

Risks & Rewards

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TAKING STOCK: ARE WORRIES ABOUT GEOPOLITICAL RISK HURTING YOUR INVESTMENT PERFORMANCE?

By Nino Boezio

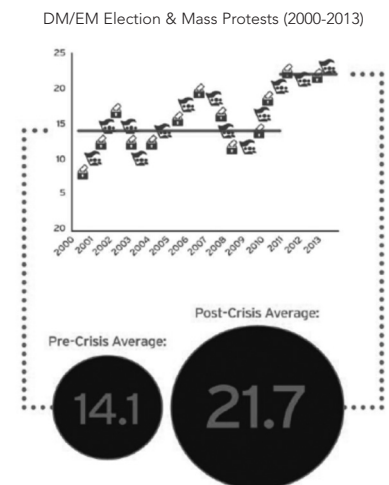
We have seen more than our fair share of geopolitical risk in recent years. Major headlines in 2013 and 2014 included tensions from North Korea, the potential financial collapse of Cyprus, the unrest in the Ukraine, conflict and instability in North Africa and the Middle East, Scotland's referendum to stay in the United Kingdom and the Ebola virus. Citi in a report released in May 2014,¹ concluded that geopolitical events (that include election risk, mass protest risk, referendum risk and geopolitical risk, which Citi classifies all together under the label of *Vox Populi* risk) occurring in this decade, i.e., the period spanning 2011-2013, are running 54 percent higher than the prior decade (see below):

Citi measured the impact of various recent events on financial performance as shown in the following table²:

However, investors who in recent years adjusted their investment strategy to reflect concerns over geopolitical risk likely suffered in investment performance. Anyone watching the news headlines would have noticed a major disconnect between the ominous periods of global unrest and the corresponding financial market reaction, especially after a few days or weeks had passed. It was as though nothing had happened. Financial markets have tended to shrug off any fear and to bounce back quickly.

Ironically, I have noted that many recent negative events were viewed as positive developments if they resulted in temporary market dislocations, for they created buying opportunities for those who were willing to take on

FIGURE 1: The Yearly Average of Elections and Mass Protests in Major Markets has Jumped 54% in the Post-Crisis Environment



Source: Citi Research

CONTINUED ON PAGE 4

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CHAIRPERSON'S CORNER

INVESTMENT SECTION MATTERS

By Frank Grossman

Production timelines for our newsletter being what they are, I'm writing to you under deadline pressure in early December. Despite the overnight arrival here in Southern Ontario of the first real dump of snow this season, oil prices nevertheless have declined by roughly half since early 2013. This development (lower oil prices that is) has apparently roused a somnambulant equity market, prompting the resource-heavy Toronto Stock Exchange, and other markets too, to skid this week.

Same old, same old, you might well say. Yet the investment prospects for 2015 give one pause. Will we properly recognize the progeny of QE—before it's too late? The original plan was that the Federal Reserve would back-stop Treasuries and thus provide a spur to economic growth. The risk of a little inflation was thought to be worth taking—trust the gold bugs to pick up on that. But the rough calculus of three percent growth plus two percent price inflation illustrates that long-term government bond yields still remain short of the mark.

If offered a nickel-bet, I'd wager on more intermittent bouts of market volatility to come—no surprise. Borrowing a lyric from The Who (doubtless familiar to CSI fans) it may simply be another case of “meet the new year, same as the old year.” With the follow-on and heartfelt admonition “pray we don't get fooled again.”

THE FRESHMEN

Allow me to devote a few column inches to our newly elected council members: Jon Mossman, Peter Sun and Jeff Passmore. They each decided to step-up as volunteers last spring. And all three gentlemen have already found ways to contribute to the works of our section.

Jon will be working together with George Eknaian on our 2015 Investment Contest. Peter is our section's co-representative, along with Angelika Feng, to the 2015 Annual Meeting's organizing committee. And Jeff sharpened his quill and found an inkpot over the past few weeks. The product of his industry is his *Risk & Rewards* debut with a book review to be found elsewhere in this installment. An impressive start all around.

I trust that you'll join me in wishing Jon, Peter and Jeff a productive and rewarding three-year term on council. And perhaps some of you, dear readers, will take a mid-winter moment to consider following their example during the upcoming section council elections.

HERE AND THERE

The upcoming 2015 Investment Symposium is slated for March 26-27 in Philadelphia which was the location of the inaugural Investment Actuaries Symposium (sic) nearly 15 years ago in November 2000. The meeting's organizing crew (there's no better term given their relentless focus and high spirits) is chaired by Larry Zhao, ably assisted by co-chairs

Martin Bélanger and Mark Abbott. The meeting program and speaker list they've assembled looks as good as ever. Welcome back to the city of brotherly love.

Ryan Stowe is our mild-mannered meeting representative for the Life & Annuity Symposium, which will be held this year in New York City on May 4-5. (This is in addition to Ryan's other job as vice-chair of the Smaller Insurance Company Section.) Inasmuch as this is Ryan's third go round as our rep—and, as we all know, the third time's the charm—our section sponsored sessions and networking breakfast are sure to be winners.

NEW NEIGHBORS

The SOA now has a 20th (!) special interest section: the SOA Modeling Section. Trevor Howes is the chair of this new section, and has written an engaging article for this issue of *Risk & Rewards* that highlights the shared interests of both our sections. We look forward to collaborating with Trevor and his council in the days ahead, as well as to the launch of their newsletter later this year.

As you may have gathered by this point, there is always a seat at the table for section members with new ideas—or a fresh take on an old idea—and the drive to see them through to delivery. Our perennial challenge remains to work together constructively on behalf of our membership, delivering thought-provoking content, and providing opportunities to connect with others having an investment bent. This is all with a view to ensuring that the Investment Section matters. 🍷



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Figure 6. Liquidity Aside, Politics Still Matters. Many Of The Top One-Day VIX Moves Since QE Began Correspond to Political Events.

Date	%Change in VIX	%Change in S&P	Political Events	Financial/Macro Events
2/25/2013	38.7%	-1.83%	Italian election	
8/8/2011	30.1%	-6.59%	US downgrade	
8/4/2011	28.9%	-4.77%		ECB, BoJ actions, slowdown fears
5/6/2010	26.7%	-3.11%		Flash crash
4/27/2010	25.8%	-2.17%		Greece downgrade
1/28/2011	25.7%	-1.79%	Tahrir Square	Japan downgrade
5/7/2010	25.0%	-1.43%	UK election, Greece riots	
10/30/2009	23.9%	-2.74%		End of month
1/22/2010	22.6%	-2.13%	US policy uncertainty, Fed	
1/24/2014	21.3%	-2.01%		China fears, US earnings miss
1/21/2010	19.8%	-1.95%	Obama calls for bank regulations	
3/16/2011	19.3%	-1.76%		US housing data, Fukushima disaster continues
3/1/2011	19.2%	-1.68%	Libyan civil war	
2/20/2013	19.2%	-1.24%		Fed communication

Source: Chicago Board of Exchange, Bloomberg, Associated Press, CNN Money.com. Citi Research

the risk, or for those who wanted to add to their investment positions.

I would concede that the majority of negative global geopolitical events never materialized into something considered significant (even though they may have spiked market volatility for a short time), but I would still have expected the markets to price-in some sort of visible and persistent risk premium. Of course, by their very nature, unforeseen geopolitical occurrences are characterized as low probability “tail risk” events and are therefore expected to inflict pain on financial markets infrequently. However, there is a sense today that even when such events do become apparent and the risks are visible they are still being mispriced—such

events are ignored because they are considered irrelevant and it is believed that they will play out gradually without any adverse consequences to financial markets.

Mohamed El-Erian (formerly CEO of PIMCO) while cautioning that certain geopolitical events could escalate to the point where they do matter to financial markets, cited four reasons why the markets have been ignoring geopolitical events: “the countries involved are less systemically important; there’s little will from outside powers to get embroiled with these situations; the story of a recovering economy in developed markets has been a distraction; and extraordinary central bank support for markets has provided a layer of insulation.”³

ARMIES OF ANALYSTS, AND FUND MANAGERS AT THE BIG MACRO FUNDS, MAKE A LIVING FROM ANALYZING GEOPOLITICAL TRENDS. ... INCREASINGLY, HOWEVER, IT LOOKS LIKE A WASTE OF TIME.

A financial news commentator (Matthew Lynn) offered up two similar credible explanations for the current market behavior:

“firstly that there are not any wars or revolutions any more that can dramatically change the outlook for the global economy; and secondly, that the markets are so pumped up by quantitative easing, and easy money from the central banks, that anything else that happens pales into triviality by comparison. ... Nothing that happens in the outside world matters to the markets right now. ... Armies of analysts, and fund managers at the big macro funds, make a living from analyzing geopolitical trends, and moving their money around accordingly. Increasingly, however, it looks like a waste of time. Nothing that happens in the outside world matters to the markets right now. A war between China and Japan might change that. So could the collapse of the European Union and the single currency. But unless it is something that big—and those two examples both seem very unlikely—investors can stop worrying about the headlines from around the world. None of them are going to impact your portfolio.”⁴

Citi in its report also cited monetary policy as a mitigating factor and made observations regarding the recent past which are worthy of note:⁵

“So how do markets respond to Vox Populi risk? The answer appears to be, with remarkable calm, indeed hardly at all—for now. ... This might reflect the palliative effect of cheap money as central banks have “come to the rescue” and boosted asset prices that would normally be hurt by higher political risk premiums. The extraordinarily low safe yields resulting from these same policies have created a hunger for yield among private investors that may have rendered them blind even to significant risks.

The withdrawal of cheap money could mark a return to political risk, but for now markets are seemingly over-

looking a confluence of developments that would, in a world with less liquidity, have likely prompted greater concern.”

Citi’s comments regarding “cheap money” and the related liquidity are worth exploring further. Central bank activity has helped buoy investment activity and performance regardless of the underlying backdrop and risk. We have also seen financial markets globally react strongly to the upside even though the underlying global economic fundamentals have been weak. Central bank activity has been encouraging risk-taking and has been offsetting the new risks emerging around the globe. However, there is an element of caution being expressed in Citi’s report—once this liquidity withdraws as central banks change direction, we can witness more visible reactions to geopolitical risk once again, which is something we all need to keep in mind.

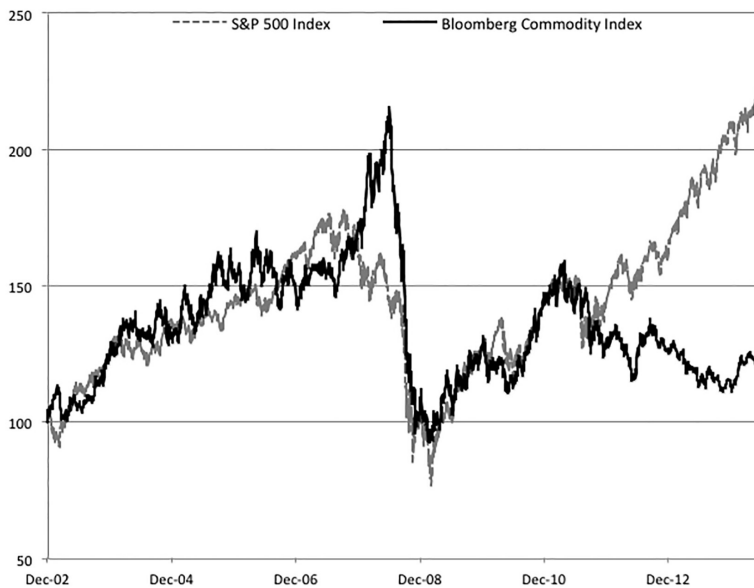
Citi also noted another type of decoupling recently, where global markets are no longer responding in unison to a geopolitical crisis, but rather are migrating to safer assets: “If anything, volatility in riskier parts of the world seems to be increasing the desirability of assets in the more stable DM (developed market) economies.”⁶ For example, the escalation of the conflict in the Ukraine in 2014 drove assets away from Russian equities into European or North American equities (i.e., hurting one while benefitting the other), whereas years ago such an event would have hurt all equity markets. Easy monetary policy by a particular central bank can therefore attract money to its domestic economy as its policy provides an aura of additional stability, and its financial markets can now function as a safe haven for investment assets, something that would have not occurred in prior crises. For many investors, this was an unforeseen consequence of easy money.

Another decoupling seems to be occurring when we look at commodity prices, which also suggests we are in somewhat of an artificial environment. The chart on page 6, for example, shows how the S&P 500 Index is moving in a

CONTINUED ON **PAGE 6**

CENTRAL BANKS HAVE A NICE UTOPIAN WORLD TO OPERATE IN FOR NOW BUT THE CONSEQUENCE DOWN THE ROAD COULD BE DEVASTATING.

different and somewhat opposite direction to commodities, which some argue indicates we are out-of-sync globally:



Source: Bloomberg. Date Range: 12/31/02 – 6/30/14. Data was unitized with a value of 100 on Dec. 31, 2002. Bloomberg Index is the Bloomberg Commodity Index Excess Return. S&P 500 Index Ex Dividends.

If the global economy was growing, strong and healthy, we would expect the demand for commodities to be following a similar trajectory to equities, but this is not the case any longer. Unfortunately, even if financial experts agree that something appears amiss in the current financial environment, their ultimate response is to go along with the trend regardless, and hope to know when to alter the course at the appropriate time. The mantra “do not fight the Fed” or any other central bank for that matter, holds true if you want to have performance that closely tracks associated benchmarks, even if you are not in agreement with the underlying global fundamentals.

From a behavioral perspective, we are also likely seeing investors adopt an attitude of complacency, because they are getting used to the current upside trend. I have noted personally, that a “buy the dips” mentality is certainly taking hold in financial markets. Some of this can be warranted since if the global economy is gradually improving over time, equity markets can continue to reach higher levels even though the pace (not the magnitude) of price appreciation can be debatable. So why should we worry? Moreover, if things do fall apart, many today do expect central banks to ratchet up monetary policy to salvage the situation. However, as Alberto Gallo warns (a credit analyst from the Royal Bank of Scotland), this market insensitivity will not continue forever, and market participants “may be putting too much faith in central banks to rein in tensions and stabilize markets.”⁷ I would have to agree that the current global monetary strategy is going to fail eventually.

The U.S. Federal Reserve and Bank of England have ended their Quantitative Easing (QE) programs which should result in reduced liquidity, while the Bank of Japan has embarked on a brand of “super-QE” and the European Central Bank is expected to embark on a higher level of QE in the very near future. Overall, liquidity is still around and abundant, but one wonders whether several types of bubbles, market dislocations and/or inflation spikes may not be too far behind. With the current deflationary environment and excess industrial capacity, central banks have a nice “utopian” world to operate in—for now—but the consequences down the road could be devastating.

What about Natural Disasters?

The Citi report does not incorporate a discussion of environmental factors or natural disasters, but this too can weigh into any geopolitical risk assessment. Like geopolitical risk, an environment or natural disaster (like the Japanese Fukushima nuclear disaster in 2011 following a tsunami, which had elements of both types of risk) can hurt an economy.

The concerns over global warming have cooled off some-

what, especially given the “polar vortex” of last winter which inflicted the northeastern part of the North American continent with excesses of snow and abnormally low temperatures. In addition, the last few summers have generally been more moderate than that of 2012, which saw drought inflicting much of the grain producing states.

However, a U.S. Federal report issued in the spring of 2014 (<http://nca2014.globalchange.gov/>) continued to raise alarms about expected changes in weather that will persist for several decades to come. The report highlighted that temperatures will generally be higher and stay there longer—summers for example will be longer and winters shorter. Extreme weather will also occur which will result in more flooding, torrential rain downpours, drought, wildfires, higher sea levels and greater insect infestation.

The report also provided some insight into the economic ramifications of such events including: the expectation for higher insurance rates or no insurance at all in some regions; higher demands for energy; more pressure on agriculture (in general lower crop yields); more health concerns; decreasing water supply; and a major change in ecosystems which can affect our wildlife and fishing industries. Most of these may not be large immediate impacts, but some events could—we still remember Hurricane Katrina in 2005 and the devastation it caused in parts of Louisiana and particularly in the city of New Orleans.

Even though this federal report may have completely frightened you, fortunately this change in weather should be gradual so that our North American economy can adjust, even if there are some major weather events in isolated areas. Nevertheless, much of the world will face similar pressures to the United States and Canada, and we have not even touched on the financial impact of events that can include earthquakes, hurricanes and tornadoes that can also be expected to escalate. In addition, as the global population continues to grow, the risk of an event affecting a large number of people becomes elevated.

Given the supposed success of central bank activity since the global financial crisis (even though we still do not know what the ultimate consequences will look like down the road) we can now expect central banks to get more directly involved in response to any environmental or natural crisis to compensate for the perceived economic impact. Central bank intervention is now being seen as the panacea to any financial dislocations occurring domestically or around the world regardless of the cause, which is becoming a very strange strategy to say the least. This is certainly not something that would have ever occurred if we had stayed faithful to debt limits or even a gold standard.

SUMMARY

Geopolitical risk can be a very interesting subject to debate. However, because such risks are very subjective, are hard to measure, and many events are hard to predict in advance, a geopolitical risk discussion can sometimes be very uncomfortable to engage in and can be highly speculative. Observable and reliable data may also not be available. As a result, geopolitical risk may often be ignored or improperly reflected in any risk analysis because of the difficulties associated with quantifying it. In addition, if something arises on the world scene that is very detrimental to a portfolio’s performance, the portfolio manager can provide the defense that the event was unforeseen and therefore not the result of faulty investment management.

Nevertheless, geopolitical events can have a very important and significant impact on investment performance when they do tip into “real crisis” territory, and therefore should not be dismissed outright. Sensitivity analysis and other forms of risk assessment should be taken into consideration (that do not always need to be numerical in nature) which can result in better financial outcomes. We should never assume geopolitical risk is gone forever, but keep it in mind when establishing our investment outlook.

In addition, we should not always expect central banks to be there to nullify any future market dislocations, especially if inflation begins to rise substantially. Monetary policy may

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have to change course once deflation is no longer the positive underlying backdrop behind global economic activity. The absence or change in the currently stimulative monetary policy to a policy that results in less liquidity, could lead to greater market volatility and higher sensitivity to geopolitical events as we lean into the future. **3**



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ENDNOTES

- ¹ Tina M. Fordham, Matthew P. Dabrowski, Willem Butler, Robert Buckland, Edward L. Morse, Taking It to the Streets: What the New Vox Populi Means for Politics, the Economy and Markets, Citi GPS: Global Perspectives and Solutions, May 2014, page 8.
- ² Ibid, page 16.
- ³ Eisen, Ben, "El-Erian: Markets should be worrying about Ukraine," <<http://www.marketwatch.com/>> [path: <http://blogs.marketwatch.com/thetell/2014/03/24/el-erian-markets-should-be-worrying-about-ukraine/>]
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- ⁵ Fordham, "Taking It to the Streets," page 9.
- ⁶ Fordham, "Taking it to the Streets," page 31.
- ⁷ Watts, William. "This is why markets shrug off Ukraine plane crash, Gaza and other geopolitical flashpoints," <<http://www.marketwatch.com/>> [path: <http://blogs.marketwatch.com/thetell/2014/07/21/this-is-why-markets-shrug-off-ukraine-plane-crash-gaza-and-other-geopolitical-flashpoints/>]



ENTERPRISE RISK MANAGEMENT: LIFE & ANNUITY INSURERS, SEEKING WAYS TO IMPROVE INVESTMENT RESULTS BY FIRST ANALYZING LIABILITIES

*Insurance Risk Advisory Practice, Franklin
Templeton Investments*

*Note: The following article was initially published as a Franklin Templeton
Topic Paper in September 2014. It is reprinted with permission.*

By Mark Whitford

EXECUTIVE SUMMARY

Life and annuity (L&A) insurance providers are under intense pressure to maintain profitability in the face of increasing competition, low interest rates, increased regulation from the Own Risk and Solvency Assessment (ORSA) and the risk of rising inflation. The liability duration of most L&A insurers tends to be over 10 years, with some insurers having liability durations longer than 30 years (long-term care, or LTC). As companies seek to increase interest-rate spreads from the discount rate that is used in pricing, investment income is playing an even more vital role in the profitability of L&A companies than in past years. In today's low interest-rate environment, however, companies have often had to increase their exposure to greater financial risk in order to generate the necessary investment income.

Background on L&A Products

Life insurance is used to protect dependents against financial hardship when the insured person dies. The majority of American families depend upon life insurance to provide such economic protection. A full 70% of American families own some type of life insurance. In 2012 Americans purchased \$2.9 trillion in new life insurance coverage, worth \$19.3 trillion in accumulated coverage.

There are three main types of life insurance policies: individual life, group and credit insurance. As of 2012, individual life insurance in the United States totaled \$11.2 trillion (58%), group insurance \$8 trillion (39%), and credit insurance \$94 billion (3%).

Annuities protect policyholders against outliving their financial resources (longevity risk). As of 2012, annuity reserves were worth \$3 trillion with group annuities (pension plans) accounting for \$958 billion (32%), and individual annuities valued at \$2 trillion (68%).

Disability income insurance provides income protection in the event of accident or sickness. These policies commonly provide 50% to 70% of an insured person's pre-disability income.

Long-term Care Insurance safeguards retirement savings and alleviates financial hardship in cases where long-term care is necessary.

Life insurer assets: As of 2013, life insurers held \$6.1 trillion in assets. A life insurer divides its assets between two accounts: the general account, which supports contractual obligations for guaranteed fixed-dollar benefit payments, and the separate account, which supports liabilities associated with investment risk pass-through products. As of 2013, the general account assets amounted to \$3.8 trillion while the separate accounts held \$2.3 trillion. Assets in the general account are invested mainly in bonds and mortgages; while assets in the separate account are invested primarily in stocks and bonds.

Life insurer liabilities include mainly policy and asset fluctuation reserves.

Policy reserves are accumulated to cover company obligations to policyholders and beneficiaries. The reserve level is determined on an actuarial basis, taking into account funds from future premium payments, assumed investment returns, and expected mortality rates. At the end of 2013, US life insurers' policy reserves totaled \$2.6 trillion.

Asset fluctuation reserves are required to absorb risk associated with invested assets. The asset valuation reserve (AVR) accounts for the default risk related to fixed income assets and an equity component risk. The interest maintenance reserve (IMR) aims to capture interest-related capital gains and losses on fixed income assets. In 2013, the industry's total AVR was \$47 billion, and its IMR was \$26 billion.

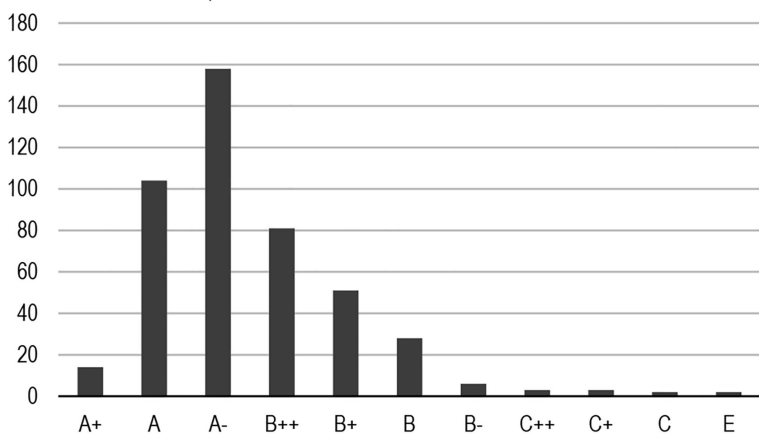
Insurance Regulation: Life insurance companies are regulated at the state level by state insurance departments and insurance commissioners. The regulators' mission is to protect policyholders while also facilitating an effective and efficient market place for insurance products.

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Life insurance is a highly credit-sensitive industry: The distribution of ratings is heavily clustered in the higher investment grade rating range. According to Moody's, about 77% of insurers have a rating of A and above.

Figure 1: Global Rating Distribution by Rating Category

As of December 31, 2013



Source: SNL Financial LC

Under Moody's life insurers rating framework, an insurer is evaluated on business, financial and operating risks:

- **Business Risk: Economies of scale**
 - Market position and product recognition: The larger the market share and the wider the product recognition, the better the economies of scale and diversification benefits.
 - Distribution: Strongly controlled and diversified distribution channels assist in the maintenance and growth of market share.
- **Financial Risk: Profitability and capital adequacy**
 - Investment Risk: When the realized investment yield is less than expected.
 - Liability risk: When actual liability costs are more than expected.
 - Liquidity risk: When a mismatched asset-liability balance causes an untimely sale of assets.

- **Operating Environment Risk:**
 - Country risk: Economic, social, judicial and general business conditions.

Insurance Market Development, Penetration and Density Gains Stripping

Depending on the market environment, an insurance company can realize capital gains in its portfolio by selling securities. By doing so, the insurer can boost its policyholders' surpluses and related metrics, such as its risk-based capital ratio and permitted dividends. However, this strategy might be at the expense of lowering the long-term yield for the remaining investment portfolio.

The IMR helps safeguard against a portion of this risk. In addition, a pattern of realizing excessive capital gains is likely to be a matter of great interest to regulators during the examination process.

The goal of our enterprise risk management (ERM) analysis is to help L&A insurance providers improve the efficacy of their investments by providing an in-depth analysis of risk on both the liability and asset sides of the balance sheet. Our ERM analysis of L&A insurance providers leads us to believe there is room to increase potential income levels by selectively adding risk to investment portfolios.

With bond yields at historically low levels, the opportunity for higher yields on existing investments has diminished. If this trend continues, investment income levels could decline further unless the portfolio's risk tolerance levels are re-evaluated and credit quality adjusted accordingly. High-yield corporate bonds, bank loans, securitized mortgages or income-producing equity securities may represent attractive options for improving current income while keeping the portfolio within a targeted risk spectrum.

As companies increasingly rely on income from investments to meet the challenges ahead, we suggest the need for proper evaluation of the compositions and risk levels of

their investment portfolios is becoming more urgent. We also believe L&A companies should evaluate the potential benefits of ERM as management seeks to enhance margins and still meet future financial and regulatory challenges.

LIQUIDITY RISK

L&A companies tend to be cash flow positive for the first 10 to 20 years that a policy is in force (including new policies, a company could expect to be cash flow positive for over 20 years). Since a typical policy's cash flow is expected to be positive for the first few policy years (Figure 2, right), L&A insurers have less liquidity risk compared to health and P&C companies for which liquidity risk is a major concern. While a given L&A insurer's investment portfolio can sometimes provide a significant contribution to income, we still need to consider its liquidity risk prior to setting any strategy. Also, in the current low interest-rate environment, generating even the same amount of investment income that portfolios may have produced in the past has become a challenge. As bonds mature and are reinvested at lower rates, they can impact the overall profitability of the company.

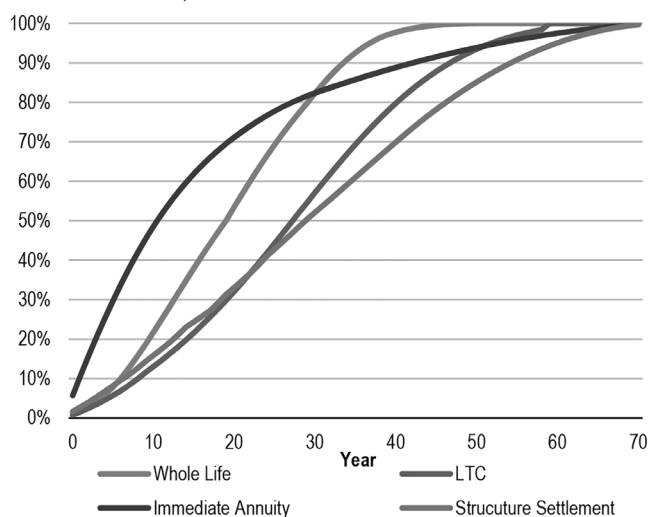
THE CLAIM COVERAGE SQUEEZE

The dilemma of lower investment returns poses a series of questions for insurers.

Is your company at risk due to changes in the frequency and severities of claims (LTD, LTC, structure settlements)? When this occurs, firms can experience significant pressure on profitability. Is your company experiencing a drop in the frequency of claims but an increase in severity? How has inflation compared to the inflation reported in the Consumer Price Index? Are the L&A morbidity and mortality levels coming in as expected? What about lapse rates? Understanding the risks impacting the liability portion of the balance sheet in a changing claims environment can be tricky. The challenge lies in finding ways to improve margins while maintaining appropriate liability coverage and capital ratios.

Figure 2: Estimated Liability Cash Flows

As of December 31, 2013



Source: SNL Financial LC

While increasing the portfolio's asset base may appear to be a daunting task, we believe ERM analysis can provide valuable insights and a path toward implementation by employing a holistic view of the risks impacting both the asset and liability sides of the balance sheet. Our ERM analysis of L&A insurance companies leads us to believe there is an opportunity to potentially increase investment income by selectively raising risk tolerance levels. Our methodology and results are set out in this paper.

THE FOUNDATION OF ERM ANALYSIS

Insurance Asset Mix and Investment Principle

Life insurers accumulate assets by collecting premiums from policyholders and earning money on various investments. These assets also provide the US economy with an important source of investment capital.

Not only does the investment performance of the insurer's portfolio affect the company's profitability and capital

CONTINUED ON PAGE 12

adequacy, but the returns can also alter the firm's reputation and creditworthiness. With strong and stable investment gains, an insurer has a competitive advantage in growing its business, accessing capital markets and meeting capital requirements.

Life insurers have \$6.1 trillion invested in the economy, as of December 31, 2013, making this group one of the largest investors in US capital markets:

- These companies are the single-largest source of bond financing for American business, holding 17% of all US corporate bonds.
- The sector invests on a long-term basis in American businesses. More than 30% of general account bonds held by life insurers had a maturity of more than 20 years at the time of purchase. More than two-thirds had a maturity of over 10 years.
- Of the \$749 billion in government bonds held by life insurers, the overwhelming majority, \$706 billion, were long-term obligations.
- Long-term obligations provide long-term capital to the commercial mortgage market, financing more than \$271 billion, or one-eighth, of US commercial mortgages.

Yield-Oriented vs. Total Return

Each insurer has a wide range of possible investment management objectives for their portfolio. While some focus on total return, most insurance companies are yield oriented, especially life insurance firms. Insurers that focus on long-term yield will typically have a target minimum yield needed to meet product pricing requirements, pay operational costs and earn the desired profit margin for the insurer's owners.

Alternatively, the insurer could target a total return (reported income plus price change), which is typically compared to

the total return on a predefined investment benchmark. The investment benchmark could be either a standard market metric (such as a Barclays Capital fixed income index) or, more likely, a custom index designed to meet the insurer's investment requirements.

The investment manager's objective is to outperform the investment target, usually by a predefined margin, such as 50 basis points per annum. If the manager outperforms the index by as much or more than the specified margin, while meeting the other constraints, the investment manager would be considered successful in managing the investment portfolio.

Most insurers, however, have a strong bias to yield-oriented targets because they have specific requirements on the product side. Consequently, even in a total return-oriented portfolio, the investment manager needs to remain appropriately focused on the portfolio's yield, if that is also an objective of the insurer.

Setting up investment strategies: In general, investment strategy involves minimizing tracking error risk (to match liability closely) and maximizing active return (to increase profitability).

- The active return (Tracking Error) = portfolio return – benchmark return.
- The Tracking Error Volatility (TEV) = the standard deviation of the active return.

Where the above benchmark is set up to closely mimic the firm's liability profile, and any deviation from it, is intended to enhance returns when a risk tolerance exists.

Asset mix to reflect liability profile: As of December 31, 2013, life insurers had approximately \$3.8 trillion in assets in their general asset account (65% of the total assets in the insurance industry), with the majority invested in bonds and

very little in equities. By comparison, P&C insurers had about \$1.6 trillion assets (about 30% of the total assets in the insurance industry), of which about 60% was invested in bonds and 25% in equities.

CASH FLOW TESTING (CFT)

As most L&A companies must annually pass CFT requirements, insight into the amount of excess capital left after analyzing each of the scenarios is very valuable. Understanding which scenarios pose the most risk to the company could lead to alternative investment strategies. The better we understand the true picture of a company's overall capital position, the better we can conduct an ERM analysis and create a holistic approach to designing an investment portfolio.

RISK-BASED CAPITAL (RBC)

Our analysis is based on an initial review of RBC. The importance of RBC ratios is two-fold:

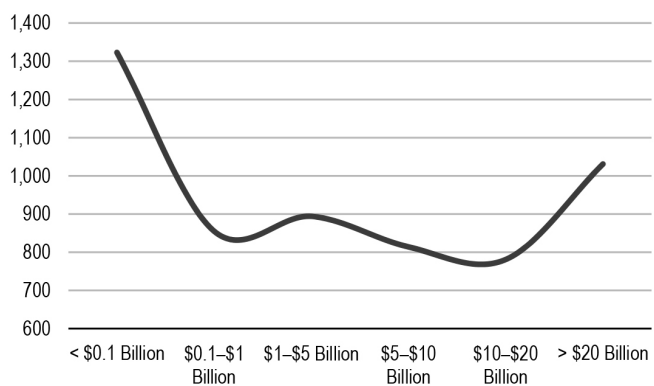
- Insurance companies must maintain a minimum amount of capital on their balance sheets to remain in business and avoid increased regulatory scrutiny.
- Comparing RBC ratios across a competitive set provides a measure of risk tolerance, particularly when evaluating a company relative to other insurers of similar size and type.

As shown in Figure 3 (top, right), RBC ratios as defined by invested asset base vary by company size and tend to drop as a company grows, except for the largest companies.

A more detailed examination of the breakout of risks within the RBC calculation (Figure 4, bottom, right), shows insurance risk and other asset risk (C-2 and C-1o), not surprisingly, listed as the largest component. More intriguing from our perspective, however, is the discovery that insurance risk decreases quite a bit as a company grows.

Figure 3: RBC Ratios According to Company Size

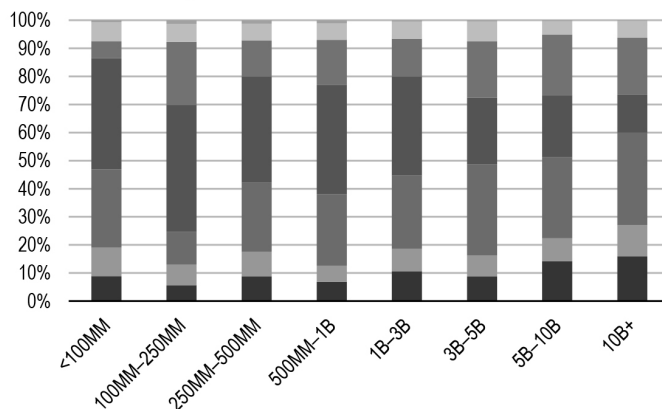
As of December 31, 2013



Source: SNL Financial LC

Figure 4: Breakdown of Risks within RBC Calculation for L&A Insurers by Size

As of December 31, 2013



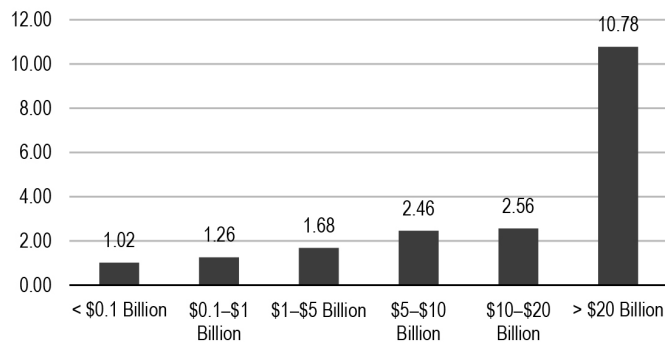
Source: SNL Financial LC

We next considered the liability side of the firm's balance sheet and possible implications for the invested asset base.

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Figure 5: Liabilities Compared to Capital and Surplus for L&A Insurers by Size

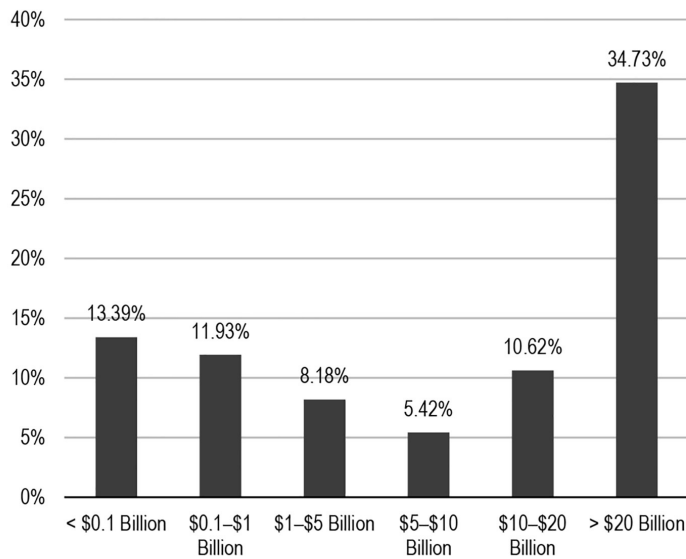
As of December 31, 2013



Source: SNL Financial LC

Figure 6: Ending Surplus/Assets for 2013

As of December 31, 2013



Source: SNL Financial LC

LIABILITY RISK ANALYSIS: PREMIUM TO SURPLUS RATIO

We observed a meaningful difference in the level of business companies are willing to underwrite or generate for a given level of capital and surplus (Figure 5, top, left). Premiums written by a company, for the most part, range between 1 and 4. Interestingly, larger companies tend to write greater amounts than their smaller counterparts. For example, a firm with an estimated \$2 billion in premiums may have a 2 ratio versus a firm with premiums in the range of \$20 billion that might have a ratio around 3.3.

In general, premium-to-surplus ratios increase with company size. Ratios for smaller companies tend to hover at around 1–2 while larger companies tend to have ratios of 3–10. Larger companies assume additional risk; however, they appear comfortable with writing relatively more business and holding relatively less capital for protection against adverse deviations in claim reserves.

LIABILITY RISK ANALYSIS: LIABILITIES LEVERAGE TO ENDING SURPLUS

L&A companies tend to hold a higher percentage of their assets as reserves compared to health and P&C companies. One interesting trend (Figure 6, bottom, right) shows how leverage increases to a point as a company grows and then starts to decrease. Part of the drop is associated with the type of business written as a greater percentage of the policies underwritten by larger L&A companies business comes from group annuities.

A detailed examination gives a better understanding of the growth of disabled life reserves (DLR) and active life reserves (ALR). As DLR tend to be shorter in duration and a better measure of the potential for liquidity risk, companies managing this type of risk often maintain two portfolios, one for DLR and one for ALR. Asset duration within the DLR portfolio tends to be short and cover day-to-day cash needs and liquidity management. Duration in the ALR portfolio can be longer (more than 10 years).

CREDIT RISK CAN HAVE A MAJOR IMPACT ON TOTAL INVESTMENT RETURNS AS WAS DEMONSTRATED IN 2008.

Several factors must be considered when measuring liquidity risk. We believe two characteristics are especially important for L&A insurance providers:

- **Net written premium growth:** Changes in premium growth will alter the firm’s liquidity needs. Is the company still growing and in a positive net cash position? Are premiums shrinking and is the company in run-off and seeing an increase in DLR? Are positive cash flows turning negative?
- **Growth in disabled life reserves:** Claim reserves generally grow on an annual basis, due in part to premium growth. Annual medical inflation may affect the growth in reserves as the medical component of reserves may be growing faster than the indemnity component.

The next step in our analysis is on the asset side of the balance sheet. ERM analysis of assets focuses on the risks inherent in investment portfolios, including liquidity and credit characteristics as well as the composition of the invested asset base.

ASSET RISK ANALYSIS: CREDIT RISK

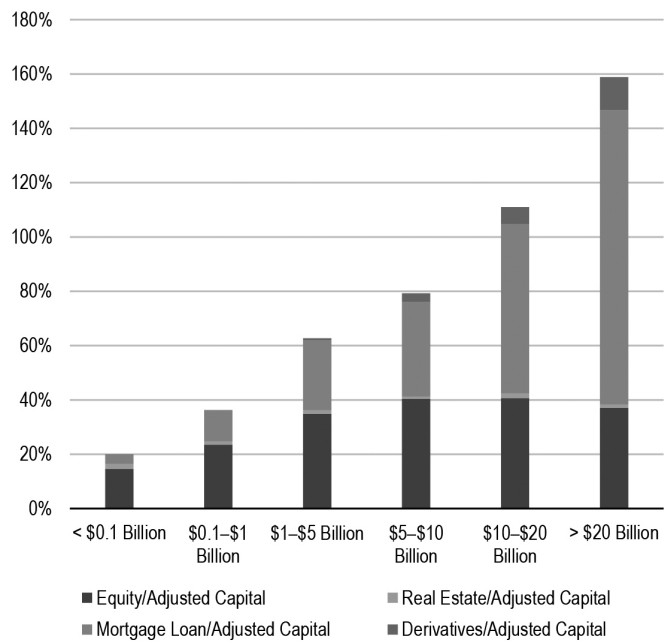
Credit risk can have a major impact on total investment returns for L&A insurers, as was demonstrated in 2008 at the height of the global financial crisis.

We categorize risky asset classes as high-yield bonds, preferred and common stock, schedule BA assets and “other invested” assets. Figure 7 (right) compares the percentage of surplus that L&A companies invest in these riskier asset classes.

ASSET RISK ANALYSIS: INVESTMENT RISK COMPARISON

L&A companies tend to hold less cash and maintain larger allocations to mortgage loans, contract loans and “other

Figure 7: Proportion of Risk Assets as a Percentage of Capital and Surplus of L&A Insurers by Size
As of December 31, 2013



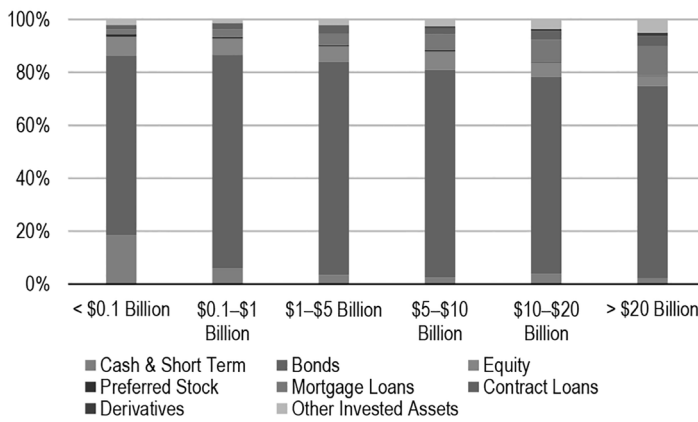
Source: SNL Financial LC

invested assets.” As the invested asset base increases, there tends to be a corresponding increase in allocations to riskier

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Figure 8: Asset Allocation Profiles of L&A Insurers by Size

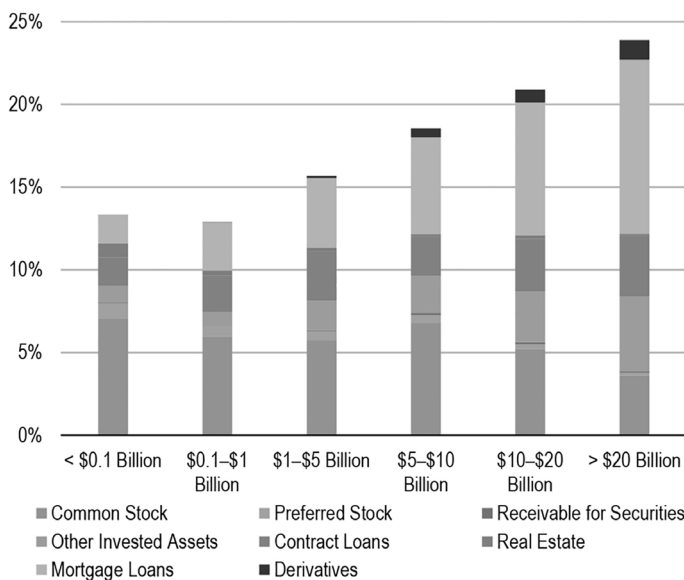
As of December 31, 2013



Source: SNL Financial LC

Figure 9: Excludes Cash and Bonds

As of December 31, 2013



Source: SNL Financial LC

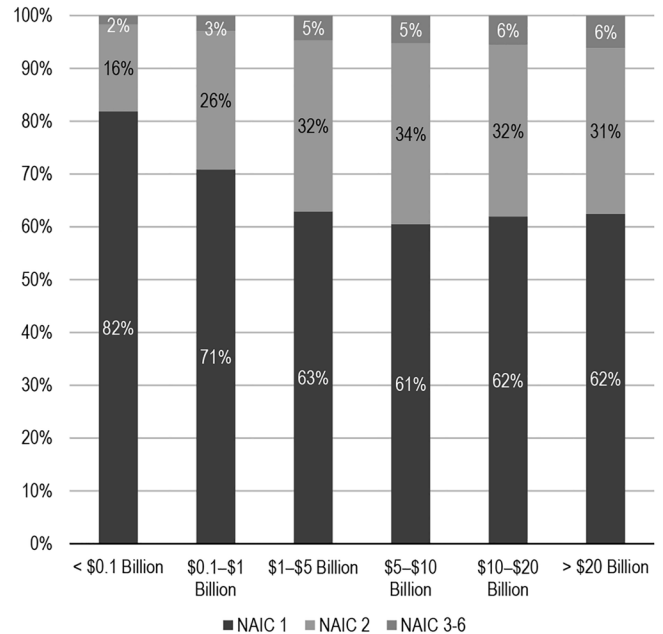
asset classes and a decrease in investment in cash and bonds. In addition to evaluating liquidity and credit risks, a review of investment portfolio composition also reveals several interesting themes. Figures 8 (pg. 16) and 9 (pg. 16) compare the asset allocation decisions of L&A insurance companies by size.

ASSET RISK ANALYSIS: BOND ALLOCATIONS

An examination of bond portfolios in isolation provides further evidence of the relationship between risk tolerance and invested asset base (Figure 10, below, right). As the

Figure 10: Distribution of Holdings by Bond Ratings for L&A Insurers by Size

As of December 31, 2013



INVESTMENT INCOME LEVELS COULD CONTINUE TO DECLINE UNLESS RISK TOLERANCE LEVELS ARE REEVALUATED AND THE CREDIT QUALITY IN INVESTMENT PORTFOLIOS ADJUSTED ACCORDINGLY.

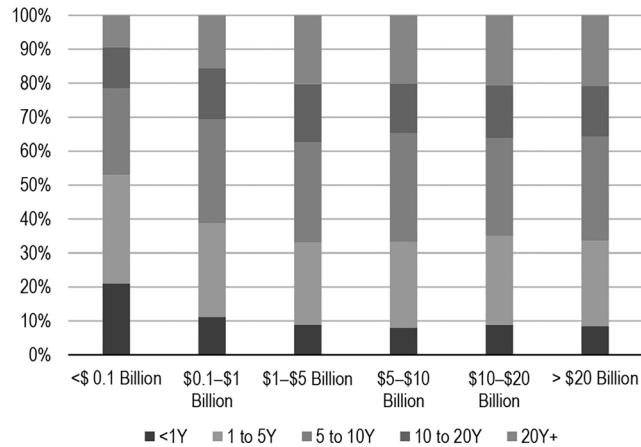
invested asset base increases, the allocation to National Association of Insurance Commissioners (NAIC) 1-rated bonds (AAA–A) declines, while the allocation to NAIC 2 (BBB) and NAIC 3–6 (high-yield) bonds rises.

IN SEARCH OF YIELD

Recent capital market trends may drive further changes in asset allocation decisions and risk tolerance levels. With the exception of the 2008 crisis period, overall bond yields have declined meaningfully over the last decade, and opportunities to invest for yield have diminished. Prior to 2008, a AAA-rated security yielded approximately 4%; today, that same security would yield closer to 2%. If this trend persists, we believe investment income levels could continue to decline unless risk tolerance levels are reevaluated and the credit quality of investment portfolios adjusted accordingly.

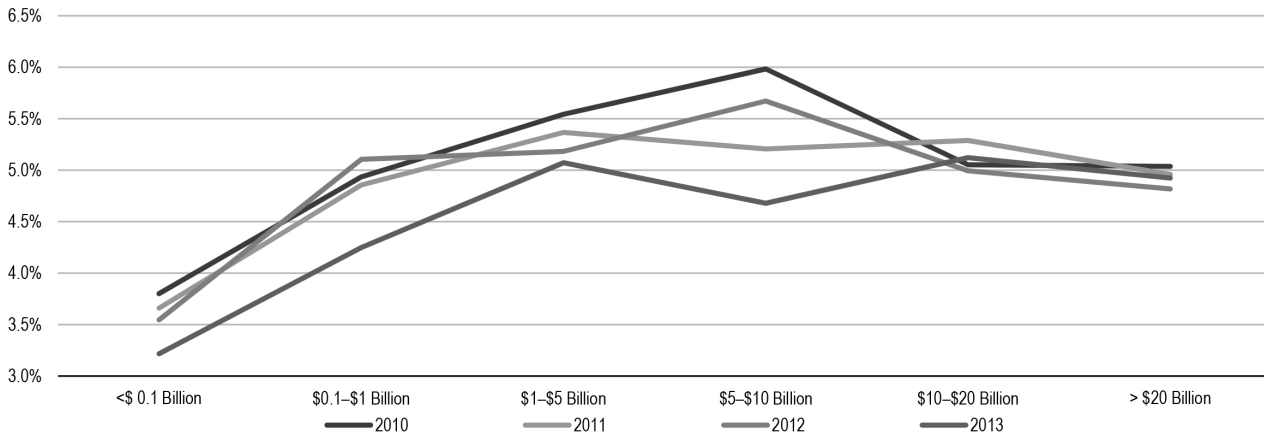
L&A insurers seeking to boost investment income in an environment of diminishing yields may benefit from a shift in asset allocation to potentially higher-yielding opportunities such as high yield corporate and municipal bonds, bank

Figure 11: Maturity as % of Bond Portfolio and Average Maturity
As of December 31, 2013



Source: SNL Financial LC

Figure 12: Net Yield on Invested Assets
As of December 31, 2013



Source: SNL Financial LC

CONTINUED ON PAGE 18

AS COMPANIES RELY MORE ON INVESTMENT INCOME, THE NEED FOR PROPER EVALUATION OF THE COMPOSITION AND RISK LEVEL OF INVESTMENT PORTFOLIOS WILL BECOME MORE CRUCIAL.

loans, select opportunities within mortgage-backed securities (MBS) or income producing equity securities. Such assets may produce yields ranging from 3.5% to more than 7%, although the higher yields may also bring higher risk. Another area that has been gaining traction among companies lately is insurance-linked securities (ILS), see below for additional information on this asset class. As we move forward, our expectation is to see an increase in the number of rated funds. We believe the higher-yielding asset classes we have discussed may represent an attractive option for improving current income while remaining within a targeted risk spectrum and providing additional potential diversification benefits.

UNCOVERING OPPORTUNITIES WITH ERM

Life insurance and annuities provide death and longevity risk protection for millions of people. Over the years, these instruments have accumulated large amounts of assets. Those assets are mainly invested to match the obligations to millions of policyholders. The investment performance of those assets not only contributes to an insurer's profitability, but also its competitiveness and growth of capital. The benefit payments are needed to help people overcome tough financial hardship, either in the event of sudden death of bread-earners or living through vulnerable old-age periods. For this purpose, the insurance business in the United States is highly regulated at the state level and closely monitored by rating agencies.

Against this backdrop of increasing pressure on profit margins spurred by growing competition and regulatory changes, L&A insurance companies face the challenging task of improving margins while maintaining appropriate liability coverage and capital ratios.

As companies rely more on investment income, we expect the need for proper evaluation of the composition and risk level of investment portfolios to become more crucial. Our ERM analysis has led us to conclude there is an opportunity to increase profitability by selectively adding risk to an

insurer's investment portfolio—just one demonstration of how ERM's approach can provide a possible solution.

The process of balancing the drivers of both assets and liabilities can be challenging. In skilled hands, however, ERM has the potential to support the evolving needs of growing companies, particularly in a dynamic financial and regulatory environment. We believe companies in the L&A insurance industry should consider the potential benefits of ERM as they seek to enhance margins and meet the financial and regulatory challenges that lie ahead.

SUPPLEMENTAL INFORMATION

The Purpose of ILS

A quick overview of how the insurance market works helps to illustrate the purpose of insurance-linked securities (ILS). An insurance policy allows an individual or business to purchase some form of financial protection against accidents, property damage, illness, death or other potentially significant financial events. An insurance company may then purchase reinsurance, which provides financial coverage against possible losses incurred from the original policies. Another way for an insurer or reinsurer to reduce the financial risk of its policies is to issue insurance linked securities. These are financial instruments that enable a cedant—the term used to refer to an insurance or reinsurance company issuing ILS—to shift part of the potential financial risks from the policies on its balance sheet directly to the capital markets.

Why the ILS Market Is Growing

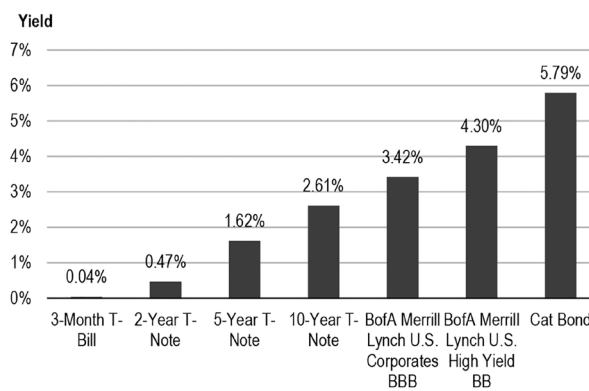
At approximately \$54 billion, insurance-linked securities constitute a small subset of the overall \$332 billion reinsurance market but it is noteworthy that the ILS market has doubled since 2008.⁴ The ILS market is rapidly expanding due to its attractive nature to insurers and institutional investors. Insurers can reduce reinsurance costs, while freeing up capital to underwrite new insurance policies. ILS are most often used to obtain supplemental protection for high-severity, low-frequency events; for example, hur-

ricanes, earthquakes, tornadoes and other natural disasters. However, the securities may be used to securitize most types of policies including property, life, terrorism, marine and agriculture. Many institutional investors have found the potential risk/return profile appealing because the value of these securities is more closely tied to insurance events, than traditional financial markets.

Potential for Attractive Current Yield

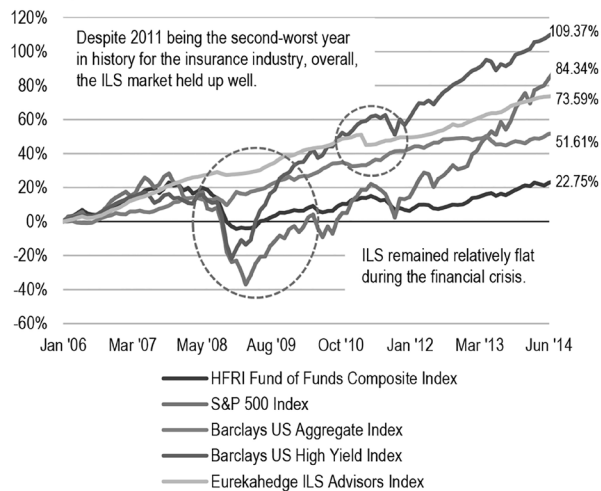
Low interest rates further complicate the current investment landscape as institutional investors seek yield while also being mindful of the potential US Federal Reserve policy changes now that its quantitative easing program is winding down. As seen in Figure 14, the average market yield on catastrophe bonds is currently higher than many other more traditional fixed income securities. In addition, the floating-rate component and shorter-term instrument dura-

Figure 14: Market Yield Comparison
As of June 30, 2014



Source: Bloomberg LP, as of 6/30/14. BofA Merrill Lynch, used with permission. BofA MERRILL LYNCH IS LICENSING THE BofA MERRILL LYNCH INDICES "AS IS," MAKES NO WARRANTIES REGARDING SAME, DOES NOT GUARANTEE THE QUALITY, ACCURACY AND/OR COMPLETENESS OF THE BofA MERRILL LYNCH INDICES OR ANY DATA INCLUDED THEREIN OR DERIVED THEREFROM, AND ASSUMES NO LIABILITY IN CONNECTION WITH THEIR USE. **Past performance is no guarantee of future results.**

Figure 13: Cumulative Performance of Eureka Hedge ILS Advisers Index
January 1, 2006–June 30, 2014



Sources: FactSet,¹ S&P,² Barclays,³ Bloomberg LP, Eureka Hedge, as of 6/30/14. **Past performance is no guarantee of future results.**

tion common to ILS (typically six months to three years) may help reduce the interest-rate sensitivity of a portfolio. Maturities also differ across various instruments, offering the further potential benefit of frequent repricing in the overall market. ☺



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IMPLICATIONS OF GEOPOLITICAL INSTABILITY FOR INVESTORS: SPOTLIGHT ON THE MIDDLE EAST

This article first appeared in the June 2014 issue of Investment Insight by Segal Rogerscasey Canada. It is reprinted here with permission.

By Nino Boezio

Any major geopolitical event will affect investment performance. Investors with diversified portfolios are not immune from the repercussions. Among the recent developments worth noting are the crisis in Ukraine and, in our hemisphere, unrest in Brazil and Venezuela. We have also seen unrest in Asia stemming from tensions between Japan and China and threats from North Korea.

Tensions can spread quickly, with potentially explosive results, such as major conflicts. The region that has demanded perhaps the greatest attention is the Middle East, which has been volatile for decades. Lately, Egypt, Iran, Iraq and Syria have all been in the headlines. Exploring financial data from the region can give us a good indication of how severely financial markets can react to any geopolitical crisis.

For investors, the Middle East is of particular interest because the region is still the main source of oil, which keeps the global economy running. The price of oil and the uncertainty of accessing this vital commodity affects equity markets all over the globe. When the price of oil increases dramatically, it can push economies into recession, as high fuel costs pressure consumers and businesses to curtail other expenditures.

This Investment Insight examines data related to past major events in the region to provide insight into the magnitude of their impact on financial markets. It also outlines steps investors can take to protect themselves from geopolitical instability.

THE INVESTMENT IMPACT OF PAST GEOPOLITICAL EVENTS IN THE MIDDLE EAST

Segal Rogerscasey Canada has analyzed the performance of a range of investments during and just after six key events in the Middle East, starting with the 1973 Arab oil embargo.

The results of that analysis are summarized in the table on the next page.

Based on the data in the table and considering how markets have responded to risk in the past several years, if any prolonged and major crisis were to occur, Segal Rogerscasey Canada believes the following consequences are likely:

- North American equity prices (and by extension, equity markets globally) could decline significantly in the short term as economic expectations are severely diminished due to the event.
- Prices could rise for safer fixed-income securities, particularly those issued by the government of Canada and the U.S. Treasury, unless inflation expectations rise dramatically, which can then factor into higher interest rates. These investments are considered safe, liquid and often produce positive rates of return during major crises.
- As we saw with the recent global financial crisis of 2008-09, the value of the U.S. dollar could increase compared to other currencies because investors would prefer more liquid U.S.-based assets. Many global transactions and investment vehicles including derivatives use the U.S. dollar as the medium of exchange. As global risk increases, more activity in these products would be expected, resulting in more demand for the U.S. currency.

EXPLORING FINANCIAL DATA FROM THE REGION
CAN GIVE US A GOOD INDICATION OF HOW
SEVERELY FINANCIAL MARKETS CAN REACT TO ANY
GEOPOLITICAL CRISIS.

Performance of Various Investments¹ During and in the Months Following Six Key Events in the Middle East							
Event and Reaction Dates							
Investment Performance		Arab Oil Embargo (10/16/73 – 12/05/73)	Iranian Revolution (1/16/79 – 12/1/79)	Iraq Invasion of Kuwait (8/02/90 – 8/23/90)	Persian Gulf War (1/17/91 – 2/28/91)	U.S. Iraq War (3/20/03 – 4/9/03)	Libyan Civil War (Arab Spring) (2/18/11 – 5/2/11)
Canadian Stocks²	During the Event	-5%	30%	-5%	9%	-1%	-1%
	Next Six Months	-8%	19%	5%	4%	20%	-11%
U.S. Stocks³	During the Event	-16%	6%	-13%	12%	-1%	2%
	Next Six Months	-2%	9%	20%	23%	21%	-8%
Oil⁴	During the Event	287%	119%	34%	-10%	1%	33%
	Next Six Months	-13%	22%	-45%	13%	7%	-18%
Gold	During the Event	4%	109%	9%	-4%	-4%	11%
	Next Six Months	44%	32%	-8%	-2%	15%	13%
Canadian Bonds⁵	During the Event	2%	1%	0%	4%	2%	1%
	Next Six Months	-5%	4%	11%	5%	4%	6%
U.S. Bonds⁶	During the Event	-2%	-2%	-4%	2%	-1%	-3%
	Next Six Months	-6%	3%	11%	6%	2%	-1%

¹ Some return estimates are approximated based on monthly data. Returns for U.S. stocks, oil and gold are expressed in U.S. dollars; otherwise, the returns are expressed in Canadian dollars.

² Canadian stocks are represented by the S&P/TSX Composite Index.

³ U.S. stocks are represented by the S&P 500 Total Return Index.

⁴ Oil is represented by the price of West Texas Intermediate, as supplied by Thomson Reuters.

⁵ Canadian bonds are represented by government of Canada bonds with a maturity greater than 10 years prior to 1980 and the DEX Universe Bond Index thereafter.

⁶ U.S. bonds are represented by 20-year U.S. government bonds.

Source: Segal Rogercasey Canada

CONTINUED ON PAGE 22

- The price of gold and other precious metals would increase. Precious metals are often viewed as “safe-haven” investments. They can sometimes function as pseudo-currencies and may be preferred relative to other investments in times of crisis, due to their intrinsic and tangible value. Certain economies (particularly those in the developing world) will lose confidence in their local currencies in times of global instability.
- The price of crude oil would increase significantly as supply disruptions occur. As much as one quarter of the world’s supply comes from the Middle East.
- By extension to the price increases in oil and gold, many energy-related equity securities would likely outperform other types of securities, a development that would favor many of the major Canadian equity indices over U.S. equity indices because the Canadian indices are more concentrated on energy. Companies that engage in energy production and extraction would enjoy higher prices for their products while having relatively fixed costs. Similar comments can be made for mining companies that specialize in gold or silver mining production.

It is also important to note the following:

- Oil prices were at low levels in the 1970s—below \$4 USD a barrel early in the decade compared with near \$100 USD a barrel at the time this publication was written. Oil was driven to almost \$12 a barrel during the Arab Oil Embargo — a similar magnitude increase today would take oil to almost \$400, which is likely too far a reach given the existence of Strategic Petroleum Reserves (SPRs) in many major countries today, which can help dampen any short-term spikes. In addition, oil prices were rather suppressed prior to the 1970s. However, oil prices reaching over \$200 a barrel would not be unreasonable.
- Gold prices have tended to continue rising after a crisis ends, in many cases due to the inflationary impact of

the event on the global economy. Central banks, for example, may engage in monetary stimulus measures to re-ignite economies that have stalled or retreated during the crisis.

- Given the world’s growing dependence on energy, particularly in southeast Asia, it is quite possible a new Middle East crisis would affect the equity markets more than past crises did, although this could be mitigated somewhat by increasing global diversity of oil production and renewable alternatives.

STRATEGIES FOR INSULATING PORTFOLIOS FROM GEOPOLITICAL INSTABILITY

Even if an investor has a diversified investment program, any major geopolitical crisis will still likely have a negative effect on investment performance. However, investors should keep in mind that many geopolitical events de-escalate very rapidly into non-events. Therefore, a portfolio cannot always be positioned for a geopolitical crisis since it is uncertain if the perceived event will materialize into something larger.

However, as suggested above, certain sectors can perform well in troubled times. Energy-related equity investments can perform well relative to equities in general. Having parts of a portfolio invested in fixed income and dividend-paying securities can provide the cash flow needed to support the portfolio’s financial obligations, despite any short-term market fluctuations that can occur. In addition, even though most portfolios will not include a direct exposure to precious metals, those that do or have an exposure to mining companies that are particularly focused on this sector may experience better relative performance. Gold has often been considered a safe-haven investment and a hedge against inflation, and as seen in the table on page 2, gold often performs well even after a crisis ends. For more sophisticated investors that can handle the volatility, an alternative could be to invest via oil and gold futures.

INVESTORS SHOULD NOT LOOK UPON NEGATIVE MARKET EVENTS ONLY WITH DESPAIR, BUT AS A CHANCE TO REVIEW PRIOR ASSET ALLOCATION DECISIONS WITH THE GOAL OF ESTABLISHING BETTER PORTFOLIO POSITIONING.

We would not suggest a heavy exposure to these categories given that many events do not materialize into full-blown crises and for many other reasons. Diversification should always be an important consideration. However, excluding these components in an asset allocation decision must be carefully weighed when evaluating the return and potential risk of the portfolio under review.

INVESTMENT OPPORTUNITIES DURING A CRISIS

It should be noted that any financial market dislocations would provide opportunities to shift back to investment categories that were previously considered expensive from a valuation point of view, assuming that financial conditions would return to some sort of normalcy within a short period. As demonstrated in the table on page 21, there would likely be an economic rebound once the crisis that triggered the repercussions ends.

Raising some cash from the equity portion of the portfolio or delaying some asset purchases in anticipation of a crisis can provide an opportunity to purchase equity securities at lower prices.


Also, previously idle cash can be deployed at that time to take advantage of new opportunities.

The portfolio can be rebalanced such that the asset allocation weightings can be returned to a previously-agreed-upon, long-term strategic weighting. In addition, alternative investments such as real estate and infrastructure can be introduced into the portfolio for the first time.

CONCLUSION

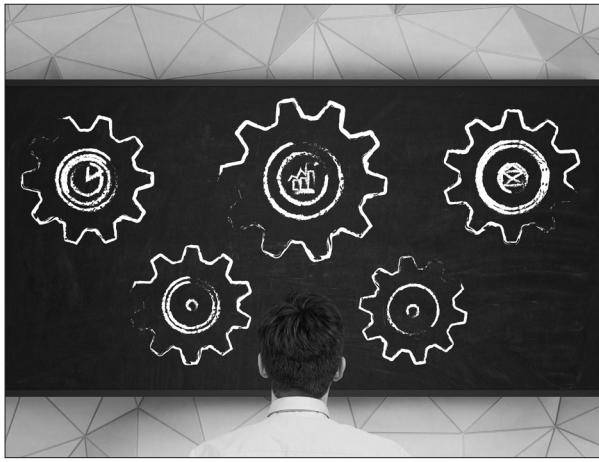
Geopolitical events are prone to cause fear and disrupt an otherwise well-thought-out long-term strategic investment strategy. Emotions can run high. Asset valuations become distorted and future market expectations can become radically changed. Advice on what to do is also not readily available in these fast-moving and disruptive investment climates.

A major financial market dislocation provides a great opportunity to revisit the asset allocation strategy of the portfolio. Segal Rogerscasey Canada has performed numerous asset allocation studies for its clients to reevaluate portfolio positioning based on existing, evolving or new global macroeconomic and market circumstances. We also have the tools to evaluate extreme market events and how these can impact the overall performance of a portfolio.

Investors should not look upon negative market events only with despair, but as a chance to review prior asset allocation decisions with the goal of establishing better portfolio positioning. A static asset allocation decision that only considers a small set of asset classes is not truly suitable for the needs of most clients and investors. As needs, return expectations and risks change, so too should portfolio positioning. 



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MIND YOUR MODELING

By Trevor Howes

I think most actuaries have an innate fascination with models. Modeling is an opportunity to create and control something useful, a magical toy built on the past that explains the present and predicts the future. And a toy that is constantly in need of tinkering, adapting and improvement. We love them. Go on. Admit it!

These toys, however, are increasingly important to our employers and to our professional work, and the stresses of rapid environmental change, of the increasing scale of processing, of the human and Information Technology (IT) costs of feeding our models, are mounting rapidly. What is the present state and future outlook for our modeling toy-tools in the investment and ALM side of our business? Do we actuaries need to consider fundamental changes in our thinking and approach?

Actuaries have modeled assets for many years for various purposes, such as Asset Adequacy Testing for Statutory reporting and ALM risk analysis. While important, these functions have tended to be outside mainstream reporting and the models used by them subject to less critical scrutiny. However, asset liability modeling is rapidly growing in importance within new reporting methods such as those required by PBA and IFRS/Solvency II, and for advanced risk analysis driving economic capital reporting and critical strategic decisions.

Companies need to project realistic financial statements of complex events under multiple financial frameworks. Investment and reinvestment strategies contemplate complex asset classes such as structured securities and exotic derivatives which demand more precise models with links to external data sources. These changes will soon cast a brighter spotlight on the approaches taken to asset modeling in particular and the sophistication of the combined asset and liability modeling used.

Events have also conspired to shake our stakeholders' faith in our modeling abilities. Models have failed to protect companies against or even warn them of the possibility of

calamitous events. Changes in the economic and business environment happen more suddenly with greater impact than ever before. Model risk is competing with modeled risk for regulatory attention.

New stochastic techniques will be needed in many cases that require the ability to handle a large number, maybe thousands, of scenarios each of which specifies the key elements of a potential economic environment in greater detail. The demand for realistic financial projections of income and capital may in turn imply nested stochastic projections in a fully integrated asset liability model. Models will need to be fast, robust, flexible and efficient and so will the actuaries that maintain and operate these models.

Unfortunately in many companies, there are difficult barriers to overcome in achieving these performance goals for both systems and their users. The primary obstacle may be a legacy of multiple special purpose models that has evolved over the years, with each model addressing components of the total problem and attempting to work together by simple passing of files back and forth.

Modeling silos are commonplace. It is simpler to rebuild a new more sophisticated model for a specific purpose or specific type of asset or liability than it is to create a fully integrated asset liability model. But a collection of small, inconsistent models increases risk, drags performance and complicates ongoing system evolution. Transformation that consolidates models and modeling platforms, integrates risks, improves asset and liability interaction, and enables both sustainable evolution and improved process governance is the way of the future.

The selection and calibration of economic models has typically been the preserve of an internal finance team in larger companies or outsourced to niche vendors/consultants who sell both the asset modeling platforms and the calibrated models. The move to market consistent valuation is demanding comprehensive market models that take a theoretically consistent view of all types of assets and liabilities

A COLLECTION OF SMALL, INCONSISTENT MODELS INCREASES RISK, DRAGS PERFORMANCE AND COMPLICATES ONGOING SYSTEM EVOLUTION.

and the options embedded within them. New hedging strategies designed to protect company health against these option risks must be priced, valued and projected with a consistent market view. Multiple distinct models must somehow reliably collaborate to deliver a comprehensive internally consistent picture in real time.

The legacy approach to ALM modeling in many companies seems driven by historic preservation of roles and data ownership by functional areas, so that asset data and asset models and liability models are never fully integrated or even run on consistent platforms. But if the realistic projection of economic risk, public financial statements and regulatory capital demand detailed nested stochastics reflecting consistent underlying market models, how is this practical or even possible without a tightly integrated modeling approach reusing core modeling engines and tightly coupled scenario generators for multiple purposes?

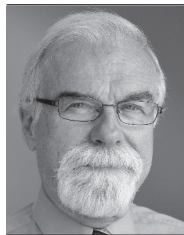
Practical challenges compete with these theoretical concerns for management's attention. Rapidly increasing computing power, with new cloud-based resourcing options offer promise, yet the sheer volume of processing involved in market consistent reporting and dynamic hedging simulation boggle the mind and devour the budget. New innovative modeling techniques are essential to efficiently employ both on-site and cloud-based IT resources, while delivering results that inspire confidence and trust, as opposed to fear and doubt.

Actuaries are used to being intimately involved in the planning, cutting, gluing and assembly of their modeling toys, as well as playing with them. They are not as used to involving specialists and working as a team, in spending time proving and documenting their work, or in submitting to external rules about how to approach their modeling work. To cope in this new modeling world it appears we may need to rethink our professional practices and our attention to personal and professional performance. We may have to start thinking about our beloved toys in a new light. It will

be an interesting challenge.

The new Modeling Section of the Society of Actuaries wants to help actuaries with the challenges of their current modeling and the changes in their modeling that will almost certainly be coming. Model design, validation, control, governance, operation and efficiency are all topics we are thinking about. We expect to have members from all areas of practice and types of business that share common modeling challenges look to us for help, and volunteer to help us address these issues with newsletter articles, ideas for research projects, webinars, presentations at meetings and networking and discussion forums.

We want to work with the other Sections of the Society of Actuaries, like the Investment Section, to help them focus on the modeling issues and challenges that matter to them, that are specific to their practice area, but likely share both complications and solutions with other practice areas. Please consider joining the Modeling Section today and helping us help you! We can still keep our toys if we play this right. 🧩



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CORRESPONDENTS' REPORT FROM THE SOA 2014 ANNUAL MEETING

By Robert Berendsen, Thomas J. Egan Jr., Frank Grossman, Warren Manners, Jon Mossman, & Emmanuel Vézina

Your correspondents couldn't have asked for better weather in Orlando during the 2014 SOA Annual Meeting held at the Rosen Shingle Creek facility from Oct. 27-29. Just imagine them—notepads in hand, with their faithful portable typewriters and SLR cameras slung over their shoulders, tip-toeing around the alligators basking in the warm Florida sunshine in their quest to bring you the latest news. Shades of Hemingway! Well, maybe it wasn't quite like that—given the ubiquity of modern wireless devices and the advent of the responsible drinking ethic. But hopefully you will find their brief reports about various Investment Section sponsored sessions and events diverting nonetheless.

SECTION COUNCIL FACE-TO-FACE MEETING

On Sunday afternoon prior to the Annual Meeting, a special face-to-face meeting of the Investment Section Council was held. Attendees included not only current council members, but our three newly elected members, too: Jon Mossman, Jeff Passmore and Peter Sun. Section activities during the past 2013-14 year were reviewed, and some attention was given to our plans and resources for the upcoming year. Our board partner, Evan Inglis, took a few minutes to share his perspective on the section's role and function. At length, presentations and expressions of thanks were extended to our outgoing council members, Larry Zhao and Tom Anichini (who succeeded one another as council chairs) as well as Mike Kirchner. The meeting was followed by a pleasant group dinner. [FG]

ECONOMIC CAPITAL: KEY MODELING CONSIDERATIONS (SESSION 38)

This session was sponsored by the Investment Section and the Joint Risk Management Section, and was moderated by Robert Berendsen. You had to show up early to get a seat at this one. Some braved standing for its full duration.

Seasoned practitioners know that making the right choices when building stochastic models for economic capital modeling is crucial to being able to deliver reliable information and support timely decision making. Speakers Daniel Finn

and Takeko Uemoto were on hand to help us make the right choices by sharing their experiences and insights into developing such models.

Daniel started off by providing a quick overview of what economic capital models are and how they differ from other actuarial and accounting models that actuaries use. He then focused on economic scenario generators (ESGs), its many instruments, how to ensure each instrument is well tuned, and in particular how to get all the instruments to produce harmonious economic scenarios.

Takeko then built on that. She considered the asset and liability models that use the economic scenarios as input and walked us through five key areas for actuaries to consider when building economic capital models for insurers, including tools that can be employed to make our models perform better, make them “sing.”

Now, go and make your own music! And, if going solo is intimidating, ask a friend and start a band! [RB]

SMART—AND DUMB—THINGS ABOUT SMART BETA (SESSION 87PD)

Lucky were those who made it to this early session, as it offered them great insight to rethink their 401(k) investment strategies for 2015. In fact, Paul Brett Hammond and Felix Goltz offered a practical and thoughtful view of the buzz around smart beta. Part of the session centered on discussing key myths on the subject, most notably that smart beta is “smarter.” In other words, embracing the smart beta theory as-is goes hand-in-hand with accepting that other beta is dumb. Technically, if some kind of beta was of superior intelligence, it wouldn't stay as such for long as investors would fully take advantage of it. As everyone recalls, there's no such thing as a free lunch or for that matter, the only free lunch is proper investment diversification. Ultimately, while there is global recognition that there is something interesting in smart beta, investors' caution is warranted to navigate all the myths around it. [EV]

USE OF EFFICIENT FRONTIERS IN STRATEGIC ASSET ALLOCATION (SESSION 101PD)

Sean Kane from Cardinal Investment Advisors spoke about traditional Markowitz Mean-Variance (MV) efficient frontiers. An efficient frontier represents all combinations of assets that maximize return for a given level of risk. The inputs into an MV frontier are, not surprisingly, means, variances and correlations of asset class returns. This approach is based on the assumption that returns are normally distributed. The most important take away is that an MV frontier is very sensitive to its inputs and therefore the frontier is subject to “garbage-in-garbage-out.”

Ken Griffin from Conning presented on a simulation modelling approach to developing efficient frontiers. This uses an economic scenario generator (ESG) to project a set of paths of asset class returns as well as paths of liabilities to determine efficient frontiers in asset-liability space rather than an asset only frontier. Using this approach, liability duration matching will become an obvious effective risk reduction technique. [JM]

TAIL RISK HEDGING (SESSION 133)

Jeff Burt and Mike DePalma co-presented a session on the importance of managing tail risk, which was streamed via the Internet to offer a virtual session for members not physically present at the annual meeting. Jeff is an executive vice-president—Financial Solutions with Hanover Life Reinsurance of America; and Mike is senior vice-president and CIO of Quantitative Investment Strategies with AllianceBernstein, and is based in New York.

The presenters took care to define what comprises a tail risk, referencing Nassim Taleb and the term “black swan event.” Mike described how tail risk can impact an asset portfolio, which is often the conventional sense of the potential hazard posed by tail risk. But Jeff examined how tail risk in terms of expected mortality experience is also

present on the other side of the balance sheet, in many life insurance companies’ liability portfolios.

Both gentlemen then proceeded to describe how tail risk could be mitigated, recognizing that there is often a cost associated with the benefit of reduction of risk. A key issue regarding tail risk is at what point does one recognize the financial threat posed by a black swan event? Both Mike and Jeff agreed that it was generally better to do this before rather than after a catastrophic event—maybe even as early as the liability pricing or asset purchase decision!

Such was the crush at the floor mic near the conclusion of the session, that some attendees jumped straight to their comments and questions for the panelists—completely forgetting to state their names for the session recording. Carried away by their enthusiasm for the session’s topic, as it were. You had to be there. [FG]



Attendees at the Investment Section Council Face-to-Face Meeting on October 26 included (from left to right): Peter Sun, Larry Zhao, Frank Grossman, Tom Egan, Jon Mossman, Tom Anichini, Evan Inglis, David Schraub, and Emmanuel Vézina. (Photograph credit to Leslie Smith.)

CONTINUED ON PAGE 28



David Stalker (left foreground) and Terry Sakurada (right foreground) consider their moves during the Thomas C. Barham III Speed Chess Tournament on October 28. (Photograph credit to Larry Lickteig.)



Steve Stockman (left) accepts his first place tournament prize and certificate from Albert Moore (center) while tournament director Carolina Blanco (right) looks on. (Photograph credit to Frank Grossman.)

THOMAS C. BARHAM III SPEED CHESS NETWORKING EVENT (SESSION 145)

On Tuesday evening, after a busy day of shuttling between presentations, 21 actuaries matched wits at the fourth Thomas C. Barham III Speed Chess Tournament. Smart moves, oversights and blunders were all in abundance, yet good humor and sportsmanship prevailed throughout the rounds. At the end of the contest, hearty congratulations went to the first-place winner Steve Stockman, and Larry Lickteig who was runner-up.

Our tournament director Carolina Blanco, international chess master (IM), then gave a short presentation on “What Should You Do When Losing is Not an Option?”—attracting two more meeting attendees who didn’t play in the tournament. Most everyone knows that the object of chess is to beat one’s opponent, but sometimes the emphasis on winning a point, or perhaps drawing so as to gain a half point, can be particularly important. Carolina discussed how a good chess player needs to adapt his or her plan to changing circumstances. Maintaining mental toughness is vital, but it’s also necessary to appreciate how the delicate balance of risk and reward can evolve during a match.

Following Carolina’s chess lecture and despite the late hour, she obliged all comers—including (the dauntless) Jeff Stock, Dave Diamond and Mark Tanner—in blitz games at 6:1 odds. Each of the challengers had three minutes on their side of the chess clock while Carolina took but 30 seconds to complete all her moves. And the verdict? Let’s just say that Carolina is and remains an IM for good reason. (You can check it out yourself on YouTube thanks to Jeff Stock.) [FG]

INVESTMENTS STRATEGIES AND ALTERNATIVE INVESTMENTS IN INSURANCE AND PENSION PORTFOLIOS (SESSION 172PD)

The purpose of the session was to provide insights into how insurance and pension investment strategies have evolved in response to a changing economic climate and

THE PERCENT OF ASSETS DEVOTED TO ALTERNATIVE INVESTMENTS HAS INCREASED IN BOTH THE UNITED STATES AND CANADA AVERAGING NEARLY 20 PERCENT IN 2013.

changing regulatory standards. The use of alternative investments in both insurance and pension portfolios was also discussed.

Kelly Featherstone of AIMCO Investments explained that alternative investments are generally considered to be anything that is not stocks, bonds, or cash. Each alternative has unique features but they generally share the following characteristics: relative illiquidity, complexity, higher transaction or management costs, low correlation with traditional assets, non-normal or nonlinear return profiles, infrequent valuations, and difficult to benchmark. Alternative investments are usually used to improve the expected return, reduce the risk of the portfolio and/or hedge liabilities. The percent of assets devoted to alternative investments has increased in both the United States and Canada—averaging nearly 20 percent in 2013.

Ming Chiu of AIG then discussed strategic asset allocation for global multiline insurer's portfolios. He explained how asset portfolio optimization approaches have moved over time from Mean-Variance Analysis to the Black-Litterman Model and now to the Risk Factor Based Asset Allocation Approach. He explained the four steps for the Risk Factor Based Approach: Investment & Risk Driver Choice, Risk Factor Scenario Generation, Asset Value and Return Distribution, and Portfolio Optimization.

Kathleen Brolly of Bank of America Merrill Lynch presented next, and examined asset allocation strategies to reduce the asset risk in pension plans. She described the importance of changing from an asset-only perspective to an asset-liability perspective. The asset-liability approach focuses on how the effect of asset changes relative to liability changes will affect the funded status from one period to the next. She showed how stochastic projections can demonstrate the future probability distribution of the funded status for various alternative asset mixes. A Glide Path can be used to move from the current asset mix to an asset mix with less funded status volatility. Finally, she demonstrated an approach to



Larry Lickteig (left) receives his runner-up tournament prize and certificate from Albert Moore (center) and tournament director Carolina Blanco (right). (Photograph credit to Frank Grossman.)

monitoring and reporting on the funded status movement from period to period. [TE]

PREDICTIVE MODELING FOR ACTUARIES: MACHINE LEARNING, PREDICTIVE MODELING AND INSURANCE RISK MANAGEMENT (SESSION 183PD)

This year's annual meeting had no shortage of sessions covering predictive modeling, eight in all, covering a wide range of products, sectors, modeling techniques and insurance applications. Given the big data revolution that is all around us this is not a surprise. Figuring out how to distill meaning and strategic direction from these massive and disparate data sources is "big" business and techniques, both new and old, are rapidly being developed to help make sense of it all.

The focus of this session, sponsored by the Investment Section and moderated by Warren Manners, was on one

CONTINUED ON PAGE 30

such technique known as Agent Based Modeling or ABM. Jeff Heaton kicked things off by explaining that ABM is a technique employing relatively simple algorithms or rules-of-thumb that define how agents behave and interact with one another. Here agents were defined as entities such as policyholders, insurance Agents (with a capital A), insurance companies and even nations. Using these simple algorithms these agents are then allowed to interact in a simulated environment, the results of which emerge organically. The idea is to allow the outcome of this simulation to evolve through the so called “butterfly effect” rather than working backwards from an a-priori view of the outcome.

Anand Rao followed Jeff with an example of a simulation model being developed by PwC coined Behavioral Simulation. Behavioral Simulation leverages the abilities of ABM to model complex systems but looks to behavioral economics to define the algorithms that drive behavior. This approach is designed to simulate how individuals really make decisions based on cognitive, heuristic, emotional and social factors as they navigate life cycle changes and environmental factors.

The session ended with Jeff and Anand fielding questions from the audience including how their models compared with those employed by the U.S. armed services, and whether they see application of ABM in the field of hedging variable annuities. [WM] 5



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SOCIETY OF ACTUARIES

Investment SYMPOSIUM

MARCH 26-27, 2015
THE WESTIN PHILADELPHIA
PHILADELPHIA, PA



Investment strategies for challenging times

Today's investment landscape is unlike any other in modern history. Valuations in many asset classes are stretched, macro-economic risk is high and regulatory constraints are on the rise. This, coupled with additional constraints on the investment process and a political process mired in discord, is a powerful combination. Experts at this year's symposium will help you navigate the conflicting forces and provide insight into the many nuances in investment strategy and risk analysis.

Choose from five tracks of study:

- Retirement Income Security
- Portfolio Management and Strategies
- ALM, Quantitative Risk Management and Trading
- Economics, Regulation and Governance
- Demographics, Environmental and Social Investing

Investments and asset liability management professionals can't afford to miss this annual event.

soa.org/2015InvestmentSymposium



2014 ASSET ALLOCATION CONTEST: NAVIGATING INTERESTING TIMES

By Tom Anichini

In 2014, the Investment Section conducted its second asset allocation contest, allowing section members a chance to allocate among 10 ETFs over a six-month span from May through September. Again we awarded prizes of iPad minis (or their equivalent) in three categories: Highest Cumulative Return, Lowest Volatility, and Highest Ratio of Return to Volatility. The ETFs spanned asset classes common to U.S. investors, from Enhanced Cash to Emerging Markets Equity and Commodities.

The 2014 contest also entailed these new wrinkles different from the 2013 contest:

- No automatic rebalancing was assumed;
- Contestants were allowed to rebalance or change their allocations twice—after two months and after four months—transactions were assessed a transaction cost to better reflect real life conditions; and
- All ties were broken by a single tie-breaker score: the sum of squared ranked absolute prediction errors in all three categories.

More than 130 section members submitted entries. For the first five months of the contest the rankings were largely static as risk asset returns were mostly stable and somewhat positive (except for commodities).

Then, in late September, risk assets began to falter. Rankings shifted, and at least one of the winners navigated the contest's rebalance opportunities deftly.

CUMULATIVE RETURN PRIZE: RON BARLIN (6.27%)

Ron took advantage of the second of two rebalance opportunities to switch his allocation from 100 percent iShares MSCI Emerging Markets Index (EEM) to 100 percent iShares MSCI ACWI Index Fund (ACWI). Despite his cumulative return taking a maximum hit from the transaction cost, when risk assets fell at the end of September his cumulative return fell less than it would have had Ron

allowed his initial allocation simply to drift. His final return, 6.27 percent, exceeded the cumulative return of any single one of the ETFs available.

LOW VOLATILITY PRIZE: CHILIK LEE (2.0669%)

Chilik was one of six entrants who submitted an initial allocation of 20 percent Guggenheim Enhanced Short Dur ETF (GSY)/80 percent Vanguard Total Bond Market ETF (BND), an obvious attempt at winning the Low Volatility category (or perhaps a reflection of a conservative utility function). All six finished tied for the lead. Chilik won the tie-breaker with the lowest prediction error score in the contest, based on the data listed below:

Measure	Result	Prediction
Cumulative Return	1.86%	2.50%
Volatility	2.07%	2.40%
Return/Volatility ratio	0.898	1.0

I asked about Chilik's method for estimating the eventual return and volatility so accurately:

"I estimated the predicted volatility straight from the historical data, but the predicted return I adjusted downwards from the average of past historical data of the bond funds. I didn't expect bonds to experience another significant yield drop (or even a yield spike) over the six-month horizon, thus I predicted the performance of the bond funds would not be as good as they were in 2009-2012." Well done, Chilik.

RETURN/VOLATILITY PRIZE: MARY PAT CAMPBELL (0.898)

This category was the most closely contested in the contest. The same group who submitted 20 GSY/80 BND allocations ranked at the top of this category. Since Chilik was ineligible to win two prizes, Mary Pat won with the 8th best prediction error score in the contest. When I notified her

A CONCENTRATED PORTFOLIO OFFERS A STRONG CHANCE OF WINNING THE CUMULATIVE RETURN CATEGORY, IF THEY COULD GUESS THE BEST-PERFORMING ETF.

about winning a prize, she said this category was the one she had hoped to win.

CONCENTRATED PORTFOLIOS

Participants learned from the 2013 contest that a concentrated portfolio offers a strong chance of winning the Cumulative Return category, if they could guess the best-performing ETF. While in the 2013 contest only a handful of submissions entailed a single holding, in 2014 over two dozen entrants allocated 100 percent to a single ETF. (Your correspondent allocated 100 percent to PowerShares DB Commodity Tracking ETF (DBC), the worst-performing ETF available.) Unfortunately most of these concentrated portfolios endured sharp losses in September, highlighting the timeliness of Ron Barlin's tactical shift to ACWI. **3**

PARTICIPATE IN 2015

Watch for an invitation during Q1 2015 to participate in the next iteration of the contest!



Thomas M. Anichini, ASA, CFA, is a senior investment strategist at GuidedChoice. He may be reached at tanichini@guidedchoice.com.

IN THE NEWS

In an article by Lawrence Bader titled, "Question: How Does Investment Return Affect Pension Cost?" Bader answers that in economic terms—"It doesn't." So, pension fund investment policy should be designed not to minimize pension contributions, but rather to fit the plan sponsor's overall business and risk management policies. This article was a guest editorial published in the September/ October 2014 edition of the *Financial Analysts Journal*.



2015 INVESTMENT SYMPOSIUM

By Martin Bélanger

// Investment Strategies for Challenging Times” is the theme for the 2015 Investment Symposium, to be taking place at the Westin Hotel in Philadelphia on March 26-27, 2015. No matter what your field of practice is, the investment environment impacts your role. The Society of Actuaries Investment Symposium is a great place for practitioners in asset-liability management departments, corporate finance, risk management, valuation or audit departments to network with each other and learn about the new developments in the investing landscape.

Prior Investment Symposiums have featured prominent investment thinkers such as Robert Merton, presenting on the challenges of managing a defined contribution pension plan; Emanuel Derman, discussing actuarial model behavior; Peter Bernstein, discussing the global economy and capital markets; Zvi Bodie, talking about the convergence of portfolio management and financial engineering in the area of pensions; and Robert Arnott, presenting on demographics trends and investments.

The 2015 event continues our tradition of delivering top speakers. Key sessions will include a Panel of Chief Investment Officers, where CIOs will discuss trends in asset allocation, investment risks, product development, the equity risk premium, and many more topics; how demographics will shape the investment world by Amlan Roy of Credit Suisse; and an economic overview by Luke Tilley of the Philadelphia Federal Reserve.

Breakout sessions will fall under five broad topics: 1) retirement income security; 2) portfolio management and strategies; 3) ALM, quantitative risk management, trading; 4) economics, regulation, governance; and 5) demographics, environmental and social investing. Some of the topics covered will include smart beta, quantitative risk management, model governance and socially responsible investing.

For more details and to register for the meeting, check out the Investment Symposium website at

www.investmentsymposium.org. The organizing committee has been hard at work recruiting great speakers and preparing relevant sessions with strong educational content. We look forward to seeing you there. ☺



Martin Bélanger, FSA, FCIA, CFA, CAIA, is director of Investments, University of Western Ontario and co-vice chair of the 2015 Investment Symposium. He can be reached at mbelang7@uwo.ca.

INVESTMENT SECTION—REDINGTON PRIZE NOMINATIONS

The Investment Section Council is now seeking nominations for the 2015 Redington Prize recognizing the best paper written by an actuary on an investment-related topic during the last couple of years. The prize is sponsored by the Investment Section and is named after F. M. Redington, the eminent British Actuary who coined the term “immunization” in a 1952 paper that was published in the *Journal of the Institute of Actuaries*.

The 2013 Redington Prize winning paper was, “LDI in a Risk Factor Framework,” by Daniel J. Ransenberg Jr., FSA, Philip Hodges, Ph.D., and Andy Hunt, FIA, CFA, and its authors received a \$2,000 cash award.

The criteria for selection are as follows:

Publication Years: The paper must have been published during the calendar years 2013 or 2014.

Author: A member of the Society of Actuaries (SOA) must have written the paper. In the case of a paper with more than one author, a member of the SOA must have been a major contributor to the paper.

Content: The topic must be judged to be timely, primarily of investment nature and of substantial value to SOA members and to other investment professionals.

Source: The paper may appear in actuarial publications including the *North American Actuarial Journal*, *Transactions*, *ARCH*, study notes and section newsletters. The paper may also appear in non-actuarial journals or publications of comparable quality. Such publications include, but are not limited to, *The Journal of Portfolio Management*, *Financial Analysts Journal*, *Journal of Finance*, and *Journal of Financial and Quantitative Analysis*.

Judging: The selection criteria include investment content, originality, practical significance, timeliness, relevancy and educational value to the membership. The Council reserves the right to choose not to award a prize.

Submission: Papers must be submitted by Monday, June 22, 2015, via e-mail to Leslie Smith at lsmith@soa.org.



EBSCO TRAINING VIDEO AVAILABLE ON INVESTMENT SECTION WEB PAGE

By Leslie Smith

On Nov. 6, 2014, EBSCO provided Investment Section members a webex demonstrating how to use EBSCO, our digital subscription to thousands of business and investment related publications.

After demonstrating how to navigate from the SOA home page to EBSCOhost (the portal for using the service), the instructor demonstrated how to:

- Browse publications,
- Search topics and authors,
- Save results in your own folder,
- Share results with other Investment Section members,
- Use basic and advanced search features to prune your search results, and
- Set up email or RSS alerts to notify when new items of interest appear.

View the recording of the session from the Investment Section Web page.



Leslie Smith is a section specialist for the Society of Actuaries. She can be contacted at lsmith@soa.org.

CROSSWORD PUZZLE

By Warren Manners

This issue of R&R offers readers a bit of R&R through a new feature—the Risk and Rewards Crossword Puzzle. The solution to this issue’s puzzle will be revealed in our next issue along with the names of those who were able to successfully complete it (the honor system is in full effect). Submissions should be made to warren_manners@swissre.com by July 31, 2015.

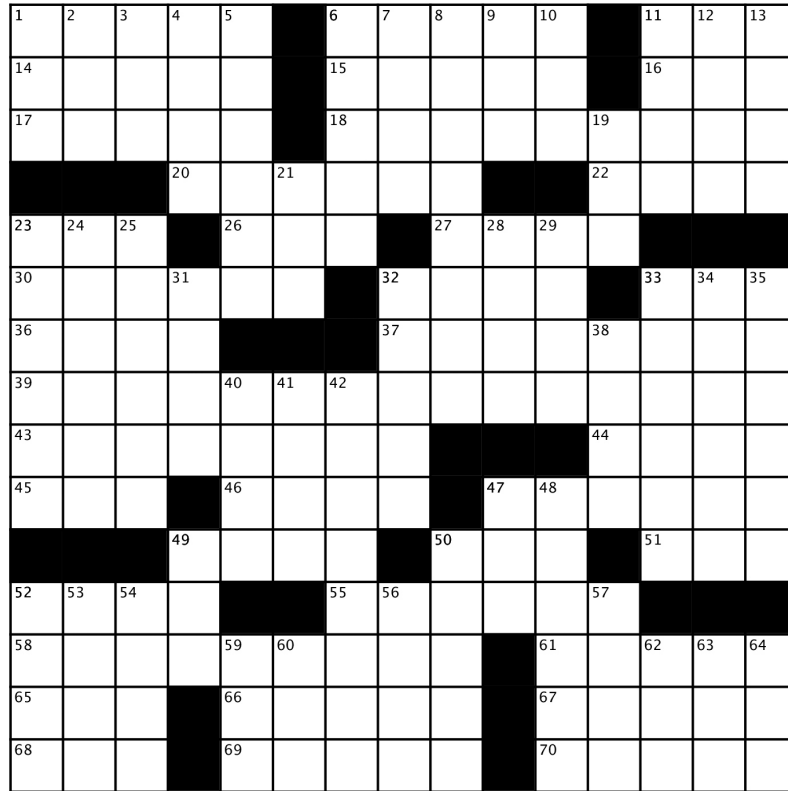
Option Options

ACROSS

1. Prays
6. Tangle and untangle
11. Edge
14. Dominates an Italian kitchen
15. Exaggerate
16. Friend to E and Turtle
17. The Little _____
18. Average European?
20. Minors
22. Frank or Hathaway
23. Bismarck to Cheyenne
26. Reinsurer offering, abbr.
27. L.A. problem
30. Othello, "She comes more _____ earth than she was wont and makes men mad"
32. Take flight
33. Duran plea, with "no"
36. 1952 Olympic site
37. Dirigible
39. Between America and Europe?
43. Windy
44. Water buffalo
45. "What is the verticle variable?"
46. Toshiba competitor
47. Dressed down
49. Not van.
50. Letters of credit?
51. Rocky _____, abbr.
52. Spherical do
55. Nests
58. Oz fruit derivative?
61. Bridge position
65. Coll.
66. "_____, girl!": words of encouragement
67. Beguile
68. Sum up
69. Squeal
70. Personal ad verb

DOWN

1. Monopoly token
2. Winner of 8 Norris trophies
3. Authoriz. to represent
4. Soap trophy



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5. Soft edible fruit native to Mexico
6. "Right on!" to Caesar
7. Eastern nursemaid
8. Keystone or springer
9. List-ending abbr.
10. Grassland
11. Eaves dropper?
12. Formerly Persia
13. Source for gold and salt
19. Union of G. Clooney and B. Pitt
21. YRT technical reserve
23. Elitist
24. Perennial plant
25. John said it was Paul
28. Husband to Dominique
29. "Jaws" boat
31. CD followers
32. Butterfly
33. Harry's weapon of choice
34. Solvent
35. Swipes second
38. Genetic codes
40. 45th of 50
41. Retro style
42. Carcinogen often wrapped in betel leaves
47. Inflation fig.
48. Bowls
49. Type of artist
50. Burning desire?
52. Marine leader?
53. Endow
54. Plunder
56. Waffle brand
57. A handful
59. Norse god of war
60. D.o.D. office that values the military retirement system
62. Regret
63. Said twice as an admonition
64. First word of "Nowhere Man"



FLASH BOYS—LEWIS' LATEST BOOK AN ENTERTAINING READ ON HIGH FREQUENCY TRADING

By Jeff Passmore

Flash Boys, A Wall Street Revolt is the latest book by Michael Lewis, the bestselling author of *Liar's Poker*, *Moneyball* and *The Blind Side*. The book was published March 31, 2014 by WW Norton and Company. It tells about the evolution of high frequency trading (HFT) through the stories of a few of the key participants. The general theme is that HFT is an unfair practice that benefits a very few high frequency trading firms and large investment banks at the expense of the remainder of the U.S. equity market participants.

LEWIS IS A BESTSELLING AUTHOR AND FLASH BOYS FOLLOWS SUIT

Lewis is as prolific as he is accomplished. Since his first book, *Liar's Poker* in 1989, Lewis has written 25 books. All but one have become bestsellers. In this regard, *Flash Boys* is no exception. Shortly after release it was #1 on the Hardcover Nonfiction list of several national publications. It has been three years since his last book, *Boomerang: Travels in the New Third World*. Given that amount of time, it is a little surprising that this book seems as though it was a little rushed. For example, it does not even have an index. More significantly, it does not have Lewis' usual clarity of exposition. It also seems to overreach in attempting to make its point that high frequency trading is something the average equity trader needs to worry about. Even so, it is an interesting story and has Lewis's gift for making technical subjects both accessible and interesting.

Lewis is most famous for his two sports related books that became movies: *Moneyball* (2003) and the *Blind Side* (2006). He is also well known and respected for his investigative financial journalism. Even before *Moneyball*, he had become famous by making financial nuances understandable to non-experts while at the same time doing thorough investigation into the behind-the-scenes people and events that drive the headlines. His ability to weave these together into compelling narratives makes his books as page turning as very good fiction.

AN EXCITING BEGINNING—THEN TWO NARRATIVES WITHIN THE STORY

Flash Boys begins with the story of a Russian-born computer programmer who was arrested and charged with stealing computer software used for high frequency trading from Goldman Sachs. This short introduction sets up many of the questions that the remainder of the book attempts to answer. The remainder unfolds in two stories. The first is about Spread Networks. This start-up company laid a straight line of 827 miles of fiber optic cable connecting equity trading markets in Chicago and New York City. The network went live in mid-2010. Because of its straightness and therefore speed, this new connection was able to sell subscriptions to the line to various investment banks and high frequency trading firms for \$300,000 per month. The speed advantage of this line is remarkable in that it is so small. Other networks could make the roundtrip, Chicago to New York and back, as fast as 14.65 milliseconds; Spread could do it in 13 milliseconds. A millisecond is one thousandth of a second.

The second story fills the majority of the book and it tells about Brad Katsuyama and the team that he assembled at the Royal Bank of Canada to combat HFT. This team later left RBC to start their own stock exchange, IEX, with a similar intent. That is, IEX was intended to address HFT by taking a market-oriented approach, offering investors an exchange where high frequency traders do not have an informational advantage. IEX went live October 2013. This story of Brad's team has numerous side stories to provide background into the various team members and to present different perspectives on the evolution of HFT.

HIGH FREQUENCY TRADING—HOW BAD IS IT?

Lewis' opinion, that HFT is both unfair and unethical if not illegal, is never clearly quantified in its context "how much does this cost us?" Nor does Lewis make clear what remedy he advocates regarding HFT—he does not answer the ques-

THE HISTORY OF WALL STREET REGULATION IS ONE OF CAT AND MOUSE—EACH TIME A NEW REGULATION SEEKS TO CLOSE EXISTING LOOPHOLES, NEW STRATEGIES ARE CREATED THAT EXPLOIT NEW LOOPHOLES.

tion “what should be done to fix this?” On the contrary, he seems to imply that HFT is just the latest example of market participants exploiting regulatory loopholes.

Lewis points out that HFT is a consequence of Regulation National Market System (Reg NMS) that was established in 2005. Its aim was to foster both “competition among individual markets and competition among individual orders.” Reg NMS provides much of the regulatory structure of the electronic trading in U.S. equity markets. By his own admission, the history of Wall Street regulation is one of cat and mouse—each time a new regulation seeks to close existing loopholes, new strategies are created that exploit new loopholes. He also points out that this general trend is one of decreasing frictional costs, e.g., the advent of electronic trading has seen both decreasing commissions and tightening bid-ask spreads.

According to Lewis, HFT profits by driving spreads wider than they otherwise would be to the benefit of the high frequency trader and to the detriment of the investor, without providing any economic benefit. High frequency traders counter that they are acting within the law, that spreads have generally gotten tighter during the period of HFT and that they are providing liquidity to the markets (for this perspective see for example *Flash Boys: Not So Fast, An Insider's Perspective on High-Frequency Trading* by Peter Kovac). Lewis does not dispute the first two points, i.e., legality of HFT or the decreasing trading costs. He does convincingly dispute the third regarding liquidity. However his vitriol seems misplaced given his observation of the nature of financial regulation: close one loophole and another, albeit smaller, loophole opens. Profiteers are not eliminated, but they do have narrower opportunity for profit. In the process, markets become increasingly efficient. He also does not provide context for the U.S. equity markets in comparison to other equity markets of the world or the U.S. markets for other asset classes. Is the U.S. equity market the most

efficient, despite HFT? Are other asset classes impacted by HFT in the way that equities have been?

CONCLUSION

Even given these missed opportunities, Lewis has written a very entertaining book and provides an easily accessible description of HFT in a quick read; the book is only 274 pages. The book is available in hardcover and e-book format. The e-book works well; there are no pictures, charts or tables that sometimes complicate e-reading. 📖



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