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Northfield News

A Newsletter for the Friends and Clients of Northfield Information Services

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Credit Risk Modeling at Northfield

By Dan diBartolomeo

As mentioned in our August 2007 newsletter, Northfield's continuing development of the fixed income portion of our Everything, Everywhere model (EE) has led us to a significant effort in credit risk analysis. This effort has proven timely, given the events of the collapse of the sub-prime mortgage market, the bankruptcy of Lehman Brothers and the subsequent global credit contraction. Analysis of credit risk of both fixed income instruments and counterparties is now a high priority for almost all investment institutions. Our enhancements around credit risk modeling involve numerous separate areas.

Credit Rating Transition Matrices

Our first effort is to construct our own transition probability matrices for rating agency assigned credit ratings. Each credit rating agency, such as Moody's and Standard and Poor's, publishes periodic reports providing historical data on the rate on which fixed income instruments in each rating class have been upgraded or downgraded by that particular rating agency. For example, historical data might show that of the bonds rated AA, 3% of those are likely to be downgraded to an A rating in a typical year, and 2% are likely to be upgraded to AAA.

Northfield is taking this kind of analysis to a much greater degree of depth. We are combining information on historical rating changes from four different vendor databases, including a US coupon bond database that we acquired in full, and hence have exclusive access. By aggregating information across multiple rating agencies and multiple fixed income data vendors with Northfield's own risk data, we're able to answer much more complex and useful questions. For example: "What are the transition probabilities for AA rated industrial bonds, conditional on the fact that two or more other issuers in the same industry have been downgraded in the last six months?"

Armed with the information from our extended rating transition matrices, we can adjust the credit related risk factor exposures for all fixed income securities in our EE model to their expected values inclusive of downgrades and upgrades. It should also be noted that to an extent the probability of transition to a state of default represents an early "termination" of a bond, effectively shortening the expected maturity date and requiring adjustment of the security's exposure to term structure related risk factors. While the change will be largely invisible to users, we expect this enhancement to be put into production in the next few months.

US Municipal Bonds

Northfield now covers more than 1.2 million municipal bond issues in our extended EE data set. Among US high net worth investors, ownership of municipal bonds is pervasive. A recently look at individual investor client portfolios at a Northfield client brokerage

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Northfield Recent and Upcoming Events

2009 Northfield Annual Research Conference

The Grand Hotel Excelsior, Venice Lido Resort • Venice, Italy • June 1-3, 2009

This year we are returning to our host city of the first Annual Research Conference, twenty years ago—Venice Italy! The Grand Hotel Excelsior is located on Lido in Italy and offers the best of both worlds: the wonders and history of Venice with all of the comforts of a beachfront resort.



Grand Hotel Excelsior, Venice Lido

The conference will start on Sunday Evening, May 31st, with the “Unofficial” welcome cocktail party and dinner. As is customary at Northfield events, a complete recreational and social calendar will accompany the working sessions. The sessions will begin on Monday morning and Monday afternoon will be reserved for recreational pursuits. Northfield is offering attendees a variety of activities, which are appropriate choices to our beautiful venue: walking tour of Venice, secret passages of the Dodge’s Palace, excursion to the islands of Murano and Torcello and a gondola race. Monday evening will feature an elegant “black tie” gala and Tuesday will feature a Venice themed evening.

Northfield is holding a block of rooms for the nights of Sunday, May 31st through Tuesday, June 2nd. **All room rates will be in Euros for this event.** The conference room rate is discounted at € 225.00 double room for single occupancy; and € 274.00 double room for double occupancy plus applicable taxes and service charges and is payable directly to the hotel. Additional room types are available basis at an additional cost..

We are accepting online registrations only. To complete your online registration, hotel requirements, and to view the detailed conference agenda, visit <http://www.northinfo.com/events.cfm>. Contact Kathy Prasad if you have any difficulties registering, kathy@northinfo.com, 617.208.2020.

Agenda

The agenda will consist of eleven 1-hour long presentations.

The Earnings Estimate Dispersion Effect in International Stock Returns

Markus Leippold, Imperial College London and Harald Lohre, Union Investment

Stress Testing: Black Swans of Shades of Grey

Daniel Satchkov, FactSet

Is Quant Investing Dead? A Formal Debate

Pro: Ed Fishwick, Blackrock

Con: Jason MacQueen, R-Squared

The Relationship Between Market Volatility and Investment Style

Dan Bukowski, QSG

Structure for Retirement Investing

John O’Brien, University of California at Berkeley

Diversification Effects Associated with Global Value Investing

Eddie Qian, Panagora Asset Management

The Triangle of Guidance, Revisions and Surprise From A Practitioner's Perspective

Keith Quinton, Fidelity Management & Research

Ensuring Trading Fairness in Asset Management

Bernd Scherer, Morgan Stanley

Tax Adjusted Portfolio Optimization and Asset Location

Ashraf Al Zaman, Saint Mary's University

The Rocky Ride of Break Even Inflation Rates

Marielle de Jong, Sinopia Asset Management

Market Mayhem, Mortgages and Madoff

Dan diBartolomeo, Northfield Information Services, Inc.

Northfield/ClariFI Joint Seminar

ClariFI's New York Office • February 27, 2009

Northfield and ClariFI are hosting a half day complimentary seminar at ClariFI's New York Office on Friday, February 27, 2009, for clients who are using the Northfield on ClariFI platform.

There will be three one hour long presentations: "Unique Aspect of Performance Attribution," "Short Term Risk and Long Term Models," and "Twelve Questions Your Risk Management Tools Should Help You Answer." A similar event was recently held at Northfield's Boston Office on Oct 27th.

To register for this event, visit ClariFI's website at:

<http://guest.cvent.com/i.aspx?5S,M3,9b748e62-97e3-4c15-813f-f260f9cf0243>

Asia Seminars Wrap-up

Hong Kong, Singapore, Sydney and Tokyo • November and December 2008

Northfield hosted our annual Asia Seminar Series with four highly successful events in Hong Kong, Singapore, Sydney and Tokyo. The seminars showcased our research on key topics in investment and risk management to our growing family of Australian and Far Eastern clients and prospects and broadened awareness of the range and depth of Northfield products, services, and research.

The presentations were given by Dan diBartolomeo, Nick Wade, and Dr. Kerr Hatrick, Director, Head, Asia, Quantitative Products One, Global Markets Equity, Deutsche Bank AG. Topics included: "A New Metric for Measuring Skill From Investment Performance," "Global Liquidity and Transaction Costs," "Impact models, seasonality and the evolution of Asian markets" "Do Prediction Markets Add Value to the Forecasting Process?," "Short Term Risk from Long Term Models," "The Equity Risk Premium, CAPM and Minimum Variance Portfolios" and "Twelve Questions Your Risk Management Tools Should Help You Answer."

Complete seminar proceedings have been posted at <http://www.northinfo.com/papersearch.cfm>.

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firm indicated that over 60% of the unique securities held were municipal bond issues.

In addition, the recent large declines in market values have left many large public employee pension funds substantially underfunded. For example, let's consider a pension fund that provides retirement benefits for public employees of the fictional city of Metropolis. Before the market decline, the fund's assets were equal to the present value of the actuarially determined expected liabilities. They were fully funded. After the recent market decline, the value of the fund assets is just 75% of the present value of liabilities. *This fund would be insolvent, except for the promise of the future funding inflows from the city government of Metropolis.* From an economic perspective, the promise of future cash flows the city can be viewed as a single municipal bond that is now 25% of the pension fund portfolio. From both asset allocation and risk management perspectives, the idea that 25% of the assets of a large *tax exempt* pension fund are invested in a single, municipal bond issuer should be very disquieting.

In the middle of 2009, Northfield will introduce an innova-

tive new way to consider municipal bond credit risk and the correlation of credit risk across issuers. *This new method rests on the idea that the ability of an issuer to service their debt is directly related to the underlying local economy from which tax revenue is derived.* It is closely related to our approach for risk assessment of commercial real estate described in: <http://www.northinfo.com/documents/191.pdf>.

For each of the more than one hundred major municipal bond issuers, Northfield has constructed a simple economic model that describes how a particular local economy is different from the national average. Each locality is analyzed in terms of what fraction of local employment and income is derived from various sectors of the economy. For example, we know that the a "larger than national average" portion of the economy of New York City and Boston relate to the financial services industry, while energy related income plays a very prominent role in Houston, and the high-tech sector dominates the Silicon Valley area in California. Using the variance and cumulative returns of stock market sectors as a leading indicator of economic

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activity, we can project both the likely volatility and trend of creditworthiness for municipal issuers. In addition, we can apply cluster analysis based on both geographic proximity and the degree of economic similarity to forecast credit correlation across different municipal bond issuers. Using the EE model, we can also project the correlation of a particular municipal issuer's creditworthiness with other asset classes in order to facilitate enterprise-wide risk assessment as in the aforementioned example of the Metropolitan public pension fund.

Issuer Level Risk Aggregation

One aspect of credit risk modeling requires us to improve the EE factor model and also our software applications in which risk reporting is done, such as the Open Optimizer. In all factor models, the risk of a particular security is described by a series of risk factor exposures and a single value describing asset-specific risks that are presumed to be independent across securities. In equity portfolios, the presumption of independent specific risks is generally sufficient, as almost all firms have only one class of common stock. However, in fixed income portfolios it is very common for an issuer to have many bond issues outstanding, so we need to realize that the "asset specific" risk of one Deutsche Telekom bond issue is essentially 100% correlated with the purportedly "asset specific" risks of another Deutsche Telekom bond.

The major mechanical aspect of this effort is to cross-reference the millions of individual security issues now covered by the EE model to their issuers. This is an enormously complex undertaking given the propensity of large issuers to have many subsidiary entities, each of may have issued its own debt securities. Our software applications will be modified to allow input of the issue/issuer correspondence and will take appropriate account of the familial relationships in risk calculations. We will also introduce a form of "synthetic" security to as a way to represent counterparty risk. The required mathematics of appeared in a 1998 working paper, <http://www.northinfo.com/documents/58.pdf>.

Issuer Specific Credit Risk Assessment

The most ambitious aspect of our credit risk research is the development of a "contingent claims" based model of credit risk. This approach began with Merton (1977) for corporate securities and was recently extended to sovereign credit risk in Bodie, Gray and Merton (2007). Contingent claims modeling of credit risk has been well accepted in bank lending, as provided commercially by the KMV division of Moody's.

The essence of the method is simple. If we are the stock-

holders of a firm, our ownership shares can be thought of as two options. The first is a call option on outright ownership of the assets of the firm, by paying off all of the firm's debt. The second is a put option to give the firm's assets to creditors, by intentionally defaulting on the debt and forcing the creditors to take the assets of the firm in exchange.

As with most situations involving options, the key input variable to the process is the expected volatility of the value of the assets of the entity. *One way to think about this is "What is the expected volatility of the firm's stock, assuming the firm had no debt?"* There are many possible ways to answer that question. Some contingent claim models have tried to actually use the volatility of the book value of assets, while others have simply used the firm's historic stock volatility. The most common approach is to "de-lever" the firm's volatility using a simple application of Ito's Lemma. *We believe that given Northfield's experience and detailed models of equity volatility, we are uniquely able to efficiently estimate this parameter.*

The key benefit of the contingent claims approach to credit risk modeling is that there is must be an explicit mathematical relationship between stock price and the expected likelihood of default. Every "up and down" in the value of firm equity, or change in volatility expectation can be instantaneously translated into an updated view of default likelihood. While careful calibration of the results is needed to filter out spurious stock market volatility, the contingent claims approach can provide indications of credit problems in a much more timely fashion than waiting for the traditional rating agencies to upgrade or downgrade an issuer.

Output from the Northfield contingent claims model will be available to clients in two forms. First, the information from the model will be impounded in to the risk values for fixed income issues in the EE model. For example, if a bond is rated AA, but the contingent claims model shows it should really be rated BBB, the credit risk factor exposures for the bond can be adjusted accordingly. In addition, the expected price effect of the downgrade will be incorporated into the value of "asset-specific" (i.e. issuer) risk. We also expect to provide credit risk assessments of issuers in some kind of database or spreadsheet format for the purpose of individual issue credit analysis. It is anticipated that this new analytical work will be available to clients sometime in 2009.

We have also begun to consider use of both contingent claims methods, and another familiar Northfield technology, the Analytic Hierarchy Process, as a means to assess credit risk for structured products. An example of using AHP for credit risk analysis can be found in Johnson, Srinivasan and Bolster (1990).

Recent Enhancements to the EE Model

By *Emilian Belev*

Introduction of credit spread durations for floating rate instruments

As part of our ongoing effort in the area of credit risk for fixed income instruments, we have recently added a measure of duration which is related to movements in the credit spread taken separately from movements in the base time-value-of-money yields. This would entail a more accurate picture of credit risk for floating rate instruments for the reasons explained below.

To briefly check back on the basic approach of the EE model to credit risk:

- a) All credit factors in the model serve as independent variables in a Generalized-Least Square regression explaining changes in bond's Option Adjusted Spreads over time, the result of this GLS being a set of raw regression coefficients and residual variance
- b) The regression coefficients and standard deviation of residuals get multiplied by the bond's effective duration to get to the actual model factor betas and specific risk estimates respectively

Prices of floating instrument durations tend to have low interest-rate sensitivity because normally the rate of the instruments will be adjusted in close relation to the base discount rates (the yield curve), hence any increases in the coupon will be countered by increases in the discount factors. Since coupons are often tied to reference rates that are supposedly based on low credit risk lending, it would be more appropriate if durations applied to floating rate instruments in point (b) above are not determined as a simple interest-rate durations of an adjustable rate bond. It is still arguable that, for example, the London Interbank Offer Rates – the prime anchor for floating rate bonds - are devoid of credit risk, especially provided that entities like Lehman Brothers were a big part of the daily market that set these values. Yet, as the purist approach would dictate, and in faith that markets regrouping from the financial crisis will tend to rectify such deviations and establish low credit risk anchors, we thought that introduction of credit spread duration will be an improvement in the accuracy of risk estimates.

The methodology of calculating a credit spread duration is simple and, we hope, effective. The rationale behind it is as follows. If we knew the path of interest rates in the future, then all cash flows from one bond could be thought of as a portfolio of zero coupon bonds, the cash flows of the

original bond being the respective face amounts of the ingredient zero bonds. If we hypothesize a large number of such interest rate paths, then this “portfolio of zero bonds” analogy will work under each of those hypothetical paths. Since the price of the bond is the expected value of all hypothetical discounted cash flows under the martingale measure, we can think of the duration of a floating rate instrument as that of a super-portfolio of the probability-adjusted values of ingredient zero coupon bonds under all interest rate paths. If interest rate paths are going up, we will have higher relative durations due to higher cash flows (coupons) occurring later in the life of a bond. If interest rate paths are going down, we will have lower relative durations because higher coupons occur early. These two occurrences will tend to offset each other contributing to an overall average bond duration that will tend to be somewhere in between that of the rate paths going up and those going down – in other words close to a path where interest rates, hence coupons are stable. We should still note that the dominant part of a bond's duration under any interest rate path will be borne by a large face amount occurring at maturity which does not change with interest rate movements. For these reasons, we calculate the credit spread duration of a floating rate instrument by treating it as a fixed rate bond, coupon for its life set to the current bond's coupon value. Note that for the purpose of term structure factor exposures (betas to shift, twist, and butterfly) we do still treat the floating rate instrument considering its adjustable rate feature. This treatment allows us to model floating rate instruments with good accuracy and in a way that is cost- and time-effective.

Acceleration of model data delivery

We are glad to inform that we have recently introduced a trimmed-down schedule at which we deliver the different modules of EE data. At this point, we make the Government/Corporate universe available by the 3rd business day of the month, and the Municipal and MBS pool updates by the 4th business day. Given that our modeling approach involves individual bottom-up treatment of each out of several million instruments, this is a significant improvement from the previous timeline of the 8th business day. Availability of the custom processing tool EENIAC and all of its functionalities are also adjusted accordingly. We do hope that this enhancement would allow our clients to be more responsive to the market environment and their audience's requirements. This is one of a series of milestones from our plan to redesign EE model data delivery into a more cohesive and intuitive format for more-and less-technical risk users alike.

Performance Attribution of Market Neutral Portfolios

By Dan diBartolomeo

The most common procedure for performance attribution for investment portfolios is to decompose portfolio returns into two levels that represent the influence of weighting decisions across portfolio sectors and the influence of security selection within portfolio sectors. Our use of the term "sector" really refers to any set of mutually exclusive classifications into which portfolio securities are divided. These classes could represent asset types (stocks, bonds), industry groups, countries or subsets of along the range of a continuous variable such as market capitalization or bond maturity. The best known expositions of the method was put forward in Brinson and Fachler (1985) and Brinson, Hood and Beebower (1986). Within the Northfield Performance Attribution system, this type of analysis is referred to as "stratification" reporting, wherein we think of each subset of the portfolio assets as a strata or layer within a whole.

A vexing problem arises when we undertake to do performance attribution on portfolios which allow short positions, particularly market neutral portfolios. Imagine a case where we have \$10 Million dollars in long positions in bank stocks and \$10 million in short positions in bank stocks. If our long positions and short positions have different returns during a period of time, we will have earned a return, but describing the return for the banking sector is difficult as our total equity investment in the sector is zero. If we think of a return for a period as the portfolio value earned divided by portfolio value invested, the return for the banking sector would approach infinity as the net investment in the sector approaches zero.

The next release of the Northfield Performance Attribution system will incorporate a change that will be invisible to users for most portfolios, but will address the long/short stratification issue.

Let's do a more detailed example that that illustrates the problem. Assume we have a portfolio of eight stocks and we have two "strata". For the sake of generality I'll call the two strata "blue" and "green". For a particular month, my eight stocks, their weights and returns are:

Ticker	Wt%	Return%	Strata
AA	20	10	Blue
BB	5	8	Blue
CC	10	-4	Green
DD	10	0	Blue
EE	15	7	Green
FF	20	8	Green
GG	15	9	Green
HH	5	-8	Blue

For the "blue" strata our portfolio weight would be 40% (20+5+10+5), while for "green" our portfolio weight would be 60% (10+15+20+15).

The portfolio return for a strata is the sum of the product of the security weights and the security returns for members of the strata, divided by the sum of the weights in that strata.

$$SW_j = \sum_{i=1 \text{ to } n} W_i$$

Where

SW_j = the portfolio weight for strata j

W_i = the weight of security i

n = the number of members in strata j

$$SP_j = \text{Sum } \sum_{i=1 \text{ to } n} (W_i * R_i)$$

SP_j = the portfolio return for strata j

R_i = return for security i

$$SP_{\text{Blue}} = [(20*10)+(5*8)+(10*0)+(5*(-8))] / (20+5+10+5)$$

$$SP_{\text{Green}} = [(10*(-4))+(15*7)+(20*8)+(15*9)] / (10+15+20+15)$$

The problem comes up because if SW_j approaches zero (all the weights in a strata sum to zero), the value of SP_j will approach infinity. Clearly, an aggregation of strata returns over multiple time periods will also be problematic.

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(Performance, continued from page 6)

Let's modify our example to be a long/short portfolio to illustrate:

Ticker	Wt%	Return%	Strata
AA	-60	10	Blue
BB	45	8	Blue
CC	50	-4	Green
DD	10	0	Blue
EE	15	7	Green
FF	-40	8	Green
GG	-25	9	Green
HH	5	-8	Blue

In this case the portfolio weight for "blue" will zero (-60 + 45 + 10 + 5) and the portfolio weight for "green" will be zero (50 + 15 -40 - 25), so calculating strata returns will be impossible because of the zero denominator in SP_j .

One solution for our dilemma is to use the absolute value of W_i for calculating SW_j (the denominator of SP_j), but continue to use the signed value of W_i for calculating the numerator. For the conventional case of all $W_i > 0$, nothing would change from the regular calculation as the absolute value of a positive value is the same value.

To make this example as general as possible, the problem has been set up so that the sum of the absolute values of the portfolio weights is 250. For most long/short problems the sum of the absolute values will be 200. We have also chosen a case where the sum of the positive weights and the sum of the negative weights is uneven. Most cases will have equal weight summations on the long and short sides.

$$SW_{Blue} = \text{abs}(-60) + \text{abs}(45) + \text{abs}(10) + \text{abs}(5) = 120$$

$$SP_{Blue} = ((-60*10) + (45*8) + (10*0) + (5*(-8))) / 120 = -2.33$$

$$SW_{Green} = \text{abs}(50) + \text{abs}(15) + \text{abs}(-40) + \text{abs}(-25) = 130$$

$$SP_{Green} = ((50*(-4)) + (15*7) + (-40*8) + (-25*9)) / 130 = -4.92$$

We should note that the sum of the portfolio strata weights no longer adds up to 100. This is why long/short strategies are often called "extension" strategies because you are extending your ability to select good/bad securities over a

greater magnitude of wealth than you could with a conventional long-only portfolio.

So for the "blue" strata we have a portfolio strata weight of 120% and portfolio return of -2.33. For the "green" strata, we have a portfolio weight of 130%, and a portfolio return of -4.92. Let's see if we can get this to reconcile to the return on the entire portfolio.

The total portfolio return is the average of the security returns R_i , weighted by the security weights W_i . We know that total portfolio weights have to add up to 100%. Said another way, the portfolio weights represent fractions of a whole like a pie chart. In the context of a long/short portfolio, the cash which is generated from "short" selling, plus any normal cash position in the initial portfolio should be the weight required such that the sum of all weights (cash included) is 100%.

$$\text{Total portfolio return} = \sum_{k=1 \text{ to } m} W_k / 100 * R_k = -9.2\%$$

Where W_k = portfolio weight for security k

R_k = return for security k

m = number of securities in the portfolio

We should be able to take the sum of the product of portfolio weight for each strata times the portfolio return for that strata and get the result to add to the total portfolio return.

$$\text{Total portfolio return} = \sum_{j=1 \text{ to } q} SW_j * SP_j$$

Where q is the number of strata

For this case we would get

$$\text{Total portfolio return} = ((120 * -2.33) + (130 * -4.92)) / 100 = -9.2\%$$

So the result checks! We are able to take the total return of a long/short portfolio and attribute it to subsets of the portfolio securities (strata) in an intuitive way. This calculation can't "blow up" because the denominators of the key ratio (SP_j) are the sums of absolute values and hence always positive.

References:

Brinson, Gary P., L. Randolph Hood and Gilbert L. Beebower. "Determinants Of Portfolio Performance," Financial Analyst Journal, 1986, v42(4), 39-44.

Brinson, Gary P. and Nimrod Fachler. "Measuring Non-U.S. Equity Portfolio Performance," Journal of Portfolio Management, 1985, v11(3), 73-76.

Technical Support Tip: Using MS Excel Workbook files in NisBatch2008

By James Williams

Starting with the July 2008 update to the Northfield Open Optimizer (Version 7.402), input files and report files can now be created using Excel spreadsheets (workbook) as the data source/destination. The input files of existing projects may be saved in a single, or multiple workbooks by selecting the XLS file format option.

The following discussion incorporates the existing sample “active_xls.fnd” which is downloaded to the user’s “C:\Northinfo\nisopt2008\samples2008\fnd_active_xls\” directory.

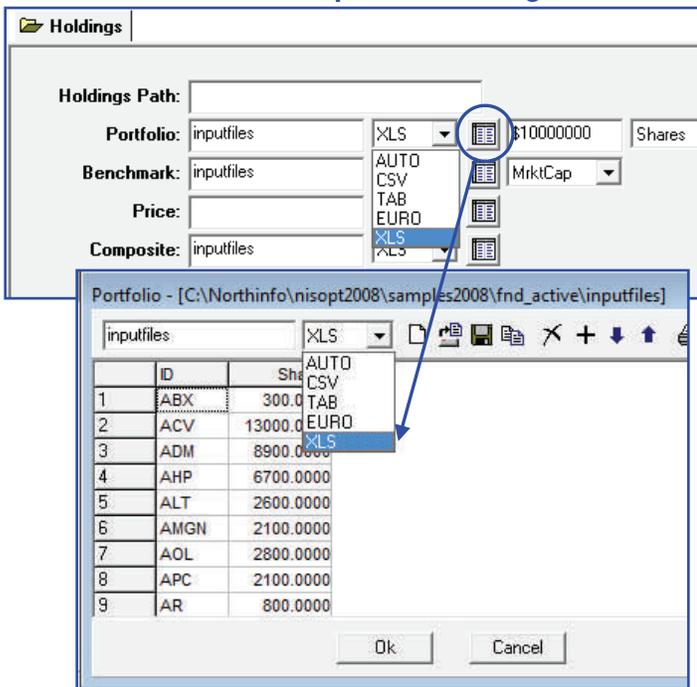
All files reference and correspond to this project sample.

The output reports to this project are created in the following directory: “C:\Northinfo\nisopt2008\samples2008\fnd_active_xls\”.

Functionality:

The file format is selected from one of the following two drop down boxes.

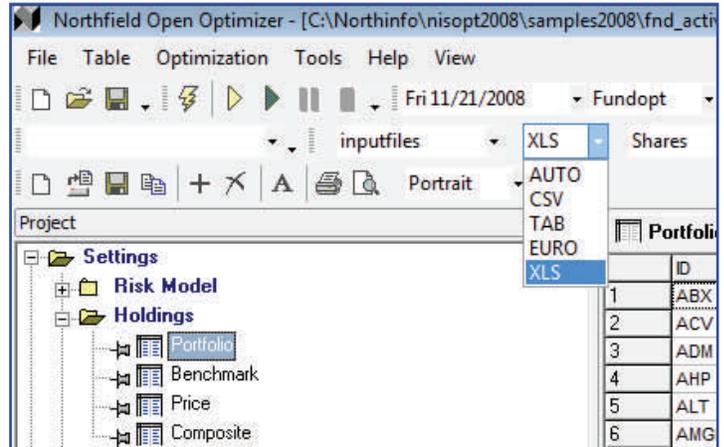
1. The workspace file settings



The edit table Window

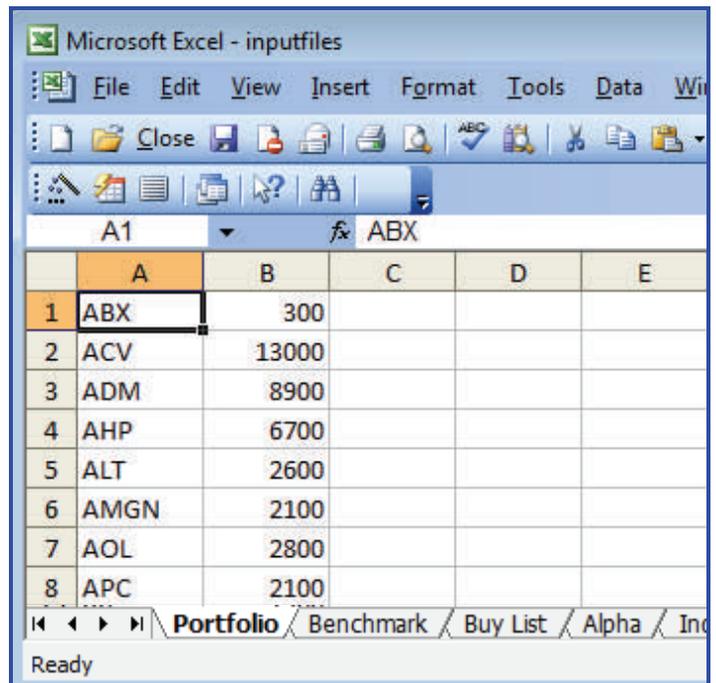
(This Table opens after clicking the “Edit Table Window” icon which is circled above)

2. The table file settings toolbar



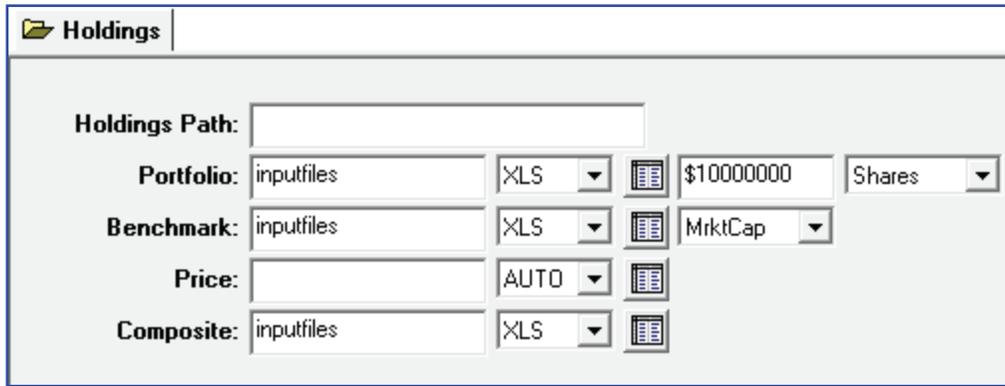
Input File

When using the XLS functionality, each input file is stored on a separate worksheet in a workbook. In the example for the project file, fnd_active, the workbook “Inputfiles.xlsx” contains the worksheets: Portfolio, Benchmark, Buy List, Alpha, Industry, Sector, Composite, mgt_score.pen, Security Minimum, Security Maximum and SmallCapFund; the constituent assets to the SmallCapFund composite asset. **Each sheet must be named according to the node within the optimizer containing that corresponding information. For example the sheet with portfolio holding information must be named Portfolio (see end note).**



(Tech Support Tip, continued on page 9)

Figure 1



(Tech Support Tip, Continued from page 8)

All input files can be aggregated into a single workbook as illustrated **with the inputs workbook on the previous page**. Alternatively a separate workbook can be created for each input file, such as portfolio.xls or benchmark.xls similar to the current functionality of one input file for each input.. A project can contain a single workbook for all input files or multiple workbooks.

Workbook files can be used in conjunction with existing CSV or TAB delimited files. For example, a project can contain a holdings.xls file in addition to an alphas.csv or round lots.txt file.

Unlike the existing .csv and .txt file formats which require the file extension, ".csv" or ".txt" to be included in the file name as in "portfolio.csv", or "alpha-signals.txt", for .xls files the file extension is not needed. For example, in **Figure 1** above, the input file name is "inputfiles" instead of "inputfiles.xls".

Composite Asset files and Attributes definition files

Composite asset and attributes definition files refer to separate underlying holdings data. The XLS functionality allows the underlying holdings to be included in the same workbook or held within a separate workbook. Additionally, like other input files, the underlying composite asset holdings and attributes holdings can still be created using

text or CSV files in conjunction with workbooks.

There are two formats that can be used for composite assets and attribute files depending on whether or not the underlying holdings data is in the same workbook as the composite assets or attributes definition file:

xls:sheet name -This format is used when the sheet or sheets where the underlying composite assets or attributes holdings is in the same workbook as the composite assets or attributes definition file.

xls:[filename]sheet name -This format is used when the underlying holdings data is stored in a different workbook than the composite assets or attributes definition file. The filename is the name of the workbook which holds the underlying holdings data and the sheet name is the name of the sheet within the workbook.

Attribute and composite asset examples

Attributes

In **Figure 2** below, a workbook named "Inputfiles.xls," contains both the Attributes data definition sheet named "Attributes" as well as the underlying holdings data in a sheet named "mgt_score.pen."

(Tech Support Tip, continued on page 10)

Figure 2

	Filename	Name	Goa	Scale	MinVa	MaxVa
1	xls:mgt_score.pen	Management Rating	5.0000	2.0000	4.0000	6.0000

- ◆ Workbook name where Attributes definition sheet is located: *Inputfiles.xls*
- ◆ Attributes data definition sheet name: *Attributes*
- ◆ Sheet name of underlying attribute holdings: *mgt_score.pen*

Figure 3

ID	Name	IndID	Price	MrktCap	Filename	Weighting	
1	SmallCapFund	Small Cap Stocks	0	13.2500	500.0000	xls:SmallCapFund	MrktCap
2	REITs	REITS	5	22.5000	1750.0000	xls:[Composites]REITS	MrktCap
3	LargeCapValue	Large Cap Value Fund	0	36.7500	2500.0000	LargeCapValueFund.csv	MrktCap

- ◆ Workbook name where composite asset definition sheet is located: *Inputfiles.xls*
- ◆ Composite assets data definition sheet name: *Composite*
- ◆ Sheet name of underlying "SmallCapFund" holdings: *SmallCapFund*
- ◆ Workbook name of underlying "REITs" holdings: *Composites.xls*
- ◆ Sheet name of underlying "REITs" holdings: *Reits*
- ◆ Filename of underlying "LargeCapValue" holdings: *LargeCapValueFund.csv*

(Tech Support Tip, continued from page 9)

Composite Asset

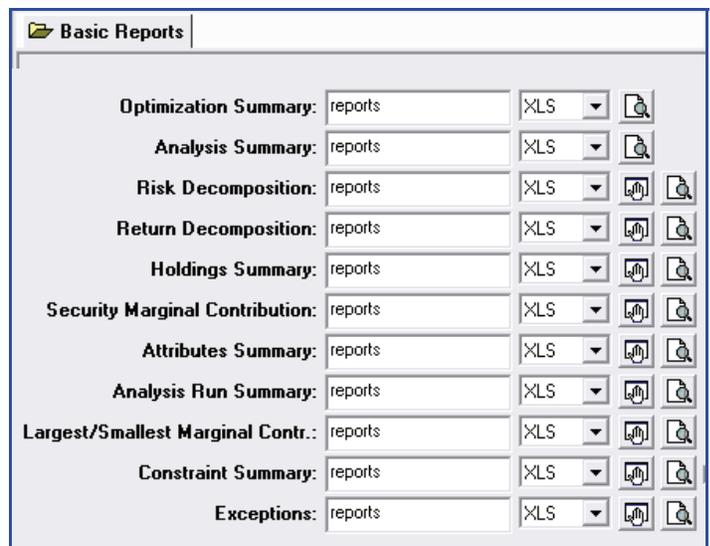
In **figure 3 above**, the composite asset definition sheet named "Composite" is stored in a workbook named Inputfiles.xls. Within the Inputfiles.xls workbook the underlying holdings of the SmallCapFund composite asset is stored in a sheet named "SmallCapFund". There is also a separate workbook, "Composites.xls", which contains the underlying holdings for the composite asset, REITs, in a sheet named "REITs." Finally a separate csv file, "LargeCapValueFund.csv," contains the underlying holdings of the composite asset named LargeCapValue

Converting existing csv based projects to Excel Workbooks

1. Open an existing project with csv formatted input files.
2. Change file formats to "XLS" from a file format drop down box, see "Functionality" on page 8 for screenshots of the drop down box locations. Remember to change file name to remove .csv or other file extension.
3. After changing file format and file name, manually save each individual file using the save button for each input table.

Output:

Output files can now be saved in the xls format by selecting the XLS as the type in the Basic Reports tab. Output files can be saved in a single workbook as shown below, "reports.xls" or each can be saved within separate workbooks and in any combination thereof.



The resulting output files saved in the same workbook is shown at the top of the next page.

(Tech Support Tip, continued on page 11)

(Tech Support Tip, continued from page 10)

	A	B	C	D	E	F
1						
2						
3						
4	Optimization Summary					
5	Date=11/21/2008; Time=05:15pm;					
6	Project: C:\Northinfo\nisopt2008\samples2008\wnd_active\active_xls.fnd					
7						
8						
9		Initial		Optimal		
10		Return	Risk(v)	Return	Risk(v)	
11	Factor	0	18.31	0	1.99	
12	Stock Specific	-0.01	70.97	1.14	15.65	
13	Total	-0.01	89.28	1.14	17.64	
14	Tracking Error	9.45		4.2		
15	Portfolio Utility	-8.34		0.14		

Notes

- All workbook sheet names are hardcoded and can not be changed in this version. The sheet names must be identical to those in the project tree. For reference the project tree names are listed below

Portfolio	Benchmark
Price	Composite
Buy List	Alpha
Security Minimum	Security Maximum
Minimum Trade Size	Industry Map
Industry	Sector
Attributes	Tr. Cost (buy)
Tr. Cost (sell)	Lot Size

- In future versions, name of sheets will be customizable.
- The order of the sheets in a workbook is not important.
- When a NisOPT2008 project is open, the underlying XLS files can only be opened in MS Excel as “read-only”.

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Northfield Boston Office Moving

Northfield’s Boston Office is moving to a new location. The new office is located near Boston’s historic North End and is conveniently situated near public transportation including North Station and the Government Center and Haymarket subway stops.

The newly renovated larger space will offer room for Northfield’s ongoing expansion.

The move is tentatively scheduled for April 1st. The new address will be:

Northfield Information Services
77 North Washington Street, Floor 7
Boston, MA 02114

Northfield Speaking Engagements

Northfield President Dan diBartolomeo will be speaking at the CQA/SQA Joint Seminar on Equity Trading in New York City on February 3rd. The topic will be on Trade Schedule Optimization.

On February 27th, Dan will be speaking at the, ClariFI/ Northfield joint client seminar, in New York City.

If you have any suggestions of what you would like to see covered in upcoming issues, please e-mail your ideas to staff@northinfo.com