research releases for public comment its proposed “Trade Management Guidelines”.

2002 – Bob Collie of Russell publishes “Performance Standards for Transition Management” in The Journal of Performance Measurement.

2003 – Transition management industry leaders convene at a “Performance Standards Forum” in an effort to establish a consensus.

2004 – After continued discussion and input from providers and Plan Sponsors, a “T-Standard” is drafted by Russell to consolidate feedback about how best to achieve consistency when measuring implementation shortfall during a transition.

performance during a transition, it often raises as many questions as it answers.

As the transition management industry continues to develop, ensuring consistency in performance measurement (both pre- and post transition) will be of paramount importance for all interested parties to the transition.

PROJECT PERFORMANCE DURING A TRANSITION

Given the complexities associated with asset transitions transition, management clearly needs to address much more than the simple execution of a portfolio list. Technology and quantitative risk methodologies are imperative. Order management systems and portfolio optimisers are not differentiators among transition managers – they are pre-requisites.

Transition management clients are not looking for an index fund, a trading desk or even a custody expert when they transition assets: they are looking for, and need, all three. A transition manager must focus on managing all of the multi-faceted dimensions of an often-complex undertaking. The sheer number of parties involved in a transition guarantees that even the simplest of transitions will require planning and communication in order to execute the restructuring in an efficient manner. Transitions involve the beneficial owner of the assets (the client), at least one custodian (but often more, especially when sub-custodians become involved), any number of target managers (some of whom may have multi-asset class mandates), the client’s consultant, and of course, the settlement and regulatory bodies in every country where assets are to be traded.

If a transition manager does not, or cannot, handle and coordinate all of the operational, custody, portfolio management, trading and trade settlement issues, the client faces undue risk and often, unnecessary expense.

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