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I thank my buddy Rohan for showing me that even an 18-year-old can grasp the nuances of this industry in just a month! Many thanks to my wife Shaila and my sons Sidharth and Sachin for allowing me the time to write this book. Shaila is slowly learning that Serena Modigliani was not kidding when she told her that, if her own experience with Franco was anything to go by, then living with me would only get worse with time... and still Shaila sticks by me. Finally, thanks to Jeanette Fernandes for an amazing job of editing the manuscript at short notice and to Royal Fern Publishing for all the hard work in turning around this book expeditiously.

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I dedicate this book to Mrs. Turner and Mrs. Rhatigan of Maurice Hawk Elementary School in West Windsor, NJ, for teaching my first and third graders to write books at this tender age (including how to write an index and glossary!), and to my mom (Minakshi) and Shaila's mom (Jeanette) for encouraging their kids, too, to write.

In memory of Kirit Patel ... a dear friend and a smart investor!

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New Paradigm for CIOs – Doing More with Less

Mohammed Ali boarded a plane one day and, just before take-off, was requested by a stewardess, “Sir, please fasten your seat-belt.” The youthful, exuberant Mohammed Ali is believed to have remarked, “Superman does not need a seat-belt....” to which the smart young lady replied, “And Superman does not need a plane either!”

Role of the Chief Investment Officer

The volatility of the markets in 2008 created turbulence in finance portfolios not envisaged by even the most astute investors. Only those who had fastened their seat-belts emerged from the debacle relatively unscathed. However, this unanticipated crisis can be put to good use as a lesson for the institutional investment management industry. It exposes the failings of previous research, regulation, and advice on the investment of institutional assets.

Bearing in mind the counsel of Rahm Emanuel, President Obama's Chief of Staff, “Never let a crisis go to waste,” this book uses the lessons of the 2008 reality-check to help CIOs do much more with less, especially since budgets have been drastically cut. Equally important, this book reveals the drawbacks in the current practice of managing assets and rewarding asset managers. CalPERS, one of the leaders in investor activism, has proclaimed that fees of hedge fund managers need to be reviewed, and it is likely that other pension funds will join this chorus. Fortunately (and unfortunately), the recent market turmoil has also exposed the impact of corrupt middlemen on fees and manager selection.

It is therefore pertinent to focus on an entirely new paradigm for managing assets – one focused on dynamism of decisions, vital in an environment driven by dynamic market performance. In so doing, this book expunges the old paradigm, professed by asset managers and many consultants, that hiring an external manager with all the fee issues it entails to perform a given task (e.g., manage portable alpha or LDI) was a silver bullet requiring no further action.

Sadly, the CIO's role during the tension of 2008 has been one of firefighter – often having to bear bad news of failed hedge funds, securities lending, or even illiquid cash investments. Then, CIOs had to make frantic attempts to raise cash to meet outstanding obligations, as the failure of alternative investments and seemingly safe assets exposed chinks in the armor of even the Ivy League endowments. Moreover, many CIOs have paid the price for choosing to be innovative: in response to a cry for blood, Boards have had to fire CIOs when funds lost 20-30 percent of their value in a single year. Many times, the call to dismiss a CIO came from a misinformed local press or public that picked on a single bad decision and a supposedly outsized pay package. Such distress could have been easily averted had the task been set up efficiently, expectations discerned and fulfilled with care, and performance and risk-adjusted performance adequately monitored.

Roland van den Brink, CIO of Bedrijfstakpensioenfondsen Metalektro in the Netherlands (PME) and currently Executive Director of Mn Services, ran one of the most effective pension funds in the world. He entrusted only three key investment staffers with management of assets in excess of • 20 billion, and liberally outsourced activities best performed on a larger scale. This clear division of labor controlled costs and minimized staff management time. More importantly, he likened himself to the pilot of a plane and monitored his plan accordingly. He organized his plan data in a simple, succinct Pension Dashboard, which kept him constantly updated on where his fund was headed relative to liabilities, risks being taken, and the direction needed to proceed to ensure continued solvency. His motivation stemmed from the belief that “once you manage risks, you can then focus on returns.” Philip Menco of de Eendragt (and one-time colleague of Roland), who shares this philosophy, turned in positive performance for the economically-floundering year of 2008 through effective, high-level investment strategies.

The CIO role in the new millennium faces new challenges, including declining solvency, budget cuts, and increasing complexity of managing assets, with less transparency, less liquidity, and less bargaining power on the part of investors. However, it is incumbent on the CIO in this environment to re-establish the Board's objectives and risk tolerance, as well as its investment horizon. The CIO must re-structure the entire investment paradigm to evaluate investments that best achieve the objectives of efficacy, liquidity, transparency, and low cost. The Chinese proverb that states, “One cannot be a genius in one's own village” applies most often to CIOs at public institutions, because the general presumption is that outside managers are smarter than internal staff. However, once the appropriate governance and monitoring structure is set up, the Board would be better served if they rely more on their own CIOs and less on external advisors.

Effective real estate decisions are driven by “Location, Location, Location.” Similarly, the SMART (Systematic Management of Assets using a Rules-based

Technique) paradigm is based on “Allocation, Allocation, Allocation.” The three key areas where these allocation decisions will be emphasized are: (i) Allocation to a Liability Hedge; (ii) Allocation to Beta Assets; and (iii) Allocation to Alpha Opportunities. The SMART process attempts to bring best practices (adopted by asset managers) into the suite of capabilities of pension assets, because the potential benefit from adding a few basis points to the total portfolio is likely to be more valuable than finding the best managers. SMART also has the advantage of better decision-making (not subject to emotion), transparency, consistency, governance, and risk management.

THE NEW SMART LDI APPROACH – LIABILITIES, BETA, ASSETS, AND COSTS

The recent financial market meltdown has imperiled the financial status of pension funds (and other investors) worldwide. There have been dramatic declines in solvency or size of portfolios even in the Netherlands, where the focus on ALM is both extensive and impressive, and the regulation of pension funds by the Dutch Central Bank (DnB) is based on funding rather than asset performance. In many cases, solvency dropped from 140 percent to 90 percent, and even the DnB's own pension fund had fallen below 100 percent solvency.⁶ Regulators in the Netherlands, the UK, and the United States are being pressured into adopting conciliatory measures, including avoiding onerous recovery plans, relaxing mark-to-market accounting, allowing flexible asset smoothing, and extending recovery periods.⁷ For example, in the Netherlands, current regulations require pension funds to return to 105 percent solvency in three years (regulators are being pressured to raise the term to five years), which would entail a drastic cut in pensions,⁸ an increase in contributions, or more risk-taking – all unpleasant measures in the current environment.⁹ Though this book focuses on pension funds, many of the same principles are also applicable to endowments/foundations, sovereign wealth funds (SWFs), social security (SS) funds, insurance companies, and retiree health care plans.

⁶ “DnB's own pension plan must submit recovery plan,” *www.ipe.com*, March 25, 2009.

⁷ *Investments and Pensions Europe* – on-line version (February 16, 2009). http://www.ipe.com/news/Trade_bodies_warn_against_hard_hitting_measures_30830.php
<http://www.pionline.com/apps/pbcs.dll/article?AID=/20090318/DAILYREG/903189974>
on measures by the U.S. Internal Revenue Service to relax restrictions on asset smoothing.

⁸ http://www.ipe.com/news/PME_mulls_pensions_cut_in_2010_31010.php?type=news&id=31010

⁹ Thanks to Patrick Groenendijk of Vervoer Pension Fund for this insight.

Amidst the slew of innovations in the management of pension funds and other assets, two major trends have emerged in recent months. First, the “LDI” trend, with a clearer recognition of the need to tie assets to liabilities, is gaining attention after 2008. The adoption rate has been slow due to changing regulation. The goal of the standard approach is strictly to increase the correlation between assets and liabilities; but this is just one part of the equation – the returns also have to be matched. The second is a separation of two different sets of contributors to returns and their management – called “Separating Alpha and Beta.”¹⁰ This book demonstrates that these two trends are not separate, but rather can be implemented effectively in one superior approach, especially if clients use SMART. In short, CIOs can improve performance and solvency by being smart about regular cash flow and rebalancing decisions that they make on alpha and beta assets. This is different from the current approach where the spotlight is on manager selection (or static alpha) and a naïve extension in duration, as opposed to managing beta and manager allocations against an effective and easily tracked liability benchmark.¹¹

For simplicity, this book separates the portfolio management discussion into three segments – (i) Liabilities, (ii) the Beta Engine, and (iii) the Alpha Engine – and briefly contrasts current practice with a more innovative approach.¹² A recent MetLife (2009) study of 153 U.S. pension plans, of which 43 percent had assets under management in excess of \$1 billion, highlights that “Asset Allocation” was selected 54 percent of the time as the risk factor to which plan sponsors pay most attention;¹³ “Underfunding of Liabilities” was selected 47 percent of the time;¹⁴ and “Asset and Liability Mismatch” was selected 43 percent of the time.¹⁵ This warrants focus on liabilities, beta management, and good process, since over 57 percent of respondents agreed that, in their experience, there is evidence of limited or no holistic risk management.

¹⁰ Callin (2008) is a good example of bad advice by asset managers seeking to sell products rather than help investors make effective decisions. Their arguments are invalidated, helping investors get a clearer understanding of the true risks and how to manage them. Another bad recommendation is to pitch 20-year bonds as a long-term substitute to equities based on point-of-time statistics - Robert Arnott (2009).

¹¹ For example, the DIC Pension Fund in Japan thinks very creatively about hedging liability risk and private equity beta risk. This book borrows ideas from innovative CIOs such as Mr. Hideo Kondo, but it advocates a much broader perspective than only generating return on hedging.

¹² We thank David Deutsch and Lisa Needle, former CIO and Acting CIO, respectively, of the San Diego County Employees Retirement Association, for permitting the use of these terms, which they have utilized in the effective implementation of their fund.

¹³ The response was: We use disciplined rebalancing to implement a documented strategic asset allocation policy.

¹⁴ The response was: The design and execution of our investment strategies have proven effective in comfortably managing our funding contribution level.

¹⁵ The response was: We carry out regular studies that have proven accurate and effective in managing mismatches between the duration of plan assets and liabilities.

Regrettably, costs were neglected in the last few years as investment vehicles became increasingly complex. Cost reduction directly results in improvement in performance, and Chapter 9 shows how this dramatically helps individual investors. CIOs can set up their overall SAA at extremely low cost, and ensure that staff and managers are paid commensurate to not only the risk taken but also to the skill displayed.

This is not a proposal to jump on the government bandwagon to restrict executive pay. On the contrary, the most talented investors warrant hefty bonuses, with the caveat that their performance is based on appropriate risk management and a clear demonstration of skill. Chapters 7 and 9 turn a common argument made by asset managers on its head – namely, that CIOs and Boards were accused of being too short-term in their evaluation of products. This argument is reversed to compel asset managers to be long-term as well, and to defer payment for the performance component of fees to later in the product cycle, once skill is established.

As an aside, nowhere is such an approach as essential as in the DC space where retail investors have to sacrifice today for the promise of a rosy future, with products such as “Target Date Funds.” Pogue and Modigliani (1973, 1975) argued for the reform of mutual fund fees that appropriately adjusted for risk, but the lack of progress in this direction demonstrates the clout of the product provider and less than optimal federal regulation. To avert a pension crisis in the retail investment space, such a re-evaluation in compensation to mutual fund managers may have to be mandated by regulation, as individual investors lack the bargaining power of pension fund CIOs – the likely audience of this book.

CHALLENGES – CASH FLOWS/REBALANCING, DYNAMIC DECISION-MAKING

In the late 1990s, one of the more sophisticated global pension funds - the World Bank’s pension fund – was managed by a talented staff, under the leadership of Afsaneh Beschloss, but the bulk of the work befitted an auditor rather than an investor. The approach, though innovative at the time, was not that of hard-core investors – too much time was spent on ALM studies and meeting managers, and too little time on being effective investment managers. In contrast, in the asset management space, the process for making all investment decisions was very clearly articulated. Equally important to large asset managers was that, while performance was variable and questionable at best, process allowed for a consistent approach, immunity against staff departures, and the ability for global information sharing.

Every morning, a one-pager specified the day’s recommended transactions. Based on data released the night before (economic, price, sentiment, value, etc.), for every portfolio under management, it would highlight:

- (i) **What** actions had to be taken – buy/sell/do nothing;
- (ii) **How much** was to be taken – 1 percent, 0.5 percent;
- (iii) **When** it had to be done – at the open of London markets though some managers had strict time-based recommendations; and
- (iv) **Why** these actions made sense – focusing on the specific change in momentum or economic data that caused a re-evaluation of the recommendations.

The most critical aspect of this approach was the explicit recognition that not doing anything was also a bet – something most pension funds have not realized, though investment policies suggested by consultants, and implemented by pension funds, routinely follow this passive approach. The practice at J.P. Morgan was to reflect on the systematic recommendations of the models, give portfolio managers the discretion to add to or subtract from the positions – based on their views about the market (e.g., politics, etc.) that may not have been factored in the systematic process – and then implement the final recommendation, tracking in detail the ensuing performance and risks.

In the simplest terms, to become an effective Pension Pilot, every implicit decision in a pension fund needs to be made explicit – after all, only what gets “M”easured and “M”onitored gets “M”anaged: the “M³ of Investing.” A pension fund CIO has the exact same job of managing assets as do the external managers they hire – only the asset labels are different. Therefore, SMART pension fund CIOs should put themselves through the same RFP questions they ask of their external managers, namely:

1. What are the key areas on which to focus daily decision-making?
 - a. Beta Allocation, Liability Hedge, Manager Allocations (typical elements of a pension fund)
2. What is the decision on these identified areas today?
3. What is the basis of this decision?
 - a. Qualitative judgment (perfectly acceptable) or a systematic process;
 - b. If systematic, what factors are used to make the daily recommendation?
4. Which staff member is responsible for which decision?
 - a. CIO for liability hedge and rebalancing/currency management;
 - b. Staff for external manager allocations
5. How is consistency in decision-making ensured, and what is the process for reviewing whether these decisions have been effective and for changing them if they have not?

Danny Ozark, manager of the Philadelphia Phillies sports team, is credited with the amusing observation, “Half this game is 90 percent mental.”¹⁶ Similarly, this

book argues that half the time, good investing is 95 percent process and 5 percent good ideas. At the end of the day, investing is not rocket science but the effective application of economic intuition to a set of decisions.

FORGET ALTERNATIVES – FOCUS ON LIQUID ASSETS/TRANSPARENCY

Many old-style investors were shocked with the dramatic and sudden move to alternatives, including private equity, hedge funds, and more exotic investments. In large part, this embodied a drift to the “endowment” model, the mantra of Ivy League CIOs who were elevated to Buddha-like status. Their every move was emulated without anyone pausing to ask the basic question: “Is it worth taking such a costly, illiquid bet?” (In other words, “What is the cost of illiquidity and lock-ups, and when will it hurt me the most?”). The balance of power shifted so dramatically towards asset managers that even CIOs of the largest funds had little input in the terms and restrictions of these alternative investments.

In 1995, the World Bank was asked by a consultant to review a private equity deal (the consultant was paid on commitments rather than disbursed amounts). Surprisingly, the list of co-Limited Partners (LPs) was the same as those on previous deals – an enviable Who’s Who list for asset managers. However, the document was designed by the General Partner (GP), with terms most favorable to the GP, with little recourse to the most sophisticated global pension funds. So why didn’t the LPs band together and dictate terms to the GP, rather than willingly submit to self-flagellation, that too for an investment where the ability to gauge future success was as meager as “Trust Me”? Years later, this approach was being perpetuated by “hedge funds” and fund-of-funds (FoFs) to the detriment of the investor.

It’s time to return to basics and ask whether the goals of managing a pension fund can be met through effective, low-cost, transparent, liquid, dynamic management of beta and liabilities. If so, forget about alternatives or, at the most, play with them at the margin to extract any ‘alpha’ from illiquidity, but recognize that gates, lock-ups, provisions on selling partnership interests in secondary markets, and restrictions on revealing the nature of the investment (especially in private equity) are effectively an increase in the investment cost, and hence a lower after-fee performance.^{17, 18}

The simple prescription is for CIOs to follow the low-cost, high value-added KISS principle: “Keep it SMART and Simple.”

¹⁶ The two simplest implicit bets in investment policy are (i) the choice of strategic currency hedge, as that is a bet on the local currency; and (ii) the rebalancing policy, which suggests doing nothing when the portfolio drifts between the ranges or rebalancing periods.

¹⁷ Muralidhar and van der Wouden (1999).

¹⁸ It surprises us that consultants and FoFs did not price out the various options that pension clients sold for “free” to asset managers, and that these options were exercised at the worst possible time for the investor.

RISK MEASUREMENT IS NOT EQUAL TO RISK MANAGEMENT

Risk Management is lamentably a misnomer in the asset management industry today. A major U.S. pension plan spent millions purchasing an expensive risk system, and additional millions to pay consultants to implement the system, only to have their senior investment officers ignore the risk report – so much so that when the frequency of distribution of the report dropped from daily, to weekly, and then monthly, there was no protest from the staff members it was supposed to serve.

People often confuse Risk Measurement with Risk Management. The latter is the responsibility of the CIO and investment staff, and is accomplished by making effective decisions on every allocation or selection decision in the fund. Risk Measurement, on the other hand, is what outside vendors offer at high cost, most often for little value! The Pension Dashboard discussed earlier focuses on daily risk measurement (i.e., value-at-risk, black swan risk), but the CIO using it focused on Risk Management. To illustrate, in 1997, the Treasurer of the World Bank, Gary Perlin, posed the question: how much would the fund lose if emerging markets collapsed? Since the World Bank had already implemented what was probably the first LDI-based pension risk system at the time, it was relatively simple to run the numbers and give him an estimate. When markets did collapse the following year, the models were within a tad of the 1997 estimate. Gary’s soft and extremely polite reaction was, “If you were so damn smart, why didn’t you make me money?” Never again did I confuse Risk Management with Risk Measurement.

STAFFING AND COMPENSATION

Another interesting aspect of institutional asset management is the willingness of pension fund Boards to pay external managers many times more than what they paid internal staff for equivalent, if not better, decisions and greater control. Yet, it is common to have many CIOs pilloried in the press for high salaries, only to have the Fund hire an external asset manager for higher multiples.

Paying Wall Street high salaries is not the fault of Wall Street, but of Main Street. The industry has no pre-qualifying certification for becoming an investor. More important, every investor at an asset management firm has learned their craft at the expense of the end client; so it is time for pension fund Boards and CFOs to see the fund as a potential profit center and allocate resources appropriately. For example, on a \$1 billion fund, a 2 bps enhancement by improving rebalancing is equivalent to \$200,000 – something worth paying for.

Every organization has to decide where they have the greatest competitive edge, and hire staff accordingly. One may argue, as manager research is a generic activity with publicly available data, an effective small-sized pension fund may

want to have a CIO focus on Liabilities and Beta Management, delegating the job of selection and the management of allocation to alpha managers to one or two staff member/s. The actual data collection and due diligence are outsourced to an industry (of consultants) that has grown for this purpose and where this data has become a commodity – hence the low cost for smaller funds. If the Dutch had adopted this model in their drive to improve governance and solvency and to lower costs, they may not have ended up allocating assets to foreign fund managers with little-to-no background in managing Dutch pension assets, and firing many well-qualified CIOs. Some of the blame for this trend lies at the door of the DnB, which decided to apply onerous reporting/model restrictions and then worried about the outsourcing of Dutch assets to foreign, potentially poorly qualified (regardless of brand name) asset managers.

There has to be a better relationship between Boards and staff, based on appropriate, long-term compensation structures, eliminating the need for “Advisory Boards,” which had earlier been erroneously suggested to help CIOs garner support for their innovative ideas. Smart Boards should entrust their staff with clear mandates and allow them to innovate, instead of wasting time and effort building consensus. Moreover, while it was suggested that a group of quantitative analysts should carry out performance attribution and risk assessment, these tasks are easily outsourced at low cost to custodians or consultants who collect the requisite data – though CIOs would have to be specific about exactly what is needed, instead of the custodian determining what should be presented.

The SMART paradigm requires no more than a CIO and a deputy-CIO to focus solely on liability, beta, and currency management (and manage the Board and internal staff), and the appropriate number of staff to oversee external managers, holding the CIO ultimately accountable for pulling together all the operations and ensuring that risks and returns are appropriately diversified. It is no surprise that the case studies presented here are from clients who have run a meaningful size of assets with limited staff and have yet managed to raise the bar in pension investing.

THE PENSION DASHBOARD

Each client is different, but some basic information at the start of every business day is a prerequisite for an effective pilot/CIO. A disciplined pilot needs to (i) ensure that all systems are in good working order; (ii) be clear about where their final destination is; and, (iii) based on factors such as weather and traffic, whether it is expedient to travel in a straight line or make appropriate deviations to arrive at the destination safely and on schedule.

The Pension Dashboard displays, on a quantitative and qualitative basis, the following information in a single table:

1. Performance on an absolute, relative, and risk-adjusted basis year-to-date and since inception, given the previous night's data. Such information on the current situation of the fund helps to determine whether to increase/decrease risk going forward.
2. Key decisions responsible for performance.
3. Current liability hedge, and the action needed to change it.
4. Current asset allocation including currency, and whether it is the correct one for the prevailing market environment.
5. Asset classes impacted, and if changes are suggested, the magnitude of the change, and why the change is relevant.

Figures 1.2-1.4 provide examples of the content of the Dashboard, but each client would customize their own structure according to their individual objectives, organization set-up, and decision-making process. Let us consider a U.S. Pension Fund with a portfolio structure as in Figure 1.1 and a strict asset focus. (More generic European and Japanese structures are provided in Chapters 5 and 8 – the Dutch are more ALM-focused.)

First developed by the Shell Netherlands Pension Plan, and coined the “Investment Decision Process” (IDP), this structure clearly lays out the hierarchy of decisions. Once the structure is articulated, the CIO can delegate decisions and hold the staff responsible for performance, though the CIO is primarily responsible for ensuring that all risks are diversified and risk-adjusted return goals are achieved at the total fund level.

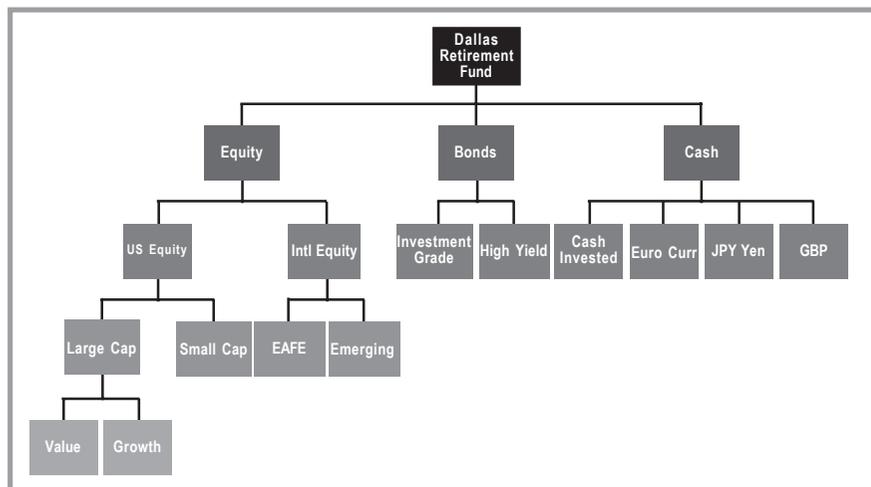


Figure 1.1. A typical U.S. pension fund investment decision process.

More important, the IDP shows that decisions relating to the daily mix of Equity, Bonds, and Cash account for 100 percent of the Assets Under Management (AUM) and hence require maximum attention. The liability, while not shown explicitly, is the benchmark for the top box and must similarly be managed as a top priority. Manager selection is at the lowest point in the portfolio tree and therefore of lower significance. Hence, it is much more efficient to spend more time managing beta than identifying the next exotic hedge fund manager to whom to allocate 2 percent of the fund.

Figure 1.2 serves as a “Rear View Mirror and Speedometer” for the CIO. They can perform better than their liabilities or strategic asset allocations (SAAs) in three major ways, as shown in the right-hand chart of Figure 1.2:

- (i) Manager contribution
- (ii) “Benchmark misfit” – created by (a) assigning managers benchmark indices different from the SAA benchmark indices and/or (b) weighting sub-components of SAA indices across managers so the aggregation is different from the SAA benchmark index¹⁹; and
- (iii) “Strategy contribution” – the value created by being dynamic/SMART in managing alpha and beta decisions.

The left side of Figure 1.2 provides high-level summary information about the fund, year-to-date and since inception. The focus is on excess return generated (relative to liabilities or an SAA); relative risk taken to achieve this result; relative return-risk ratio (or the Information Ratio), which indicates the reward per unit of risk; M^2 excess – which is a performance measure presented in Modigliani-Modigliani (1997), highlighting the need to present excess returns after normalizing for absolute volatility and removing any leverage that might have been created in portfolio construction; maximum drawdown (my favorite statistic and what I call “Yield to Fire”, i.e., how much and for how long the fund can underperform before the Board loses patience and fires the manager); ratio of excess good risk to excess bad risk – again, trying to break up naïve risk statistics into an indication of good versus bad risk (with preference for ratios above 1; confidence in skill, which indicates the expertise of the CIO in outperforming the benchmark (explored further in Chapters 2 and 3); and, finally, the success ratio or percentage of days that the performance was greater than the benchmark (a batting average of sorts, and more relevant for public institutions, where being right more than 50 percent of the time may appeal more to the press than being right a few times and doing extremely well).

¹⁹ Muralidhar (2001), Chapter 9, describes this attribution in greater detail.

A smart pension fund can easily set up a process to produce a similar report for its investment staff, especially for each respective branch of the tree, thereby improving overall control. For some CIOs, a daily report is too demanding, but the focus is more on process than frequency. CIOs must realize that lack of information during the month only means that *investment decisions are left unmanaged and being made by the market, not by the CIO, but the CIO is held accountable for the end result.*

Dallas Retirement Fund
Evaluation Period: 01/01/2000-08/18/2010

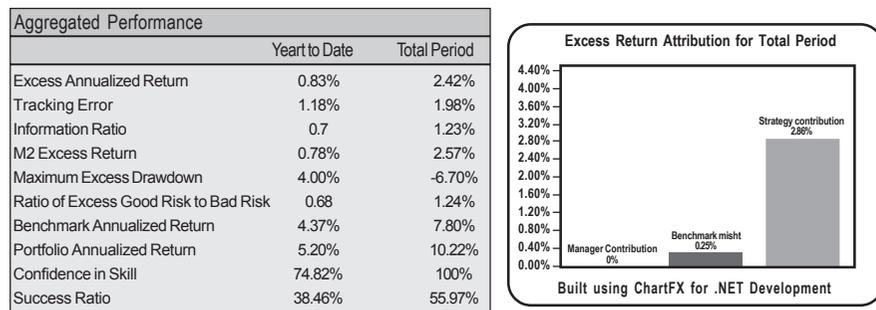


Figure 1.2. The “Rear View Mirror and Speedometer” of the pension fund.

The next part of the Dashboard helps CIOs position the portfolio to outperform in the future (à la a Global Positioning System or GPS). The purely hypothetical data tabulated in Figure 1.3 provides all the investment recommendations in one concise report, enabling the investment officers to see the recommended investment tilts. These recommendations can be derived entirely from a naïve rebalancing program, which brings all the decisions back to the SAA at a pre-determined date; they can be derived from a more intelligent quantitative process (the SMART approach proposed in Chapters 5 and 7); or they can be the result of input from the investment officers on a purely qualitative basis. Again, though the bias is for systematic processes, ultimately the process only formalizes effective qualitative analysis; hence, the goal is to give more structure to qualitative processes to help integrate them into the fund management operation. One may note that the sum of all recommendations at the top asset class level of all Stocks, Bonds, and Cash is zero (i.e., there is no leverage unless permitted by the Board), but the sub-asset class level decisions add to the recommended asset class tilt. For example, the equity overweight of 5.25 percent comes from U.S. equity overweight of 6.95 percent and International

equity underweight of -1.7 percent, and the same equity overweight is funded from a bond (-4.5 percent) and cash (-0.75 percent) underweight. This cash underweight is financed entirely in USD, and no currency positions are recommended.

Current Allocation Monitor		
	Allocation Tilt (Percentage of Portfolio)	
EQUITY	↑	5.25
US Equity	↑	6.95
Large Cap	↑	11.16
Value	↑	12.46
Growth	↓	-1.31
Small Cap	↓	-4.21
International Equity	↓	-1.70
EAFE	↓	-1.02
Emerging	↓	-0.68
BONDS	↓	-4.50
Investment Grade	↓	-2.61
High Yield	↓	-1.89
CASH	↓	-0.75
Cash Invested	↓	-0.75
Euro Currency	↔	0
Japanese Yen	↔	0
GBP	↔	0

Figure 1.3. The GPS – Where should the fund be allocated today?

Given the bias towards recommendations driven by systematic factors, Figure 1.4 highlights the rules affiliated with this portfolio that triggered in the last three months, and tracks the date on which they triggered. Equally important, for the CIO, is the bottom part of the table which specifies the economic parameter that moved, and by how much, to trigger a recommendation. For example, the portfolio tilt between equity and fixed income was adjusted on August 15, 2010, due to a change in the 200-day momentum indicator of the Russell 3000 U.S. equity index.

It is mind-boggling to think of the potential complexity of managing even a simple four-asset class pension fund (typical in Japan), where it is assumed that 20 economic factors affect the basic asset classes. It is humanly impossible for a CIO

to keep track of all these data variables in his/her head; hence, a systematic process must be established to highlight when economic or financial data have crossed a certain threshold. Figure 1.4 shows that while the price of oil dropped from the preceding week, the momentum of stocks was positive and the risk indicator of

Decision Drivers				
Active Rules in the past 3 months (from Portfolio evaluation end date 08/18/2010)		Date of Action		
Eq vs FI: 200 day Momentum	08/16/2010	* Instill Discipline by Translating Economic Ideas into Simple Rules		
Eq vs. FI: Oil Momentum	08/16/2010			
HY vs. Inv. Grade: VIX and Equity	08/16/2010			
EAFE vs. EMG: Bond Performance	08/09/2010			
EAFE vs. EMG : 200 Day Momentum	08/02/2010			
LC vs. SC: Mean Reversion 2	07/30/2010			
EAFE vs EMG: Yield Curve	06/30/2010			
LC vs SC : Mean Reversion 2	07/30/2010			
EAFE vs. EMG: Yield Curve	06/30/2010			
Value vs. Growth; Growth Momentum	06/28/2010			
Eq vs. Cash : Slope of Yield Curve	06/14/2010	* Rules Driven by Economic Data		
Eq vs. FI: Halloween Effect	06/01/2010			
HY vs. Inv Grade: Halloween Effect	06/01/2010			
USEQ vs. INTEQ: Sentiment	05/31/2010			
Signal Tracker				
Signal Series	Latest (last date & value of Signal)	Week Ago	Month Ago	Month Ago
Russell 3000 Index Close	08/18/2010 753.02	730.79	722.81	703.54
World, Energy, Oil, Brent dated, FOB Sullom Voe, Close, USD	08/19/2010 71.36	75.39	72.63	62
CBOE, Volatility Index (VIX), Close	08/20/2010 0.12	0.14	0.16	0.13
Russell 2000 Growth Index Close	08/21/2010 357.39	338.43	343.35	334.68
J.P.Morgan Emerging Markets Bond Index (EMBI) Total Return, Close	08/22/2010 366.08	363.08	354.75	333.85
MSCI, Emerging Market Free USD Index, Close	08/23/2010 777.22	768.48	734.99	608.15
R1000 1 YR% Change	08/24/2010 12 %	8 %	6 %	15 %

Figure 1.4. Knowing why these decisions have to be made.

U.S. equities (VIX) declined. The SMART approach makes it easier to formalize one's basic economic intuition into a few, powerful rules across many asset pairs, and let a computer track them, rather than mentally attempting to work out the optimal allocations in a multi-tier portfolio. Chapter 4 explores this in more detail. The four-panel Dashboard presented (Figures 1.2-1.4) should, at a minimum, be made available daily to a CIO, with the ability to drill down further into any asset class or manager allocation, as desired. As indicated earlier, *only what is measured and monitored is actually managed*.

Applicability to Endowments/Foundations/ Social Security Systems/ SWFs

Nothing so far precludes these same principles being applied by other institutional investors, including endowments, foundations, Social Security systems, SWFs, insurance companies, and even individual investors. For investors who focus on the illiquid bet, at a minimum, these principles should be applied to the liquid portion of the portfolio. At a more sophisticated level, a CIO in charge of a fund invested heavily in illiquid assets should spend time

understanding the liquid beta replication component of the illiquid asset, so that when the beta of the illiquid asset is likely to decline in performance, the Dashboard helps to effectively manage these bets. In short, illiquid investments should be less in SAAs and seen more as a tactical bet made to capture the illiquidity premium (Chapter 3 develops this recommendation further); but until such time as effective measures exist to capture volatility and illiquidity, it is realistic to expect that good governance would entail a more beta-oriented approach to managing funds. Alternatively, where governance prevents CIOs from taking a career risk in tactically allocating to illiquid assets (as it is often a bet better taken by a Board), the two portfolios should be carved out separately, and managed with similar Dashboards for each.

SUMMARY

This chapter has defined the CIO's key responsibilities and how Boards can help fulfill them. Though the focus is on pension fund CIOs, the findings are relevant to any CIO, especially as attention is drawn to cases where the **objectives or liabilities differ, but investment operations are identical**. Typically, a CIO is in a unique position between the Board and the external manager, and spends a lot of time preparing Board presentations, attending external manager meetings, reviewing performance reports, making cash flow decisions, etc. However, once the objectives are clearly articulated, the major tasks of managing assets can be outsourced, allowing the CIO to focus on the highest value-added activities: managing liabilities and beta (instead of hiring hedge fund managers). In other words, if CIOs follow the KISS principle - Keep it Simple and SMART - it would clear the deck to concentrate focus on the pension fund structure and goal-specific Dashboard. However, such an exercise requires adequate staffing, effective risk management, and appropriate compensation. The following chapters address the last two issues in greater detail.