



The FORsight Resource

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Upcoming Events...

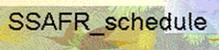


Forest Expo
Jun 1-3
Prince George, B.C. Canada
<http://www.forestexpo.bc.ca/forestexpo/>

Making the Priceless Valuable: Jumpstarting Environmental Markets - June 7-9, Portland, OR. www.ecotrust.ennectevent.com/PortlandKatoomba



SOFOR GIS 2006
Jun 12-14
Asheville, NC
<http://soforgis.net/>



Symposium for Systems Analysis in Forest Resources
Sept 5-8
Burlington, VT
<http://www.afrc.uamont.edu/pelkkim/SSAFR2006.htm>



SAF National Convention
Oct 25-29
Pittsburg, PA
<http://www.safnet.org/natcon-6/2006brochure.pdf>



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Portfolio Optimization Strategies Part II

Significant research has gone into developing models showing the appropriate mix of equity investments to optimize risk-adjusted returns. These optimal portfolios often contain a mix of stocks, bonds, and cash.

Increasingly, institutional investors are looking for alternative investments to increase the return or lower the risk of their investment portfolios. Real estate assets, including timberland, are one of the asset classes that many institutional investors, particularly large pension funds, have used to improve their risk-adjusted returns. Due to low correlation between timberland investments and equity investments, timberland has a high probability of success in improving portfolio risk

adjusted returns.

To gain insight into this issue, an analysis using a Markowitz portfolio optimization technique was conducted to determine the optimal mix of timber and traditional investments. The timberland asset class was broken into three geographic components; Pacific Northwest, Southeast, and Northeast. To compare the impacts of adding composite and regional timberland investments models were built using 1) equities only, 2) equities plus composite timberland returns, and 3) equities plus the three regional geographic timberland indices. A portfolio optimization model was built using various combinations of these assets. The model was run for multiple

iterations to create an efficient frontier. The capital market line was added and the optimal risk adjusted portfolio of traditional equities and geographic timberland investments were identified.

Return data for U.S. timberland investments was obtained from the National Council of Real Estate Investment Fiduciaries (NCREIF). NCREIF produces a Timberland Property Index, which details quarterly performance results. This data includes a Total Timberland Index as well as three regional sub indices for Southeast, Pacific Northwest, and Northeast (NCREIF 2002).

Return data for U.S. stocks was derived from the Wil-

Cartography...Art or Science?

If a picture is worth a thousand words, then a map must be worth a thousand pictures. Maps are created to communicate geographic information and the creation of maps has been the responsibility of cartographers for centuries. The fundamental difficulty that has challenged cartographers dating back to the creation of the first nautical chart has not changed. How do you

project a round earth on a flat piece of paper? Transferring any sphere to a plane creates distortion. For example, imagine an orange as the globe. Cut it into quarters, remove the peels and place them side by side. Points that were close together are now far apart. To depict the world or a specific part of it with minimal distortion, cartographers devised projections, com-

plex formulas based on the geometry and trigonometry of a sphere. These projections represent different methods of drawing lines of latitude and longitude. Onto a network of lines called a graticule, cartographers plot the outlines of continents and countries.

Cartographers select the projection that best suits the

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Cartography...

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purpose for which the map is made. The Mercator projection, named for the Dutch cartographer who devised it, distorts the size of Alaska so that it appears nearly as large as Brazil, which is actually five times the size of our 49th State. But Mercator developed his projection to portray the parallels of latitude and the meridians of longitude as straight lines, a boon to mariners charting their courses across wide expanses of ocean.

Cartography and geographic information science have been going through significant changes recently. Since the 1960s, both disciplines have seen radical changes in the ways people collect, process, and present geographic information. These fundamental changes raise many questions about the future of both cartography and geographic information science (GIS).

Perhaps the most fundamental question is whether cartography is fading away in the digital environment of the information society. Rapid advancements in GIS have made this technology extremely accessible and highly flexible. The options available to the user in the selection of colors, textures, patterns and fonts requires a basic understand-

ing of cartographic principles if the presentation of geographic information is to communicate the desired points effectively.

According to John Borchert, noted cartographer, "Cartography and graphics remain, next to words and numbers, one of the fundamental modes of communication." By developing better connections with other disciplines, notably geographic information science and computer science, cartography can become a key component of information-age communication.

Cartographers produce many different kinds of maps that fall into two broad categories--reference maps and thematic maps. The first category includes road maps and atlases, and maps that provide basic data on specific subjects. Topographical maps fall into this category. Thematic maps present information that extends beyond geography to explain many different ideas and concepts. Through the use of appropriate colors, patterns and symbols, thematic maps can show things like the stages of deforestation caused by an insect outbreak; or display the extent and effects of urban sprawl on commercial forest land; or even pinpoint concentrations of unique wetlands and wildlife species throughout a region.

The effect of computers on cartography matches the technology's impact in other fields. Rather than parchment or paper, computer screens are becoming the pre-

ferred medium for map display. GIS technology has made the ability to make, reproduce and manipulate maps; some would argue, too easy. Having the ability does not necessarily mean that a map will communicate the intended message to the intended audience.

Effective communication of geographic data and relationships still rests on the firm foundation of established principles. "It's easier to train someone who knows cartography to use a computer than to teach a computer specialist cartography," asserts Kevin Allen of the National Geographic Society. John Garver, Chief Cartographer of the society, echoes that assertion. He notes that during his career he has moved from the crow quill to the keyboard and "that's exciting, but the cartographic principles remain constant."

So to answer the question, is cartography art or science? The answer appears to be a mixture of both. Science plays a major role in the accurate portrayal of geographic information. The 'art' of effectively communicating the desired message to the intended audience relies heavily on the skills of the cartographer.

Making the Priceless Valuable: Jumpstarting Environmental Markets Slated for June

The Forest Industry has been going through some radical changes in just the past few years. Timberland is flowing off of the balance sheets of many traditional forest products companies into the portfolios of institutional investors and a few select high net worth individuals. The conservation community has been very active in the market and has the resources available for the protection of areas high in conservation value.

This is evidenced by the recent announcement that International Paper, The Nature Conservancy and The Conservation Fund have

reached an agreement to protect 218,000 acres of forestlands across 10 states in the single largest private land conservation sale in the history of the South, and one of the largest in the nation.

An opportunity to stay abreast of developments in the environmental markets, the Katoomba Group, Forest Trends and Ecotrust are sponsoring a conference in Portland, Oregon this June 7-9, entitled "Making the Priceless Valuable: Jumpstarting Environmental Markets." Topics to be covered include the formation of conservation banks, carbon markets, water quality trading schemes and other attempts to improve environmental conditions through market mechanisms.

This is a rare opportunity to hear some of the world's foremost experts speak on this exciting global trend. For more information or to register for the conference online, visit: Ecotrust.ennectevent.com/PortlandKatoomba



"Nothing great was ever achieved without enthusiasm."
Ralph Waldo Emerson

FORSim SET (Silvicultural Evaluation Tool) Released

	PARTICULARS
Authors	Mark L. Hanus, Sean J. Canavan
Species	Primarily D-fir & western hemlock but models other prominent conifer and hardwood species found in the PNW
Region	Oregon, Washington, British Columbia
Silviculture	Establishment, Intermediate & Final Harvest Options
Model Type	Individual Tree-based Silvicultural Evaluation Tool (SET)
Add'l Info	http://www.FORSightResources.com

FORSim is a planned suite of regional growth and yield applications designed to put the functionality of powerful growth models at the fingertips of inventory foresters and biometricians. At the behest of multiple ORGANON users in the Pacific Northwest, FORSight was engaged to modify and extend the functionality of the ORGANON growth model.

ORGANON is a stand simulator developed at Oregon State University by Dr. David W. Hann. It is a distance independent, individual tree model based on empirical relationships and validated for conifer and some mixed species stands up to 100 years of age. There are currently three variants of ORGANON; 1) The Southwest Oregon (SWO) version, 2) The Northwest Oregon (NWO) version, and 3) the Stand Management Cooperative (SMC) version. The development of ORGANON is continuing and new editions are being revised and released.

The requested modification involved the creation of a dynamic link library (dll) which incorporated the western hemlock growth functions of the NWO variant into the SMC variant. This dll is being made available to companies either currently using ORGANON or contemplating its use in the future.

Forest managers also expressed the need for a tool to evaluate stand-level silvicultural options. In response to this need, FORSight developed **FORSim SET**, an application integrating a user-friendly, Excel-based interface

with the ORGANON growth engine and management functions. A variety of silvicultural treatments and combinations of treatments can be modeled with this application.

- Fertilization
- Thinning Types
 - Residual basal area
 - Residual trees per acre
 - Diameter limit cutting
 - Stand density
 - User Defined
- Pruning

This interface makes the use of ORGANON much simpler as .inp input file creation is not required. Grown tree lists are output and error-checking is easily facilitated. Graphical outputs include:

- Trees/acre
- BA/acre
- CF volume/acre
- BF volume/acre

Management is applied to stands through the use of dialogue boxes and

drop-down menus.

FORSim SET is FORSight Resources' first application commercially available from the planned suite of **FORSim** forest management tools. Efficient data collection, accurate calculations and regionally specific growth and yield functionality are the goals of this product line. FORSight's understanding of programming languages and code structures combined with our industry experience give us the ability to develop solutions specific to a client's needs. We have developed relationships with software engineering companies that keep us cost competitive while providing clients with the best solutions possible.

FORSight has developed the framework for an Inventory Management System to facilitate growth projections and inventory updates at the landscape level. Our hope is to solicit input from potential users to round out the functional requirements of the system. Integration with FORSim SET will be a key benefit of the Inventory Management System. For more information contact us at info@FORSightResources.com.

Microsoft Excel Tips...

Excel has several different tools to help find and correct problems with formulas. Like a grammar checker, Excel uses certain rules to check for problems in formulas. These rules do not guarantee that your spreadsheet is error-free but they can go a long way to finding common mistakes.

Problems can be reviewed in two ways: one at a time like a spell checker, or immediately on the worksheet as you work. A triangle appears in the top-left corner of the cell when a problem is found. A problem can be resolved using the options that appear or they can be ignored. If a problem is ignored, it does not appear in further error checks. However, all previously ignored errors can be reset to the appear again.

Portfolio Optimization...

(Continued from page 1)

shire 5000 index. This index is the broadest index available for the U.S. equity market (Wilshire 2000). Quarterly returns with dividends reinvested were selected to match the return data for the NCREIF Timberland Property Index. For comparison purposes return data for the Standard & Poor's 500 Total Return Index was also obtained (Federal Reserve 2002).

Return data for international stocks was derived from the Morgan Stanley Europe Asia Far East Index. The MSCI EAFE Index is an unmanaged index of common stocks in Europe, Australasia and the Far East and includes dividends but is net of withholding taxes.). To provide an estimate of the risk free rate for the same time period of analysis 3-month T-Bill rates were obtained from the Federal Reserve.

Figures 1 and 2 show the results of this analysis for two different time periods. For comparison purposes the returns and volatility of the individual assets are included. The portfolio containing only equity assets provides an alternative with the highest overall returns from 1994 to 1998. The return for this portfolio from 1994 to 2002 was considerably less, supporting the notion that equities are risky. Because of the extremely low correlations between these equity assets and the timberland returns, portfolios can be constructed that provide considerably better risk-to-return characteristics.

The "separation principle" says that the investor can make two separate investment decisions. First, the investor selects the point on the efficient frontier at which to invest. Second the investor makes a choice of whether to leverage his investment to improve his return by borrowing at the risk-free rate, or to reduce his risk by investing a portion of the investment in the risk-free asset (T-bills). Informed, risk adverse investors will buy a portfolio where the capital mar-

Figure 1 1994-1998

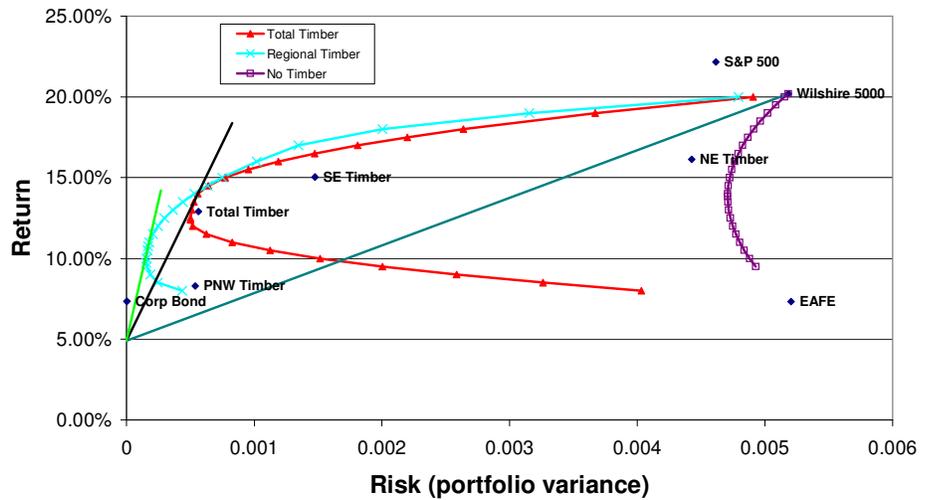
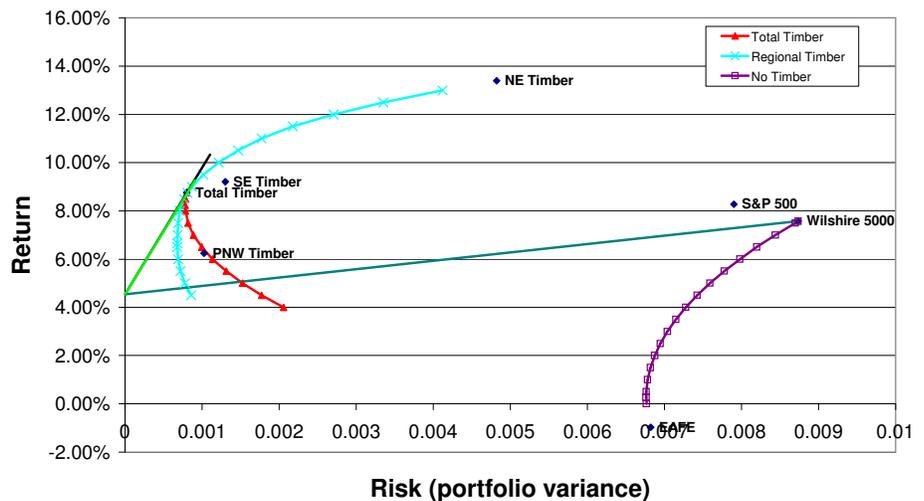


Figure 2 1994-2002



ket line touches the efficient frontier since it provides the maximum return at the least amount of risk. Capital market line is formed using the geometric mean return for T-Bills (4.92%) over the same investment horizon and forming a line tangent to the efficient frontier.

It is clear from this example that adding timberland to a portfolio of equity assets improves the risk return profile of the portfolio. It also points out the importance of portfolio rebalancing since the allocation to timberland, and the allocation to each regional timberland sub index changes depending on the time period selected.

In determining the composition of any portfolio, one should combine statisti-

cal techniques with the judgment of practical men. The paper documenting the complete analysis provided here can be obtained by contacting us at info@FORSightResources.com

"The reason some people don't recognize opportunity is because it often comes disguised as hard work."

Anonymous



FORSight's Redesigned Website Goes Live!

After months of careful planning and design, FORSight Resources' new website is now live. The value of our website as a marketing tool has been significant. By facilitating easy navigation, providing valuable content and more detail on our service offerings, we anticipate a sizeable jump in traffic. The redesigned website is part of a company wide effort to further position our brand through the use of common design elements in all of our marketing materials and media.

The interactive nature of the website will allow visitors to request information or quotes, download articles, papers and past newsletter issues or register as a subscriber to the FORSight Resource. Our audience is encouraged to visit the website and explore pages of interest. We think it was definitely worth the time and effort that went into constructing it!

FORSight Resources provides world-class expertise to companies and agencies facing critical natural resource decisions. The company's offerings include forest planning, acquisition due diligence, forest inventory & biometrics, GIS & data services, custom system/application development and hardware/software sales.

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World-class expertise for natural resource decisions...

The FORSight Library...

The Two-Stage Method for Measurement Error Characterization Sean J. Canavan and David W. Hann. 2004

Abstract - A measurement error (ME) is a component of any study involving the use of actual measurements, but is often not recognized or is ignored. The consequences of ME on models can be severe, affecting estimates of tree and stand attributes and model parameters. Although correction methods do exist for countering the effects of ME, the use of these methods requires knowledge of the distribution of the errors. A new method for modeling error distributions, called the two-stage error distribution (TSED) method, is presented here. This method is compared with traditional methods for error modeling through an example using diameter and height ME. Comparisons between the fitted error distribution surfaces and the empirical error surface are based on a dissimilarity measure. The results indicate that the TSED method produces a much more accurate and precise characterization of the ME distribution than

do traditional methods when a high percentage of errors is identical. In other cases, the TSED method works as well as the most accurate form of the traditional method. The TSED method is also expected to perform better at characterizing asymmetric distributions. It is therefore more adaptable than traditional methods and is being proposed for error modeling in the future. FOR. SCI. 50 (6):743-756.

For a copy of this paper, please contact us at info@FORSightResources.com or visit our website www.FORSightResources.com

"If you want to leave your footprints on the sands of time, be sure you're wearing work shoes."

Italian Proverb

In the Next Issue...

Does Log Grading Adequately Address Quality for Engineered Wood Products?

Emerging Technology Review

Growth Model Review - FORSight Proprietary Hardwood Model

Managing Timberland with Price Uncertainty - A Case for Tactical Planning

The FORSight Library ...

Letter from the Editor



Courtesy of Jennifer Raudebaugh. Aerial perspective from the Hiawatha Trail outside of Wallace Idaho.