June 2018

Northfield News

A Newsletter for the Friends and Clients of Northfield

Special Points of Interest:

- Main Article: Centralized Portfolio Management
- Annual Conference Announcement
- Dan diBartolomeo Named Co-Editor of the Journal of Asset Management

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Inside This Issue:

Centralized Portfolio Management

(A Twenty Six Year Tale of the Most Expensive Wine We've Ever Served)

By Dan diBartolomeo

Recently, an empirical research paper by Bouchey and Pritmani (*Journal of Portfolio Management*, Spring 2018) presented compelling evidence of the benefit of a technique called "Centralized Portfolio Management," (CPM) particularly as applied to taxable investors. We found this subject matter of particular interest as the concept of CPM was invented here at Northfield all the way back in March of 1992. While there had been some degree of industry interest in CPM in the intervening quarter century, the vast benefit to investors of applying the method has never been realized, and some of these benefits are still not well understood. The idea was first put forward in my presentation at our 1992 client conference at the Mount Washington Hotel, the site of the famous Bretton Woods global economic meeting of 1944. I should have known at the time that this technique was of profound importance: essentially every asset manager in attendance saw CPM as a threat to the economic viability of asset management firms, and so was unhappy. Everyone representing major asset owners was offended because they felt I was calling them incompetent because they had not already implemented this clearly superior way of dealing with external managers. All the Northfield staff was unhappy with me for having managed to put a chill in an otherwise jovial conference atmosphere.

It can be said that some degree of controversy was anticipated. The title of the presentation was "A Radical Proposal for the Operation of Multi-Manager Investment Funds" The closing slide of my presentation was a quotation of Puck's closing soliloquy of Shakespeare's *Midsummer Night's Dream.* Of course, this verse famously begins *"If we spirits have offended, think but this and all is mended, that you have but slumbered here while these visions did appear."* Shortly, thereafter I retired to the bar to consider how to cheer up the crowd. Luckily, the hotel wine steward came to my rescue: as a way of drawing attention away from the CPM controversy he proposed a very special dessert wine to be served with the evening meal, a Centenary Madeira vintage 1843, **approximately one hundred fifty years old at the time.** Both the taste and heritage of this unique elixir did the trick. Everyone went back to the congenial pursuits of snowshoeing and sleigh rides between the conference sessions. Subsequent to the conference, there were a couple of strongly worded phone calls from asset managers inquiring as to what *exactly* we had proposed asset owners undertake. Apparently, a couple of large asset owners took the occasion to use the CPM concept as leverage in fee negotiations with managers.

So what is Centralized Portfolio Management, and what made it so controversial at the time of initial introduction? Put simply, it is an approach that allows a large investor (e.g. asset owner) to utilize external active managers in a way which is much more efficient than traditional methods of using external managers. This advantage is amplified when dealing with taxable accounts as well demonstrated in Bouchey and Pritmani. Consider a

(Centralized, Continued on page 5)

Recent and Upcoming Events

Complete Attribution for Quantitative Investors, Designing Quantitative Strategies and The Narrowness of Breadth - Breakfast Reception

The Penn Club of New York • June 27, 2018

Northfield and Mayfield Investments will be holding a joint, half-day seminar at the Penn Club New York to discuss Complete Attribution (CAtt). Catt solves a longstanding problem for active quants: how to attribute risk and return directly to a strategy's signals and constraints, not simply to the factors of a risk model, and to do so accurately.

Leigh Sneddon of Mayfield Investments will give two presentations: "Complete Attribution" and "Optimal Strategy Design and the Narrowness of breadth."

At the time of this writing, there are no spaces left. To be put on the waiting list, visit **http://www.northinfo.com/events.php**

Webinar-Building Smarter Portfolios-Using Factor Models Across the Investment Process

July 10, 2018 • 11:00 AM EDT

This webinar is a Northfield and Charles River Development co-sponsored event.

Abstract

As institutional portfolios grow in size and complexity, factor models play increasingly important and versatile roles across the buy-side investment process. Join our panelists, Dan diBartolomeo, President, Northfield Information Systems and Katya Taycher, Director of Product Management, Charles River, for a discussion moderated by Frank Smietana, Product Marketing Manager, Charles River. Topics include how to:

- Facilitate better risk and portfolio management decisions
- Construct and support innovative investment products
- Embed models to gain timelier insight into risks and opportunities

There is no charge to register. If you cannot attend the live session, please register and we will send you the post webinar recording. To Register, visit: **https://pages.crd.com/acton/form/25224/0071:d-0002/0/-/-/-/-/index.htm**

2018 Northfield Annual Research Conference

The Cliff House Maine • Cape Neddick, Maine • September 5-7, 2018

We are pleased to announce our 30th annual research conference at the Cliff House Maine, in Cape Neddick, Maine. The conference will officially start on Wednesday, September 5th and end on Friday September 7th.

Cliff House Maine

This iconic Maine resort, which welcomed its first guests in 1872, inspires a new community of travelers today with remarkable sightlines, intuitive amenities, and emotionally rewarding encounters. Located minutes from Ogunquit's sandy beach and just over an hour north of Boston, Cliff House stretches across 70 oceanfront acres atop Bald Head Cliff on the southern coast of Maine, overlooking the ocean's edge and Nubble Lighthouse.

The full seminar agenda and registration information will be posted to **www.northinfo.com/events.php** in the coming month as it becomes available.

Contact Kathy Prasad if you have any further questions, **kathy@northinfo.com**, 617.208.2020.

2018 Newport Annual Summer Seminar Wrap-Up

Tennis Hall of Fame • Newport, Rhode Island • June 8, 2018

Northfield's annual summer seminar took place at the International Tennis Hall of Fame, in Newport, RI on June 8th. The seminar presented recent research and technical advances to an audience of Northfield clients and friends.

The agenda consisted of six presentations including: "A Tale of Wynn(ers) and Losers," "Fixing Active Management: Why Value Investing Works," "Fulcrums, Levers, Pulleys and RAMP - The Northfield Analytics Framework and SAAS Platform," "Maximizing RAROC: Turning the Risk Unit into a Profit Center," "Replicating Expected Commercial Real Estate Performance Using Liquid Market Instruments," and "Why Getting Risk Right Is Wrong."

As is customary, the seminar coincided with the USA Professional Championship of Court Tennis. Following the presentations, attendees viewed a semi-final match between world champion Camden Riviere of the U.S. and Ben Taylor-Matthews of the UK. Court Tennis, or "real tennis" is the medieval sport that is the progenitor of all modern racquet sports. Riviere won the match and went on to win in the finals. To learn more, visit the US Court Tennis Association site at **http://www.uscourttennis.org**. After tennis on Friday evening, everyone enjoyed a relaxing waterfront dinner party at Gurney's Resort in Newport. The complete proceedings have been posted to our website at **http://www.northinfo.com/research.php**.

There is no charge for participation in any aspect of this event. We will accept any donation you might care to make on behalf of Pine Street Inn, Boston's primary homeless shelter. If you would like to make your donation online, please visit **http://www.pinestreetinn.org/donate/donate_now** or you can a make check payable to Pine Street Inn and mail to Kathy Prasad at Northfield.

Recent Webinars and Online Workshops

Online Workshops:

Introducing MARS-ERM
Northfield's complete risk management infrastructure for institutional asset owners.
Presented by Emilian Belev CFA, ARPM, Northfield's Head of Enterprise – Wide Analytics, May 16, 2018

Webinars:

Return and Risk in Endogenous Time
Presented by Northfield President Dan diBartolomeo, April 26, 2018

Maximizing RAROC: Turning the "Risk" Unit into a Profit Center
Presented by Emilian Belev CFA, ARPM, Northfield's Head of Enterprise – Wide Analytics, May 29, 2018

Generating Tax Alpha
Presented by Steve Dyer, Northfield's Client Training and Support Specialist, June 26, 2018

The webinar and online workshop presentation slides are available at **http://www.northinfo.com/research.php** under "webinar proceedings."

Contact your Northfield Sales Representative if you are interested in viewing the full presentation recording for any of these events.

A full list of all available webinar recordings is available at **http://www.northinfo.com/docs/webinars.htm**

2018 Northfield London Annual Seminar Wrap-Up

Ironmongers' Hall • London • April 19, 2018

Northfield's highly successful annual London research seminar took place Thursday, April 19th, 2018. The purpose of the seminar was to showcase our research on various topics in investment and risk management to our growing list of EMEA Region clients and prospects. The presentations were given by Northfield's Dan diBartolomeo, Jason MacQueen, Mike Knezevich and guest presenter Jasper McMahon, co-founder and CEO, Now-Casting Economics Ltd.

The agenda consisted of five presentations including: "The Predominant Lack of Market Volatility," "Nowcasting - a tool for discretionary and systematic portfolio management," "Smart Beta Bond Portfolios," "Maximizing Application of the Risk Systems That Read®: the Wynn Resorts Story" and "The Use of Factor Risk Models in the Presence of Higher Moments." The complete proceedings have been posted to our website at **http://www.northinfo.com/research.php**.

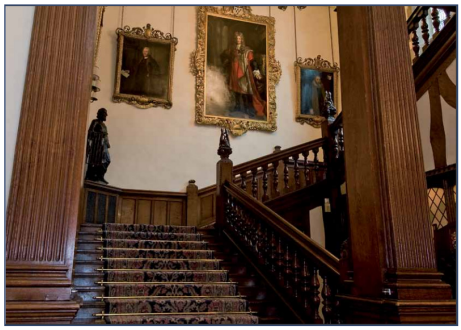
About the Ironmongers' Hall

The seminar was held at the Ironmongers' Hall. Built in the 1920's Ironmongers' Hall is an elegant Tudor style hall which feels much like a country house re-located to the heart of the City of London. Home to the Ironmongers' Company who earliest records suggest were an effective body in 1300. The Company is tenth in order of precedence and is, therefore, one of the Great Twelve Livery Companies.

Steeped in historical tradition the first hall, dating back to 1457, was in Fenchurch Street; it was rebuilt in 1587 and rebuilt again in 1745 on the same site. The third hall was destroyed on 7 July 1917 by a bomb dropped during World War I. The present Hall was opened on 17 June 1925.

For more information on the this unique venue, please visit **http://ironmongers.org/**.

Event Hall



Grand Staircase

Drawing Room

Attilio Meucci's Advanced Risk and Portfolio Management Bootcamp

August 13-18, 2018 • New York University • New York City

In 6 intense days, the ARPM Bootcamp empowers avid learners with a background in the hard sciences to quickly gain the deep technical knowledge necessary to operate across the complex world of quantitative trading, asset management, and risk management.

Topics include data science and machine learning; classical/Bayesian multivariate statistics and econometrics; financial analytics, market, credit & liquidity risk management; estimation error and model risk; factor modeling, portfolio construction and optimization, and much more.

It also features access to the online quantitative platform ARPM Lab, the micro-video-lectures ARPM MOOC, and Social Mixer and Gala Dinner networking opportunities. 40 CPE units GARP

Visit **http://www.arpm.co/bootcamp/registration/** to register, and view the detailed program information. There is a discounted Northfield affiliate rate available.

(Centralized, Continued from page 1)
simple example of a large taxable investor with multiple external managers. A stock X reports better than expected earnings and the stock price jumps up. Manager A who likes value stocks decides X is now overvalued so sells their position. Manager B who prefers momentum stocks likes X and decides to buy it in close time proximity to the sale by Manager A. The investor has now experienced two active management fee streams, two transaction costs and possibly a large capital gain tax to have their aggregate portfolio end up essentially where it started. From the investor's perspective this is clearly a suboptimal process.

The proposed CPM solution was for the investor to operate a single actively managed "centralized" portfolio. This would eliminate the potential for internal cross-trading with the inherent costs and tax liabilities. The positions in the centralized portfolio would represent the optimal combination of input alphas, risk modeling, estimated transaction costs and tax effects (where applicable). The idea of using weighted alphas from multiple external managers to run a consolidated portfolio was first proposed by Rosenberg (1977). However, many asset managers would be resistant to "selling their alphas" as a business model. Obviously, the "selling alphas" would allow non-manager alpha forecasting firms to compete for mandates and potentially drive down fees (clearly the concern of asset managers at the Bretton Woods event). It also might create compliance problems in terms of the timing of information release of alpha forecasts and executing trades for a manager's conventionally contracted clients.

Rather than a "sell your alphas" business model, CPM proposed a different route. Each external manager would still be given traditional AUM to manage and be paid accordingly. However, rather than execute trades through their own traditional trading desks, all external manager trades would be filtered through an centralized trading desk operated by the asset owner or their designated agent (i.e. a broker). The key to CPM is an analytical technique to infer a manager's stock level alphas from the composition of their portfolio and the trades they make to change the portfolio from time to time. At the simplest, one could rely on the Kuhn-Tucker conditions for portfolio optimality: that the security level alphas have to offset the marginal risks of each security to the portfolio. We can then create inferred alphas from the portfolio positions for each of the external portfolios and blend these alphas across external managers as inputs to the operation of the central portfolio.

The details of the CPM method and the numerous benefits were summarized in two white papers, the original 1992 version and an updated version that has been on our website since 1999, **http://www.northinfo.com/Documents/61.pdf**. While repeating all material in this paper is beyond the scope of our newsletter, we should at least reprise the key advantages of CPM. The first is that presumed skills of asset managers are an expensive resource. Under the usual way of doing manager allocation, the skills of any one manager apply to only their slice of the total fund AUM. Under CPM, the aggregate skills of all managers apply to all dollars of the fund, *which mathematically must produce higher returns if the managers are indeed skillful.* This reverses the routine notion that multiple active managers are engaged to reduce risk. Obviously, we can always hold an index fund for the aggregate benchmark if our only goal is to reduce the potential for underperformance. The purpose of having multiple active managers is to add return, which is best done in the CPM technique.

The second benefit is that a manager's preferred attitude toward risk is no longer a constraint to their usefulness. If we employ a manager that chooses low tracking error strategies but with a high degree of success, we can overweight their influence in the blended alphas with no impact on the operation of the external manager. Third, the alpha blending process can largely eliminate cross-trading and the associated transaction costs, market impact, and tax expenses. The fourth is that the costs of hiring and firing external managers is greatly reduced as their influence in the blended alpha can be increased or decreased gradually over time so as to minimize disruption to the portfolio as a whole.

One important methodological detail for CPM was added in diBartolomeo (*Journal of Performance Measurement*, Fall 2008). In this paper focused on the "Effective Information Coefficient" method of doing performance attribution, we propose a simple adjustment to the alpha inference process to account for the possibility of the inferred alphas being biased by "long only" constraints being observed by the external managers. A more sophisticated adjustment could be based on the methods in Grinold and Eastman (1998).

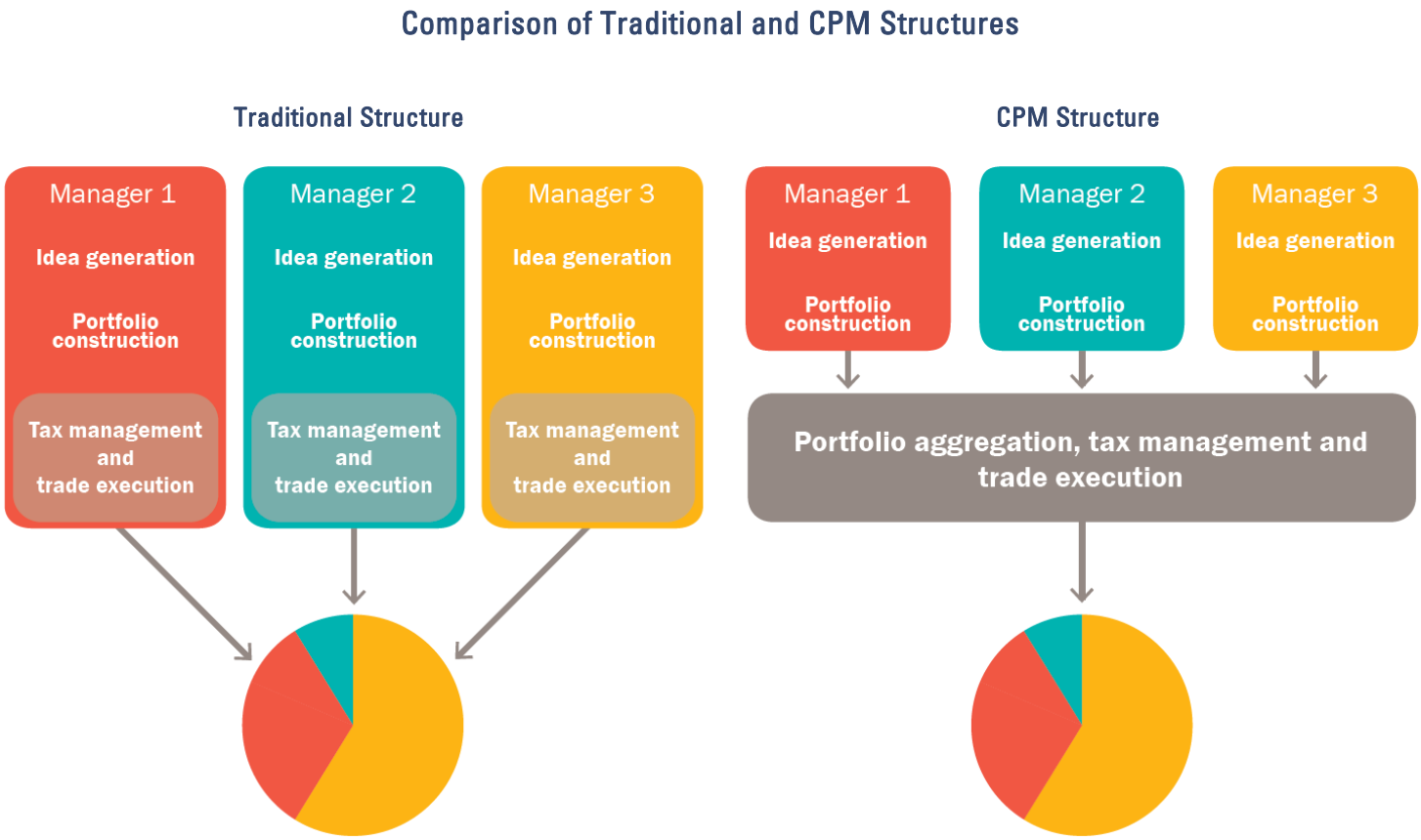
It should be noted that the Bouchey and Pritmani paper was the circumstance of investing for taxable, high net-worth individuals. An early paper by Stein and McIntire (2003) illustrated the potential for CPM to be useful as an overlay to taxable active strategies. CPM had previously gained a material following in countries where even institutional investors pay some amount of capital gain tax (e.g. Australia). Several Australian asset managers (e.g. Vanguard) have offered CPM services in various flavors and degrees of sophistication. Such firms have reported solid empirical results including reduced turnover costs and improved alpha.

Among the related empirical data from the Australian mar-

(Centralized, Continued on page 6)

(Centralized, Continued from page 5)

ket comes from Frank Russell, http://russellinvestments.com/au/cps/CPS/cpm/. The consulting firm Wills, Towers, Watson produced an analysis of CPM in 2014, which is available here https://www.towerswatson.com/en-AU/Insights/IC-Types/Survey-Research-Results/2014/12/Centralised-Portfolio-Management from which the image below is reproduced.



Centralized Portfolio Management is an advanced technique for asset owners, whether taxable or tax exempt. If we believe that active managers can add value, then it must follow that a more efficient deployment of scarce active manager skill can add more value. While there are many nuances to using CPM to the fullest extent possible, it offers a great deal of benefit to large institutional investors, and to any taxable investor large enough to want to employ multiple managers. We encourage Northfield clients to engage with us to obtain the economically material benefits of Centralized Portfolio Management.

Technical Support Tip: Proxy Records

By Lalitha Raman

At the beginning of last year, Northfield began to produce proxy records for each of its risk models to fill gaps in the data that arise from various situations.

Looking at the data files for all models, you may have noticed many special additional records with the prefix '**NIS_modelname.**' These are intended to be temporary substitutions for equity securities (including private equity) for whom data records are unavailable. They are proxies for assets that conform to an asset profile.

Why would you use them?

There may be various reasons why a data record is unavailable in the model such as a new IPO or trading halt for a period of time. Questions of model coverage and exclusion are detailed in the following tech tip:
http://www.northinfo.com/docs/tech0614.pdf

Either way, the user, having noticed missing coverage and assessed the impact on their portfolio analysis, may still require that the asset be included. This is a user decision, and to this end we have included the availability of PROXY records. These records can be mapped to the asset in question, using composite assets. See details of composites in http://www.northinfo.com/docs/tech062012.pdf as well as Optimizer user manual to be found on Northfield website.

In the months ahead, we will be including additional records to act as proxies for other sorts of assets e.g. real estate.

How are PROXY records implemented & calculated?

By mapping the missing asset in question to an appropriate PROXY using composites, the missing asset then appears in the model for that month.

The question then, is what is an appropriate PROXY?

• Implementation Protocol

Broadly, the schema for the proxy records we have added to the data files follow this convention:

NIS_modelname_sectorcode-countrycode_usecase

For the US Fundamental model, the format is:
NIS_modelname_industrycode_usecase

We created 6 records for each sector / country combo in each of the models depending on the use case, which are as follows:

1. LC: All we know is it is a LARGE CAP security
2. SC: All we know is it is a SMALL CAP security
3. PE: Non traded private equity, or otherwise identified as an IPO
4. PS: Preferred shares within a category
5. CPS: Cumulative Preferred shares
6. The final one has no identifier, only a country and sector code. It is meant to be the default if we know nothing about the security other than that information.

For example, **NIS_GLOBAL_s6-c12_LC** would be a proxy in the global model for a large cap Hong Kong security in the Energy Minerals sector. **NIS_EURO_s1-c26** would be a proxy in the European regional model for a generic Industrial company located in Sweden, etc. For full list of sector and country codes see model documentation.

• Implementation Rationale - Detail

The use of proxy records is only appropriate in particular cases. It is not a panacea for all scenarios.

Below is a process for finding an appropriate proxy but directs you to exit the process if the proxy feature is not appropriate for use in this instance. You may use this process yourself to identify the appropriate proxy record or your local Northfield Support person will use the process below to provide your requested proxy record.

Note: Please don't hesitate to submit your questions about model coverage to Northfield Support. We may be able to provide you an exposure record, which you can append to your data file instead of using a proxy.

For example, you may be using one identifier and the asset may exist under another identifier. We do not provide mappings between identifiers since that would contravene identifier licensing. However, we do provide you the appropriate exposure where it exists, to be appended to your data file using the identifier you provided.

1. Do we know that this security is an equity of some kind?
   a. Yes. Go to question #2
   b. No. Exit the process

2. Do we know what country the security is from?
   a. Yes. It is given in incoming collateral data (e.g. the custody feed through OFX) or we found it manually (e.g. Google search)

(Tech Tip, Continued on page 8)

(Tech Tip, Continued from page 7)

b. Yes. We can deduce it from the ID (ISINs start with a country code, explanation of ISIN is available here: https://en.wikipedia.org/wiki/International_Securities_Identification_Number.
c. No. Exit the Process.

3. Do we know what sector of the economy the security is from?
   a. Yes. We found it manually (e.g. a Google search) or contacted Northfield support to obtain a mapping.
   b. No

4. Do we know what kind of equity is involved?
   a. Common shares (defined in collateral information, or if the security appears in a benchmark index it is almost always a common share)
   b. Preferred Shares – use case record #5
   c. Cumulative Preferred Shares – use case record #6
   d. Private Equity – NOT Traded (defined in incoming collateral data) – use case record #4
   e. Unknown

5. If these are common shares, do we know if the security is from a large capitalization firm?
   a. Yes. The security is a member of a benchmark known to be large capitalization (the benchmark name has the word "large" in it) – use case record #1
   b. No

6. If these are common shares, do we know if the security is from a small capitalization firm?
   a. Yes. The security is a member of a benchmark known to be small capitalization (the benchmark name has the word "small" in it) – use case record #3
   b. No

7. Do we know that the security is new IPO (initial public offering)
   a. Yes. This is given in collateral data – use case record #4
   b. Yes. We did an online query (e.g. Yahoo finance) and there is a price for this security today but none for 1 month ago – use case record #4
   c. Unknown

We now have six proxy records in each model for each country represented, and six proxy records for each combination of country and sector. The country codes are common across models and are documented in the Global model and EE documentation (on the website).

Our sector codes vary across models. The Global Model and Single Market models use a 7 sector classification and EE uses a 6 sector classification. Some US models use a more granular 55 sector scheme. The sector scheme for each model is described in the respective model documentation (on the website).

Note: For private equity, there is a "record type 4" for every country, and for every combination of country/sector in each model. A Google search should be able to reveal the sector type for a private company.

• Implementation Rationale Summary

To summarize, this process is just a set of "if X then Y" sort of statements

If either of the first two questions is a negative answer, we quit.

If question 3 is YES, we can use the records from the now known country/sector combination. If the answer to question 3 is NO, then we use the set of records that are defined by country but not sector (e.g. a generic French security).

The DEFAULT IS TO use RECORD #2 WITHIN EACH Country/Sector/Industry CATEGORY

Addressing questions 5,6 and 7 might involve some research but you can always default to record #2 if need be.

• Calculation

In order to help you understand the logic behind these proxy records, below we describe how each record is calculated. Please note that the calculations are simple averages, not calculations of the defined set of securities as a portfolio.

NIS_modelname_countrycode_sectorcode_usecase.csv

for example:

NIS_GLOBAL_C12_S6_LC.csv

For each sector, country, and sector / country combo in each of the models depending on the use case we create each record as follows:

1. LC - All records within the category weighted by market capitalization. Multiply the specific risk value by 1.1
2. No additional letters - All records within the category weighted by the square root of capitalization. Multiply the new specific risk value by 1.15
3. SC - All records within the category weighted equally. Multiply the new specific risk value by 1.3
4. PE - All records within the category weighted equally. Multiply the new specific risk value by 1.8
5. PS - All records within the category, weighted by the square root of capitalization. Multiply all new factor exposures by .70, multiply new specific risk value by .8
6. CPS - All records within the category, weighted by the square root of capitalization. Multiply all new factor exposures by .6, multiply the new specific risk value by .7

Staff Speaking Engagements

Northfield President Dan diBartolomeo will be attending the Attilio Meucci Advanced Risk and Portfolio Management (ARPM) Bootcamp on August 14th where he will be offering program remarks.

On the 24th of September, Dan will be giving a presentation at the Quant Minds Conference at the Long Wharf Marriott in Boston. The topic is to be determined.

Northfield Senior Equity Risk Analyst Christopher Kantos gave a joint presentation with Dan Joldzik of Alexandria Technology at the Deutsche Bank Global Quant Conference in Singapore on May 16th. The title of the presentation was "Artificial Intelligence and Physics in Finance"

Christopher will also be the featured presenter at the AI, Machine Learning and Sentiment Analysis Applied to Finance conference in London. He is speaking in the afternoon of June 18th where he will be presenting "Rapid Conditioning of Risk Estimates Using Quantified News Flows."

Christopher Kantos at the Deutsche Bank Conference

Dan diBartolomeo Named Co-Editor of The Journal of Asset Management

Northfield President Dan diBartolomeo and Marielle deJong of Amundi were recently named co-editors of the prestigious Journal of Asset Management. The new team succeeds Steven Satchell of Cambridge in the editorship.

The Journal of Asset Management is published in London and is a prominent professional journal which keeps readers up-to-date with current developments and strategies in asset management. Presenting expert briefings, tightly focused analysis, research and reviews by leading experts from all across the fund management industry. It has established itself as a valuable bridge connecting applied academic research, commercial best practices, and regulatory interests.

Regulatory Questions Support

Please get in touch with Northfield Technical Support in your region if you require any help or training in responding to regulatory questions about your risk models.

Support can be reached:

Americas
sales@northinfo.com
Sales: 617.208.2050
Support: 617.208.2080

EMEA
sales-europe@northinfo.com
+44 (0) 20 3714 4130

Asia
sales-asia@northinfo.com
+61 (2) 9238-4284

For a complete index of all former Northfield News articles, visit http://www.northinfo.com/documents/314.pdf

Boston Office
2 Atlantic Avenue, 2nd Floor
Boston, MA 02110
Phone: 617.451.2222
Sales: 617.208.2050
Tech Support: 617.208.2080

London Office
2 - 6 Boundary Row
London, SE1 8HP
Phone: +44 (0) 20 3714 4130
Tech Support: +44 (0) 17 2244 RISK

Sydney Office
Level 29
Chifley Tower
2 Chifley Square
Sydney, NSW 2000
Phone: +61 (2) 9238-4284

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