SPRING 2019

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STATE ASSOCIATION *of* COUNTY RETIREMENT SYSTEMS

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THIS MAGAZINE

OUR PRINTER IS A CERTIFIED MEMBER
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Did You Hear? **We Moved!**

It sure has been a hectic couple of months, but it is all GOOD. I am thrilled to be your new Executive Director under my own company, Sulema Peterson & Associates. I am proud to say we were able to get the contracts signed, get the office moved, and STILL take care of all the planning details for the Spring Conference being held at the Resort at Squaw Creek, Olympic Valley/Lake Tahoe.

Our new SACRS headquarters is not far from the State Capitol and we are settling into our new digs. If you are visiting the Sacramento area, be sure to come by and see us! Please take note of our new information shown below, and update your contacts.

SAVE THE DATE

Our conferences are a great way to network and learn from each other and from the experts we bring to you. Plus, we are lucky to be able to hold our conferences in beautiful locations, and this fall will be no exception. Consider saving the dates of November 12-15 to be at the Hyatt Regency Monterey Hotel & Spa in Monterey, California for our Fall Conference 2019. If you have ideas for sessions, please let me know and keep an eye out over the summer as more details about the conference are published.

I look forward to continuing the great work we do together,

Sulema H. Peterson

Sulema H. Peterson, *SACRS Executive Director, State Association of County Retirement Systems*

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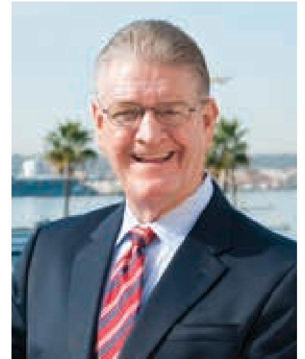


Announcing Our New Executive Director

Your SACRS board is pleased to announce that after many years of discussion and evaluating timetables, we unanimously supported the idea of contracting with Sulema Peterson to oversee SACRS operations as our executive director.

When we recently neared the end of our existing contract, we had a chance to reevaluate what we want for this organization. The board was clear that it wanted someone to help us move to the next level. In Sulema, we found that person. She alone stood out as the logical choice for this position based on her outstanding leadership.

The board was impressed with the results of the rebranding under her guidance, the long-term planning to grow the SACRS name, the conferences we hold each year, and the UC Berkeley continuing education program, which Sulema has nurtured from the beginning. All those accomplishments and more led the board to name her as our new executive director. Congratulations, Sulema!

Her new role began on April 1, so when you see her at your next SACRS conference, please thank her for all the great work she does for us.

We also welcome Cynthia DeOliver, who will be assisting Sulema. Cynthia is an independent consultant for conferences, events, and professional development. She is the owner and founder of The UTOPIA Group. She initiated her career with the former California Bankers Association in the government relations unit as a legislative assistant.

Get Out Your Calendar

Mark the date for our SACRS/ UC Berkeley Program from July 22 to 24. Education is SACRS' number 1 priority. We want to encourage you to attend this educational seminar this summer, as it promises to be the best ever. We recommend it to trustees and administrative support staff of public pension plans throughout the state, not just SACRS members.

> *"Because we're engaged in a board planning effort twice a year to look at long-term plans, we welcome new ideas on how we can improve conferences and our educational programs."*

Please reserve these dates for our fall conference: November 12 to 15 in Monterey. Kicking it off will be national speaker Dr. Anthony Chan, JP Morgan Chase's chief economist who is a regular on Fox Business and CNBC.

Because we're engaged in a board planning effort twice a year to look at long-term plans, we welcome new ideas on how we can improve conferences and our educational programs. We encourage everyone to get involved; just contact any current board member to ask how.

Our SACRS program committee has worked especially hard the past couple years on improving the quality of keynote speakers so we're among the very best pension conferences in the country. This spring's conference in Tahoe will be no exception.

Hope to see you there!

Dan McAllister, *President of SACRS & SDCERA Trustee*

> "The problem is how do you protect the confidentiality, integrity, and availability of your data so that you are able to perform your fiduciary responsibilities with a sense of security?"

Steps that Fiduciaries Should Take to Mitigate the **Cyber Threat** to **Their Funds**

The Pension industry has problems with funding statuses. We have problems with investment returns. We have problems with declining active membership, with staff turnover, and with sudden changes to the legislation that regulates us. We also (most of us) have decades of experience dealing with these issues. However, there is a problem just as large and complicated as those above, one that fund managers and trustees may intuitively sense, but do not necessarily know if they are doing enough to address: Cyber threat preparedness.

As an industry we generally do a pretty good job of identifying risks in the areas identified above. As fiduciaries we perform due diligence in a number of areas from having an independent actuary perform annual valuations, periodic experience studies, and projections; certified public accountants performing an annual financial audit of both operational and fund accounting; visiting investment managers to perform due diligence to ensure they are still viable and are operating within our contractual constraints; we audit our payroll for fraud and accuracy and perform proof of life verification of annuitants.

What then of the systems that make all this possible? Do you have the same rigor in ensuring that they are protected, what standards are you following, how is that verified? The data contained in your systems is used to determine valuation, funding status, financial health, and benefit eligibility. If any of it is inaccurate, what then is the accuracy and viability of your plans? Are you operating on a sound footing, what is the quality of your decision making if you make false assumptions?

> *Your cybersecurity philosophy represents your organization's recognition that the cyber threat exists.*

Identify Theft Resource Center Key Findings

So yes, there is a problem! The problem is how do you protect the confidentiality, integrity, and availability of your data so that you are able to perform your fiduciary responsibilities with a sense of security? *Cyberinsecurity* is a crisis faced not only by the pension industry, but also across all industries and government because of the pervasive use of technology, which is a must today, if we want to be as effective as possible in providing services. What can be done given this operating landscape? Fortunately, there is a solution. The solution lies in a number of approaches, which are outlined below:

- Have a cybersecurity policy similar to an investment policy
- Be prepared in the event of an incident
- Have a roadmap for the implementation of cybersecurity capabilities
- Perform continuous monitoring and improvements to stay abreast of evolving threats

DEVELOPING A PHILOSOPHY

Your cybersecurity philosophy represents your organization's recognition that the cyber threat exists. It represents how you plan to identify threats, protect against them, detect them, respond to them, and recover from threats. Before you begin, you should decide which standard is most appropriate for your operating environment. There are many standards to choose from, so decide carefully since this decision will impact how you proceed later. Federal agencies, for example, are required to follow the Federal Information Security Management Act (FISMA), and some state and local governments have adopted this standard. Others follow the standard developed by the International Organization for Standardization (ISO) or the Control Objectives for Information and Related Technologies (COBIT) standard. These standards are frameworks that provide you with controls that can be measured to determine how well you are protecting yourself.

One of the most useful frameworks for pension funds is the National Institute of Standards and Technology Cyber Security Framework (CSF). The framework encourages organizations to document their current cybersecurity posture, decide on their target state for cybersecurity, identify and prioritize areas of continuous improvement, assess their progress towards their stated goal for cybersecurity, and communicate with internal and external stakeholders about cybersecurity and their progress.

No framework works out of the box for all organizations, so you must customize it based on your needs. You need to identify your risk factors and the likelihood that those risks could be realized. The CSF contains five main components:

Identification[1]

Being able to identify that threats exist is the first step in developing an organization's philosophy. You must be aware of the assets under your management, their value, and how they could be compromised.

Protect[2]

Which safeguards will you employ to limit the damage that could be caused by an event? This is assisted by understanding the assets that need protection, which was initiated in the previous step. How will it be determined who has access to assets, the level of authority they will have when accessing assets, including separation of duties are considered? It is also important to consider the type of training that the organization makes available to staff and select service providers, so that they are educated about the threat.

Detect[3]

How will you become aware that you are under attack? Detection methods must be understood and discussed. This important step requires continuous monitoring and improvement, and the organization may be required to implement intrusive technology to give it this capability. Thus, it is important to decide which devices will be authorized on your network and the complete set of tools that will be deployed on them to enable this capability.

Respond[4]

Once a threat is detected, you must decide how it will be contained and how you will respond. You must have an incident response plan, and understand how it addresses who is notified, how information is communicated, and which resources will be activated to assess and mitigate the damage.

Recover[5]

After identifying the magnitude of a threat, and determining which services have been affected, the activities that restore those services must be agreed upon, documented, tested, and activated as appropriate.

INTO ACTION

You now understand the nature of the threat, you know what it involves, you understand your capabilities, and you realize that the technology you employ today, and that you will deploy in the future is required for your business. The list of things to do may seems overwhelming! How do we get started and what should we work on first? This dilemma is addressed with a *cybersecurity assessment*. The assessment identifies the issues that require immediate attention so that triage can be performed to prevent exploitation of threats.

The assessment should follow the framework that most closely aligns with your business, regulatory and operating requirements identified in the previous step. It should cover key control areas such as access control, identity management, incident response, awareness and training, etc. The resulting Systems Assessment Report or SAR will identify compliance or weaknesses in the areas covered and will give you a detailed account of areas of concern. These areas are tracked in a document called a Plan of Action and Milestones (PoAM). This gives you the ability to determine your progress towards addressing your areas of vulnerability whereby you can focus on the high priority areas.

The next step is to implement protections that address your highest areas of vulnerability. You will want to immediately update any configuration aspects to your technical implementations, such as ensuring that your systems are patched to the highest appropriate level, or that physical security tightened depending on the findings in the assessment step. You might continue with reviewing, strengthening, and implementing new policies to provide an organizational wide context to further actions. Additional steps might require budget and capacity conversations to address findings that require more resource allocation and time.

Some findings *will not* be easily addressed or mitigated. In cases where an organization decides a risk cannot be mitigated, it must decide if it could be transferred, avoided, or accepted. These decisions are not foreign to you, you already make such decisions regarding investments, funding levels, and third parties who provide services to you.

HAVE A PLAN

Now that you have performed triage on the most pressing issues, what do you do next? It is always good to have a plan, but what do you do to start? As a fiduciary, you are responsible for protecting fund assets and your organization, therefore it might be helpful to think of the cybersecurity risks that you face in three areas:

- Investment Assets
- Member Records
- Reputation

Risk Considerations

Let us take a closer look at some questions that should be considered in each area:

Where are the cybersecurity risks in the investment and financial areas of operation?

- How are strategy executions performed?
- Do we have pending acquisitions?
- How are financial transfers and margin calls handled?
- Who has access to our investment accounts? Including third parties?
- How are pension payroll accounts funded and disbursed?
- What about organization operating accounts?

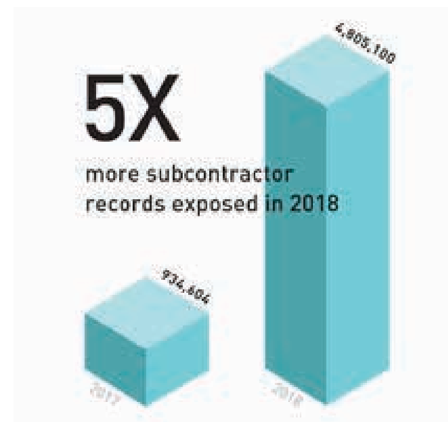
For member records, where do those risks lie?

- How are member records secured?
- Is our network segmented?
- Are our databases encrypted?
- Are staff roles clearly defined and separated?
- Do we have a self-service application? Can records be updated?
- Do employers report electronically? How do we secure information exchange with them?
- What technology does our Pension Administration System use? What are the vulnerabilities there?
- Do we use third-party administrators?

Keep in mind that insider threats and third parties that have access to your data might be the greatest sources of risk to your organization. An organization is well advised to have complete ethics, privacy, and cybersecurity policies that govern the activities of its staff. These should be supplemented by a required cybersecurity training course.

Third-party risk could materialize in many forms since you are required to share member, financial, and investment information with actuaries, auditors, custodial banks and investment managers. Ensuring that these organizations follow a program like yours is strongly recommended. You may implement a good cybersecurity compliance program, but if your data could be easily targeted by other means, then the job is only half done. The graph below illustrates the rising rates of compromises due to third-party data breaches. Some large examples are Marriott, Target, and Equifax.

> *"Reputational risk is an intangible that is difficult to quantify, but is easy to recognize when lost."*



Identity Theft Resource Center 2018 vs 2017 Subcontractor Breaches

Now, how do we protect our reputation? Reputational risk is an intangible that is difficult to quantify, but is easy to recognize when lost. Calls increase to member services, governing bodies including boards and legislatures require increased reporting and may increase oversight. Therefore, consider:

- How is the organization perceived by your membership?
- What is your compliance and reporting responsibilities?
- What happens if a breach occurs?
- How will negative cybersecurity news be handled?
- Who reviews your vendor compliance?

Once these areas of cybersecurity risk are identified, the next step is to create a roadmap to address them. The plan takes into consideration the areas of concern identified above and addresses specific actions you will take to protect each area. Some items to consider using would be a system security plan for your major systems. This plan will identify the type of information stored by each critical system, it should classify the type of data retained, and should identify the controls that will be put in place to protect the information and will specify how you will validate that these protections are occurring. You should develop an Incident Response Plan that directs actions that should be taken if an incident occurs. Develop playbooks to game out scenarios so that you are prepared to act and know which actions to take depending on the incident, and finally, you should update your business continuity plan to include how you respond to a cyber incident.

PERFORM CONTINUOUS MONITORING AND SEEK TO IMPROVE

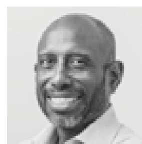
If you create a culture of cybersecurity awareness for your organization, you are on your way to reducing this area of risk. But there are no guarantees! Cybersecurity insurance helps to cover costs in the event of an incident, which could be driven by many factors:

- Conducting investigations and forensics to determine root causes.
- Determining probable victims.
- Conducting communications and outreach.
- Organizing an incident response team.
- Audit and consulting services.
- Legal services.
- Service interruptions.

IBM and Ponemon Institute Cost of Data Breach Study

The Ponemon Institute found that the cost of a data breach in the United States averages $7.35 million, with the cost of each stolen record to average $225. These costs could be higher or lower depending on the extent of the breach and the type of services that are required to mitigate it. Therefore, having the appropriate coverage helps in this area, and implementing the protections recommended above will help to reduce the likelihood that an event occurs and arm you with the tools to respond to one.

The totality of the actions above may seem overwhelming to an under-resourced organization, so let's put it in a frame of context that you already undertake today. During your annual course of business, you have actuarial evaluations performed to determine the health of your plan and may increase the Required Contribution Rate of employers, if deemed necessary by the plan rules. You perform annual financial audits to determine and demonstrate the financial health and compliance of your organization. You rebalance your investment holdings to comply with your diversification policies. You perform due diligence on money managers. Cybersecurity risk mitigation is like many–if not all–of these activities. Think of the Cybersecurity Assessment as you would a financial audit, view the SAR as a manager watch list, and the PoAM and Roadmap as you would an investment strategy and a strategic plan. Taken in this context, cybersecurity activities could be planned for and managed utilizing the tools you already possess and could become a normal operational task.



__Peter Dewar__ is the president of Linea Secure, a cybersecurity firm specializing in security and risk analysis for benefit and pension organizations. He is a CISSP certified senior strategist with over 25 years of experience in I.T. and cybersecurity. His expertise spans government, energy, not for profit, and health care sectors. Prior to Linea Secure, Dewar spent eight years at the District of Columbia Retirement Board (DCRB), providing strategic technology direction as CTO and Director of Information Technology.

ENDNOTES

1 April 16, 2018 NIST Cybersecurity Framework V1.1 page 7
2 April 16, 2018 NIST Cybersecurity Framework V1.1 page 7
3 April 16, 2018 NIST Cybersecurity Framework V1.1 page 8
4 April 16, 2018 NIST Cybersecurity Framework V1.1 page 8
5 April 16, 2018 NIST Cybersecurity Framework V1.1 page 8

FEATURED STORY

SUSTAINABLE INVESTMENT IN PLANTATION FOREST MANAGEMENT

Has the Window for Growing Pension Assets in Timber Plantations Closed?

Prior to the advent of plantation forest management, forestry was effectively an extractive industry focused on the exploitation of natural resources. This 'mining' mentality led to the widespread over-harvesting of natural forests across the planet, ultimately reducing the supply of natural forest fiber to world markets.

This dynamic played out over history in the United States, a country blessed with abundant natural resources including forests. Early on the country's natural forests were cut to supply wood and to open space for agrarian land use. Lumber production commenced in the timber powerhouse of New England in the 1700s. As natural forests were exhausted in the east, harvest production marched westward to the Lake States and eventually to the Pacific Northwest. The availability of natural timber supply eventually started to dwindle as the rapidly industrializing country demanded more wood for its growing and increasingly wealthy population. This eventually led to price pressure, which supported investment in the development of sustainable plantation forests.

In addition to changing supply of natural forest assets, a change in consumer preferences also shifted demand for timber in the United States. In the latter half of the twentieth century, environmental advocates sought to restrict (and preferably stop altogether) the harvesting of natural forests. While environmental restrictions have been applied unevenly over time, recognition and concern for the environment and deforestation has steadily increased over time, meaning the global trade of timber and manufactured wood products has increasingly been subject to a more discerning marketplace. Market participants pay closer attention today to sustainability and how raw materials are sourced. In the industrial timber space, wood processors increasingly seek third-party certified fiber sources to ensure market access for their end products.

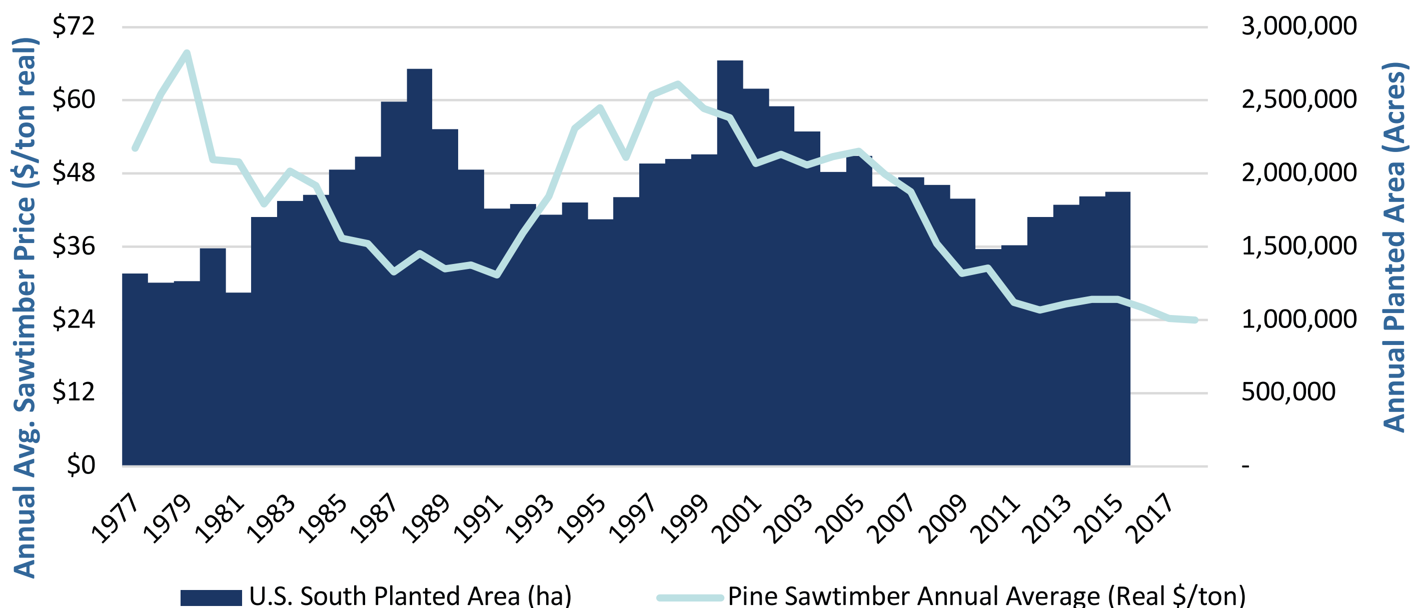
> *"The OECD forecasts global consumption of raw materials to double by 2060, as the global population rises to 10 billion and average income per capita converges to the current OECD level of USD 40,000."*

A February 2019 OECD Report projects global consumption of wood products to expand through the twenty-first century. In 2017, United States annual per capita wood consumption was approximately one ton (Food and Agriculture Organization of the United Nations), which is equivalent to one tree measuring 100 feet in height and 18 inches in diameter. The OECD forecasts global consumption of raw materials to double by 2060, as the global population rises to 10 billion and average income per capita converges to the current OECD level of USD 40,000. Similar to the United states, global natural forests have been subjected to unsustainable over-harvesting. With macro-trends indicating increasing demand for wood materials, alternative supply sources are required. This is where sustainable plantation forest management will play an increasingly important role.

PLANTATION FORESTRY AS A SOLUTION TO OVER-HARVESTING NATURAL FORESTS

Plantation forest management is concerned with the production of sustainable wood products to replace traditional natural

Exhibit 1: U.S. Southern Pine Price History and Plantation Resource Base

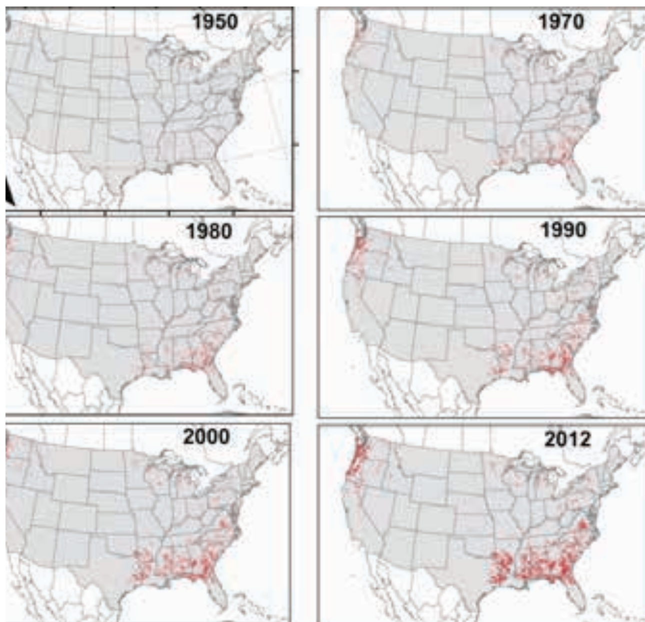


Sources: United States Forest Service's Resources Planning Act Assessment, Timber Mart South

forest sources. The focus to date has been predominantly on industrial plantation softwoods and hardwoods. These industrial plantations principally grow timber to replace feedstock for both the pulp and paper and construction industries.

The development of timberland plantations accelerated in developed economies following World War II. In the United States, there were just 15,834 acres of plantation forests in 1946. Thirty years later, by 1976, this had ballooned to 1.43 million acres, and the plantation area had increased by a further million acres by the end of the 20th century (Stanturf and Zhang 2003). Much of this acreage was on privately owned land in the U.S. South. Such rapid expansion in plantation acreage was fueled by strong market demand and high prices for fiber, and early movers who invested in U.S. softwood plantations during this build-up period enjoyed strong real rates of return. Exhibit 2 indicates spatial and temporal patterns of plantation forest development in the United States (G. Chen et al.)

Exhibit 2: Plantation Acreage Expansion in the U.S.



Source: G.Chen et al. Open Access Earth System Science Data

Outside the United States, other developed economies have also shifted away from mining natural forests to cultivating industrial plantation forests. Europe has a long history of managing its forests for production, both in pure plantations and intensively managed regrowth forests. New Zealand and Australia also have well-developed plantation forestry industries, which supply wood to both domestic and export markets. South American countries are also on the same path with extensive forest plantation establishment in the Southern Cone, perhaps most notably in Brazil which has afforested more than 14 million acres.

INVESTMENT IN FORESTRY

Forestry investments are similar in many ways to bond investments, which are considerably less risky on average compared to many alternative investments. A tree stand growing biological mass is arguably more certain than a company making a fixed interest payment. Forests provide growth regardless of political, economic, and social circumstance. Investments in timberland provide optionality, as an owner can choose to convert the accrued biological coupon (growth and yield) to cash by harvesting the timber. If the conversion rate is not favorable due to poor market conditions, the manager can choose to leave the timber on the stump for continued compound growth until a more favorable time. Moreover, the principal value of forests largely stays intact throughout the life of the investment. Generally, forests preserve value over the long run and increase in value as tree stands grow.

“An oversupply of softwoods, such as pines in the U.S. South, and a recent reduction in wood consumption, driven primarily by a reduction in housing starts after the global financial crisis, have resulted in persistently soft prices across both pulpwood and sawlog grades.”

LIMITATIONS OF FORESTRY INVESTMENT RETURNS IN A CROWDED MARKET

Historically, institutional investors in plantation forests benefited as the macro supply of industrial wood shifted from natural forests to sustainably managed plantations. As markets have matured, however, wood prices have softened in much of the United States, especially in the South, where most domestic plantation forests are grown. An oversupply of softwoods, such as pines in the U.S. South, and a recent reduction in wood consumption, driven primarily by a reduction in housing starts after the global financial crisis, have resulted in persistently soft prices across both pulpwood and sawlog grades (Source: Timber Mart South, Forest Economic Advisors).

This end-market weakness has coincided with a marked increase of new entrants investing in core industrial timberland. In 1991, there were two global institutional timberland investors seeking to invest in a USD 5 billion pool of assets, according to TimberLink. By 2017, this had increased to 23 active timberland investment firms seeking to invest in a pool of approximately USD 50 billion. Competition for land and tree assets has made core industrial timber investments less lucrative at the same time as pricing for core timber products continues to be relatively soft.

“The question then for investment managers seeking enhanced returns – over and above the relatively muted returns available from core strategies – is which tree species should be developed into sustainable commercial plantations next?”

Core species in developed markets (such as pine in the United States and New Zealand) are well tested after 20+ years of institutional investment. It stands to reason then that developing high quality management practices for global pine and eucalyptus plantations has been a predominant focus for foresters worldwide. However, there are many other timber species with strong demand profiles that have been similarly depleted in the natural forest setting and which could be of great value if domesticated and managed as institutional-grade plantations. The question then for investment managers seeking enhanced returns – over and above the relatively muted returns available from core strategies – is which tree species should be developed into sustainable commercial plantations next?

THE PROLIFERATION OF PLANTATION FORESTRY, AND THE OPPORTUNITY FOR EARLY MOVERS

While core timberland markets are very well served with capital, especially for plantation pine and eucalyptus, there are ample opportunities to domesticate other species, which may offer potentially higher returns. When considering new plantation investment strategies, an investor should consider whether the species:

- Suffers from constrained supply from historical supply sources, with limited alternative replacement sources;
- Has well-established end markets with the clear potential for ongoing increases in demand;
- Has research available to provide a clear pathway to crop domestication and reliable projection of growth & yield;
- Has the prospect to be grown in investable jurisdictions with suitable sites with efficient management, and the availability of cost competitive land; and
- Has a clear path to participate competitively in world markets. Importantly this includes the recognition that plantation supplies are not priced the same as natural forests.

Pursuant to these criteria, TRG believes high-value hardwood species stand out as one of the better strategies to deploy institutional-grade plantation management. Progress toward reliable and sustainable sources of supply is less straightforward for high-value hardwoods than it has been for softwoods. Interestingly, substantial investment in plantation hardwoods has taken place in Asia, Australia, and South America. However, the focus of these plantations has largely concentrated in low-value hardwoods such as eucalyptus and acacia, for consumption by the pulp and paper industry. Industrialized high-value hardwood species for non-pulp and paper uses such as finishing and furniture timbers are an under-invested timber asset class.

As more regions of the world develop and become wealthier, and as global population grows, TRG expects demand for high-value hardwoods to increase steadily. As demand rises, however, the traditional supply of many high-value hardwoods has become increasingly constrained due to over-harvesting, state-imposed logging restrictions, and environmental pressure. Teak (*Tectonis grandis*) is perhaps one of the best known and most illustrative examples of a high-value hardwood that has historically been unsustainably harvested from natural forests. As Exhibit 3 demonstrates, following a government-imposed ban on whole teak log exports from Myanmar (previously Burma) in 2014, plantation teak has entirely replaced natural teak supply to India, the world's dominant teak importer.

> *"We currently view plantation Teak, Mahogany, and Sandalwood, however as species that provide the most interesting risk adjusted returns for institutional investors."*

There are other high-value timber species that are grown in plantations around the world. We currently view plantation Teak, Mahogany, and Sandalwood, however as species that provide the most interesting risk adjusted returns for institutional investors.

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Exhibit 3: **Teak Imports to India, 2004 - Present**

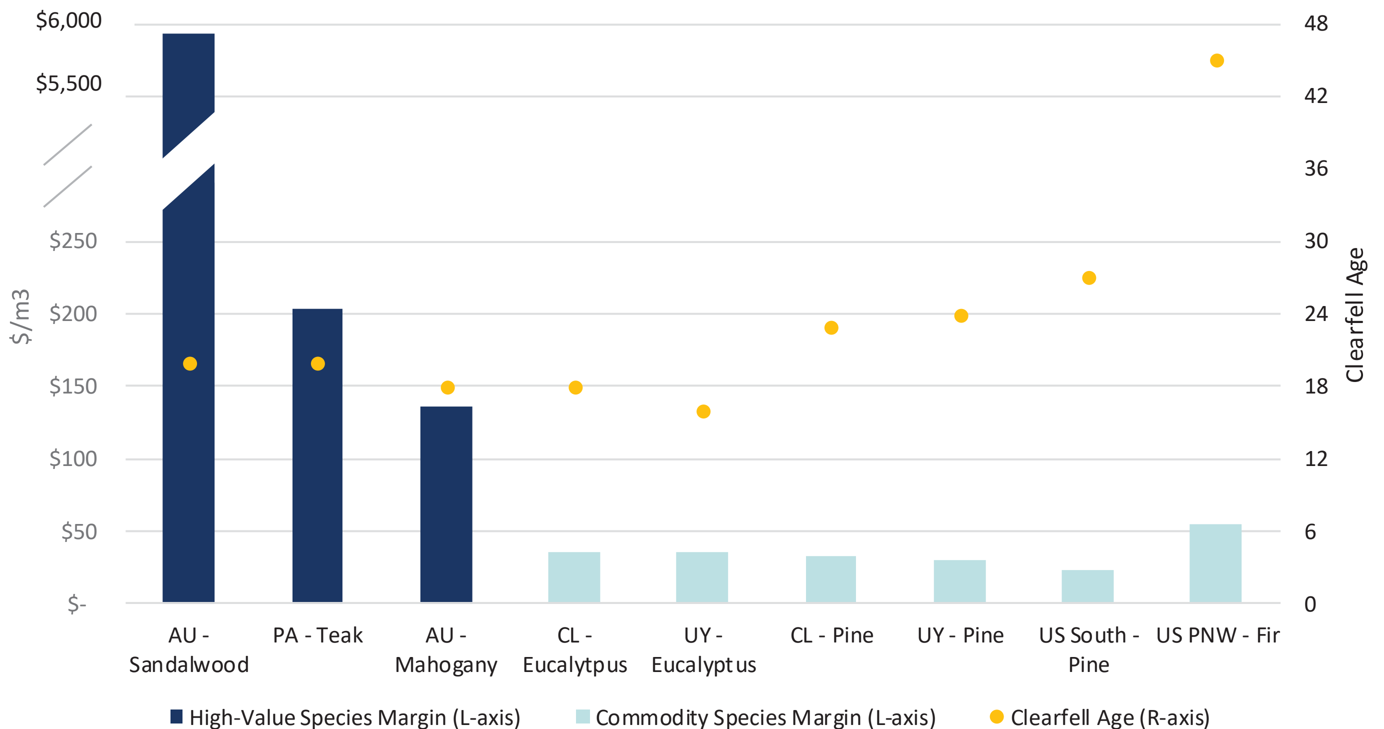
Monthly Roundwood Imports, 12 month avg

India Real GDP/Capita (USD)

■ Plantation Forest Supply ■ Natural Forest Supply ◆ India Real GDP/Capita

Source: Global Trade Atlas, World Bank

Exhibit 4: **Net Sales Prices by Strategy and Age at Harvest**



Source: RISI Global Tree Farm Economics Review 2017, Woodlands Pacific

Several geographies in the world exhibit characteristics that are favorable for investment in high-value hardwood plantations. Key criteria include established land ownership rights, good growing environments for trees, and a favorable environment for foreign direct investment. In recent years, TRG has been investing in high-value hardwoods and adding value in countries such as Panama, Costa Rica, Brazil and Australia. That Teak, Mahogany, and Sandalwood can all be grown in relatively straightforward geographies (less so Brazil perhaps and more so Australia) is very encouraging. All three species are also largely traded and valued in USD.

High-value timbers generate margins significantly in excess of core timberland. The premium stumpage pricing of high-value hardwoods not only provide attractive profitability, but also a measure of resilience against changes in prices and costs – resilience which is not always afforded to more industrial, commoditized timber strategies as demonstrated in Exhibit 4.

In addition to high returns, hardwood plantations in emerging markets have the potential to provide greater environmental impact. Reflecting favorable local growing conditions, hardwood plantations in countries such as Uruguay, Chile, Brazil and Panama have the potential to capture more metric tons of carbon dioxide from the atmosphere per acre than industrial softwood plantations—and certainly more than natural forests. In 2018, we estimate that TRG's forests captured 3.4 million metric tons of carbon dioxide. This significant impact was achieved in large part due to our substantial existing positions in hardwood plantations.

Plantation forests also deliver meaningful impact outcomes given establishment generally occurs in rural communities on farmland. In addition to sequestering carbon, establishing plantations generates rural employment, improves water quality, stabilizes soil, improves biodiversity, and provides recreational opportunities in a beautiful environment.

Importantly, TRG finds that the risk premium applied to these strategies are outsized in the market place versus the actual risk encountered – either by the jurisdiction, or by the virtue of being a 'new' species. This remains an area for experienced managers to secure outsized returns in the near term, until these value-add strategies are more widely adopted by the institutional market. Then, similar to New Zealand pine, discount rates are expected to compress driving asset values up at exit.

SUMMARY

Making prudent investments in timberland can be both lucrative and sustainable. Similar to bonds, timber investments can provide regular cash coupons by monetizing merchantable timber by harvesting, the timing of which can be very flexible. Investors can allow their investments to grow during down markets and cash-in when markets are improved with larger, more valuable timber due to the ongoing biologic growth.

In recent history, the timber industry has become less extractive and more sustainable. A driving factor in developing sustainable forest management practices has been the advent of plantation forestry. Developed economies have industrialized plantation forestry and capitalized on the global market for many softwood products and some hardwoods, notably eucalyptus species. In the past several decades, new entrants to the timber investing scene have competed strongly in core markets, driving down anticipated potential returns in the developed economies and core timber strategies.

TRG believes that investments in high-value hardwood plantations will remain a significant opportunity in the near term for investors seeking higher returns from their real asset allocations.

Eva Greger *serves as Chair of the Investment Committee for The Rohatyn Group's (TRG) forestry and agriculture investments. Before joining TRG as part of its acquisition of the business of GMORR, Greger was the Managing Director of that firm, where she assembled a widely skilled team of forestry and agricultural investment professionals to complete the investment of more than US $3.9 billion across the globe. Before founding that firm in 1997, she was Vice President of Timberlands for UBS Resource Investments International where she was responsible for evaluating and structuring acquisitions in the United States, New Zealand and Chile. Previously, she worked as an analyst for the group, then known as Resource Investments, Inc. Greger earned her A.B. in Economics from Harvard University. She is based in Boston, Massachusetts.*

SOURCES & FOOTNOTES

i Softwoods are coniferous trees, such as pines and firs, which produce wood with longer fibers and have a good strength to weight ratio that is suitable for construction, plywood, and paper.

ii Hardwoods are deciduous trees, such as mahogany and oak, which produce dense wood with shorter fibers that are suitable for both high quality pulpwood, and when managed intensively, for higher value applications such as furniture.

https://www.oecd.org/environment/raw-materials-use-to-double-by-2060-with-severe-environmental-consequences.htm

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Potential Untapped Value IN CALIFORNIA'S PUBLIC RETIREMENT SYSTEMS

California's public employee retirement systems may be failing to capitalize on the value of one of their greatest assets: **Their creditworthiness.**

"The California Constitution instructs that public retirement boards "shall discharge their duties with respect to the system with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims."

State, county and municipal plan sponsors parlay their own creditworthiness when they issue Pension Obligation Bonds ("POBs"). If they can issue bonds with an interest ("coupon") rate that is lower than their respective retirement system's assumed rate of investment return, they can immediately lower their expected retirement costs by transferring POB proceeds into the retirement system and paying down their unfunded liabilities. And, if the retirement system's investments return more than the coupon rate, the plan sponsor will have lowered its *actual* retirement costs with arbitrage profits. The risk of issuing POBs is that the retirement system's investment returns may underperform the coupon rate, which will lead to an increase in the plan sponsor's retirement costs. For the bond issuer, a lower coupon rate both decreases risk and increases the potential reward.

The fundamental question this article poses is whether, under current law, California is "leaving money on the table" by failing to allow its creditworthy public employee retirement systems *themselves* to issue bonds to support their own funding needs.

We hear so much about the underfunding "crisis" it is easy to forget that California public retirement systems are extraordinarily creditworthy from an underwriting point of view. That creditworthiness should have realizable value in the bond market. Consider the following:

- Even at the nadir of global investment markets in 2009, the *lowest* funded public retirement systems in California had enough money to pay all obligations projected to be due to their current retirees many years into the future. For example, only two of the twenty county retirement systems governed by the County Employees' Retirement Law ("CERL") ever dropped below a market-value funded ratio of 50 percent and none dropped below a market-value funded ratio of 45 percent. Contrast this with plan sponsors like Vallejo, San Bernardino, and Stockton.

- Because a public retirement system's obligations are backed by the statutory funding obligations of plan sponsors, there is a double back-stop to the system's creditworthiness: (1) The assets of the retirement system itself and (2) the future funding obligations of the plan sponsors, which retirement boards adjust annually to maintain the actuarial soundness of their retirement systems.

- The plan sponsors would not be taking on any new creditors; they would just continue to have their *existing* contingent funding obligations to the retirement systems. The retirement systems would not be lending their creditworthiness to the plan sponsors; they would just be extracting value from their *own* creditworthiness for *themselves*.

- Conditions could be placed on the systems' obligations to bondholders to protect the priority rights of the systems' members and beneficiaries, without significantly impairing the value of the bonds to potential buyers. For example, payment to bondholders could be *temporarily* suspended when a system's funded ratio falls under a certain threshold (e.g., 30 percent) *and*

the retirement board determines that payment on the bonds jeopardizes the payment of benefits.

- Conditions could be placed on a retirement board that issues bonds in order to lower risk for the retirement system and the bond holders. This could include, for example, a maximum assumed rate of investment return (e.g., six percent) and a maximum amortization period for the system's unfunded actuarial accrued liability (e.g., 15 years). This could keep a board's borrowing within prudent boundaries meant to assure its ability to fully fund promised benefits and timely repay its obligations to bondholders.

It seems that such "Pension Funding Bonds" ***issued by a public retirement system*** likely would be attractive to the bond market at a lower coupon rate than traditional POBs issued by state, county or municipal plan sponsors. The lower coupon rate would increase the margin for error in comparison to traditional POBs.

> *"Why should California's public retirement boards not be permitted to utilize an investment strategy that other similarly situated investors utilize?"*

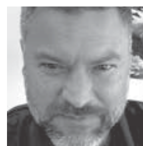
The California Constitution instructs that public retirement boards "shall discharge their duties with respect to the system with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent person acting in a like capacity and familiar with these matters would use in the conduct of an enterprise of a like character and with like aims." Cal Const., art. XVI, § 17(c). Other investors with billions of dollars in assets and strong creditworthiness reasonably may consider using prudent levels of leverage to improve their investment returns. Why should California's public retirement boards not be permitted to utilize an investment strategy that other similarly situated investors utilize? Enacted after 9-11, Government Code section 31603 already allows county retirement boards to borrow in a financial crisis in order to ensure timely benefit payments and provides that the "costs associated with securing and repaying the loan, including interest, shall be a charge against investment earnings of the fund." Why should the law prevent our public retirement boards from borrowing as part of a prudent investment strategy absent emergency circumstances?

The viability of Pension Funding Bonds will depend upon a number of factors, such as (a) the bond market's assessment of the borrower's cash flow and default risk, (b) actuarial input regarding the impacts on employer contribution volatility, (c) IRS approval, which may require federal legislation, and (d) whether the interest returns on the bonds could be tax free under existing or amended law to make them more attractive to the bond markets. Legislative and/or constitutional changes would be necessary for a retirement board to prudently consider issuing the types of bonds described in this article. To begin a discussion, I propose the following foundational terms that might be added to California Constitution article XVI and/or within California public retirement systems' governing statutory schemes.

Satisfying obligations arising out of the issuance of pension funding bonds that comply with the following conditions and otherwise comply with law shall be considered a reasonable expense of administering the system under California Constitution, article XVI, section 17(a):

1. The retirement board must determine that the issuance of the pension funding bonds is consistent with its fiduciary obligations set forth in California Constitution, article XVI, section 17.
2. The retirement board must hold all proceeds from the issuance of pension funding bonds in the retirement system's accounts and thereafter such funds may be used only for the exclusive purposes set forth in California Constitution, article XVI, section 17(a).
3. The retirement board must maintain an assumed rate of investment return for projecting the growth of the system's assets that is not greater than six percent while the system has any obligations to any bond holders.
4. The retirement board must maintain an amortization period for the system's unfunded actuarial accrued liability that is not longer than 15 years while the system has any obligations to any bond holders.
5. The retirement board must adopt an annual actuarial valuation for the purpose of setting employer contributions to the retirement system each year while the system has any obligations to any bond holders.
6. A retirement system's payment obligations on pension funding bonds must be temporarily suspended if the retirement board determines that such payments endanger the timely payment of benefits to any participant or beneficiary of the public pension or retirement system. The retirement board may make such a determination, in the exercise of its discretion, only if the funded ratio of the public pension or retirement system is determined to be less than 30 percent on a market-value-of-assets basis in the retirement board's most recent annual actuarial valuation (or based on an interim valuation by the retirement board that uses the same assumptions and methodologies as the retirement board's most recent annual actuarial valuation). All suspended payments shall be made later, with interest at the pension funding bonds' coupon rate, at such time that the funded ratio of the public pension or retirement system is determined to be greater than 30 percent on a market-value-of-assets in the retirement board's most recent actuarial valuation.

Making Pension Funding Bonds a prudent option for retirement boards will require analysis and amendments to existing law far beyond what is presented in this article. Suffice it to say that the potential value proposition of Pension Funding Bonds is simple: The risk of default by a retirement system on the type of bonds described in this article should be much lower than the risk of default by a state, county or municipal bond issuer. And, that lower risk of default should translate to a lower coupon rate on the bonds, which may enable California to harvest value from the creditworthiness of its public employee retirement systems, to the benefit of those systems' members and beneficiaries, as well as California taxpayers.



Jeff Rieger *is Counsel with Reed Smith LLP and a senior member of its public pension practice. Rieger represents numerous state, city and county public retirement systems throughout California as fiduciary, general and litigation counsel.*

State Association of County Retirement Systems

LEGISLATIVE REPORT

"At this time, there have been no votes to support or oppose any specific legislative bills that are moving through the legislative process."

The State Association of County Retirement Systems' Spring Conference just about marks the halfway point in the 2019 legislative calendar. However, at the time of this writing, the legislative policy committees have only just begun meeting, hearing legislation, amending, and voting on the 2,500 bills introduced in the 2019 Legislative Session.

Legislation

The SACRS Legislative Committee has taken an initial review of introduced bills and is evaluating amendments to those bills. At this time, there have been no votes to support or oppose any specific legislative bills that are moving through the legislative process.

However, there are a number of bills that are of interest that are being monitored and for which information has been shared with policymakers and legislative staff.

1937 Act Legislation

SB 783 (Senate Committee on Labor, Public Employment and Retirement) -- County Employees Retirement Law of 1937

This is a technical committee bill that was introduced to serve as a legislative vehicle for cleaning up and making modifications to the County Employee Retirement Law (CERL). It is likely that this bill will move to the second house of the Legislature and then await amendments from SACRS and others who are seeking non-controversial changes in the CERL.

AB 664 (Cooper) -- County Employees Permanent Incapacity

This bill, as originally introduced, would have required a county retirement system to evaluate peace officer disability based on the ability to perform the full job of a sworn peace officer. This was a reintroduction of a bill Assemblyman Cooper carried in 2017, which passed the Assembly, but was not heard in the Senate policy committee due to reservations expressed by the Chair of the Committee over potential increased costs to a system due to additional eligibility for disability retirements.

Assemblyman Cooper, who is carrying the bill on behalf of law enforcement managers in his district, amended the bill to take the statewide applicability out of the bill and make it specific to Sacramento County only. At the time of this writing, the bill has not been heard in committee.

AB 1212 (Levine) -- Infrastructure Investment

AB 1212 would require a state agency that is responsible for infrastructure projects to produce a list of priority infrastructure projects for funding consideration by public pension retirement boards and to provide it to them.

While this bill is not specific to the 37 Act systems, the author believes that local retirement boards are best positioned to invest in infrastructure projects, stating:

"Public pension funds in California make many investments in a wide array of investment opportunities. While there are conflict-of-interest rules that can limit public pension fund investments in state projects, local (e.g., county) pension funds are less likely to encounter those conflicts than the state's two major pension funds."

This bill is set for hearing in the Assembly Public Employment and Retirement Committee on April 24.

Divestment

Mandating or encouraging divestment as a means to influence social policy remains popular among some members of the Legislature.

AB 1320 (Nazarian) -- Divestment in Turkey

AB 1320 would require PERS and STRS to divest in any investment vehicle in Turkey, issued by the government of Turkey or that is owned, controlled, or managed by the government of Turkey. This divestment mandate is contingent on the passage of a federal law imposing sanctions on Turkey for failure to acknowledge the Armenian Genocide. Assemblyman Nazarian authored a similar bill last year, AB 1597, which was vetoed by Governor Brown.

AB 33 (Bonta) -- Divestment in Private Prisons

AB 33 would prohibit PERS and STRS from investing in private prisons and requires both entities to liquidate any investments in these companies by July 1, 2020. The author is focused on divestment of private prisons because many of these facilities have been used to detain undocumented immigrants, including children.

AB 1332 (Bonta) -- Sanctuary State Contracting

Assemblyman Bonta also introduced AB 1332, which would enact the Sanctuary State Contracting and Investment Act. This measure would prohibit state or local agencies from entering into new, or extending, contracts with companies providing services to federal immigration agencies or detention facilities. As originally drafted, AB 1332 would have prohibited local governments, including counties, from making pension investments in these same business. However, the pension portion of the bill was poorly drafted and, upon being informed of implications to pension systems, the author was convinced to remove the pension investment provisions from the bill.

Governor/State Budget

Governor Newsom released his proposed State Budget in January, which contemplates $209 billion in state spending of which $144.2 billion will be from the state General Fund. Governor Newsom, like his predecessor Governor Brown, has placed a premium on trying to be fiscally prudent by limiting ongoing state spending commitments in order to avoid spending cuts in the future should the economy decline. For that reason, while the Governor has many new spending proposals in his budget, 86 percent of his new spending is on a one-time basis.

One example is the Governor's $6 billion, one-time expenditure to pay down future pension liabilities at both CalPERS and CalSTRS.

***Michael R. Robson** has worked since 1990 in California politics and has been lobbying since 2001 when he joined Edelstein, Gilbert, Robson & Smith LLC. Prior to joining the firm, he began a successful career with Senator Dede Alpert as a legislative aide soon after she was elected to the Assembly in 1990. He became staff director/chief of staff in 1998, while the Senator served in the position of Chair of the Senate Appropriations Committee. He is experienced in all public policy areas with particular expertise in environmental safety, utilities, revenue and taxation, local government finance, education, and the budget.*

***Trent E. Smith** worked for over 12 years in the State Capitol prior to joining the Edelstein, Gilbert, Robson & Smith LLC. He started his career in 1990 working for the well-respected late Senate Republican Leader Ken Maddy. He was later awarded one of 16 positions in the prestigious Senate Fellowship Program. Upon completion, he started working in various positions in the State Assembly. He worked as a Chief of Staff to Assembly Member Tom Woods of Redding and later to Orange County Assembly Member, Patricia Bates, who served as Vice Chair of the Assembly Appropriations Committee. In this position, he gained a unique and valuable knowledge of the State budget and related fiscal policy matters. In addition, he has extensive experience in numerous policy areas.*

Impact Investing in the Private Markets:

Considerations from an LP Perspective

For the private markets, 2018 was marked by some record highs in terms of fundraising and deal flow, some worrisome trends in the way of compressed outperformance versus the public markets, as well as some welcome developments – such as LPs increasingly investing in their own infrastructure. (High fives all around on that front!) Generally, the markets performed well once again, and investors remain positive on the industry overall, with most planning to maintain or increase their allocations as shown in our 2018/2019 Private Markets Survey.

> *"It is a rare conversation with an LP today that does not touch on impact investing at some level, ranging from "What is impact?" to "What impact strategies are best positioned for success?"*

A logical question, then, becomes where specifically do LPs plan to direct their increased allocations – to new strategies, managers, geographies? While there's no one single answer to that question, we are seeing pockets of interest that we believe are worth discussion and examination – and one such area is impact investing. It is a rare conversation with an LP today that does not touch on impact investing at some level, ranging from "What is impact?" to "What impact strategies are best positioned for success?" Undeniably, impact as a strategy has gained a significant amount of traction over the past several years as preferences and priorities have evolved, and investors increasingly are seeking to identify investments capable of delivering social benefits in addition to expected financial returns.

“Yet, measurability is still very much a work in progress. In fact, we hear from LPs that this is one of the most challenging aspects of impact investing, because the impact being generated isn’t always clear or quantifiable depending upon the types of investments being made and into what businesses and industries.”

The Draw

Over the last few years, the notion of “making an impact” has grown in favor not just in the investment world, but also among consumers. According to a recent CONE Communications study(1), 87 percent of Americans would purchase a brand/product because that company advocates for social/environmental issues. Another study(2) from Morgan Stanley found that 86 percent of millennials (who comprise a large and increasingly influential demographic of consumers and business decision makers) indicated an interest in socially responsible investing. And in turn, changing consumer preferences have sparked the establishment of ranking systems such as “Just Companies”(3) that allow consumers and investors to make decisions based on corporate behavior and governance. The unique value proposition of using capital to make a positive difference in the world has sparked interest from all corners.

In private markets investing, the value proposition of impact is particularly well positioned given the control nature of the investment coupled with the longer time horizon, which can allow managers to drive and influence change in their portfolio company investments. We’ve observed that the level of interest in impact investing varies from LP to LP – some already have a well-developed impact or ESG portfolio and are looking to add to their exposure, while others are new to the space and are seeking guidance on how best to build a program. In either case, these LPs are taking action – a 2018 Global Impact Investing Network survey(4) reported there is now $228.1 billion in impact assets under management, up from $114 billion the year before. A report last year from(5) The Forum for Sustainable and Responsible Investment found that investors in the U.S. had nearly $12 trillion in sustainable, responsible and impact investments. That figure grew at a 38 percent compound annualized rate between 2016 and 2018, which is more than twice the rate of U.S. investments overall. And the opportunities for deploying impact capital are vast and numerous, with the aim of addressing some of the world’s largest societal and environmental challenges.

Metrics and Measurement

For many investors, broad-based guidelines are setting the framework (and a bit of a standard for the industry) for their portfolio development. The most significant, and oft-quoted of these guidelines is the United Nations Sustainable Development Goals (“UN SDGs” or “Global Goals”), the 17 interconnected goals set as part of the UN SDG’s 2030 Agenda(6) for a better, more sustainable world. Beyond these, many other sets of guidelines exist that may appeal to investors with specific religious, ethical or moral agendas. Some examples are the Bishop’s Socially Responsible Investment Guidelines(7), which some faith-based organizations have adopted, the Principles for Responsible Investment(8) (of which Hamilton Lane is a long-time member) and The Forum for Sustainable and Responsible Investment(9) (US SIF).

These sets of guidelines often share common goals that help define the target “impact”:

- Protecting the environment;
- Supporting clean energy and water;
- Fostering economic justice; and
- Providing education and healthcare in order to promote human dignity.

Additionally, there are, of course, core missions and objectives that drive individual organizations’ impact strategies. It is not uncommon to see a company focus specifically on areas such as healthcare, education or financial inclusion. This is evidenced by the rise of “Place-Based” investment strategies wherein organizations combine both their highest-priority sustainability goals with investment into targeted geographies.

Much like the SDGs, which provide the framework for investors, the Sustainability Accounting Standards Board (“SASB”) developed a “Materiality Map”(10) to guide investors’ assessment of the financial impacts of sustainability as a way to add further structure for investment decision-making.

Expanding Options; Increasing Complexity

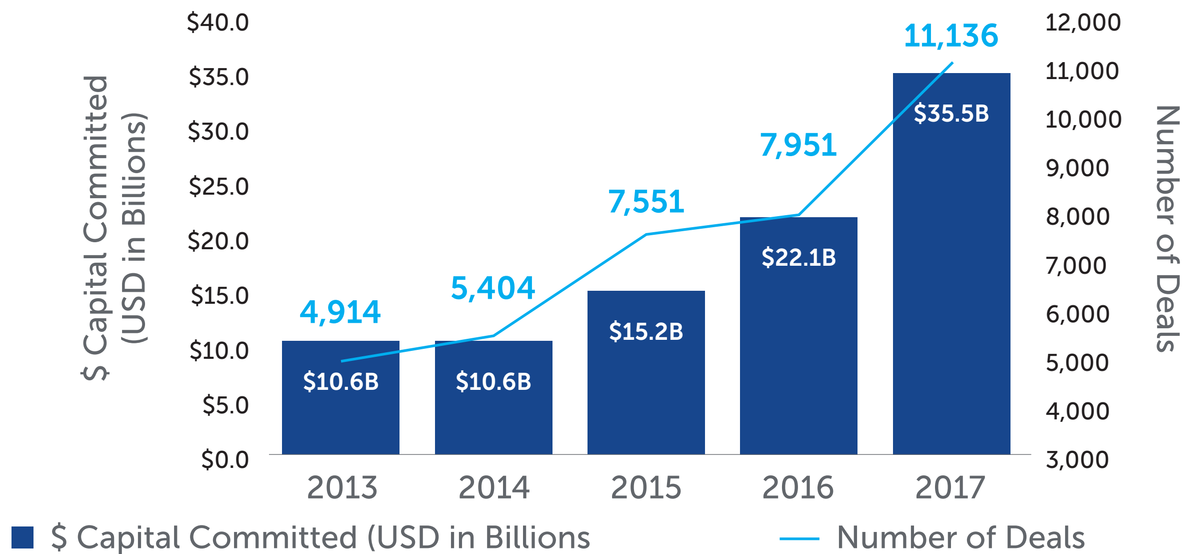
As the interest and sophistication in impact has grown, so too has the opportunity set available to investors, which continues to become more diverse and expansive. In turn, the bar for measuring outputs and outcomes has been raised, and the sector is growing more complex.

For LPs, that means making choices between specialists versus generalists, where within the investment cycle to focus their exposure, as well as how to diversify across geographies and regions.

Regardless of the strategy, sector or geography, a resounding theme we hear from investors is the need for greater transparency. And while that theme is by no means new to the private markets generally, in the realm of impact investing, transparency can mean quite specific deliverables. LPs want to understand the process that GPs are undertaking to underwrite both the investment thesis, as well as the impact thesis. Further, they want to be assured of the ongoing monitoring and reporting of the impact thesis with identifiable metrics and regular measurement.

Yet, measurability is still very much a work in progress. In fact, we hear from LPs that this is one of the most challenging aspects of impact investing, because the impact being generated isn’t always clear or quantifiable depending upon the types of investments being made and into what businesses and industries. As the market continues to mature, we expect that managers

Capital Invested and Number of Deals in the Private Markets is Growing



Source: GIIN Annual Investor Survey 2014-2018

will improve upon transparency and be able to deliver more quantifiable metrics and results. The important strides being made in this area will add greatly to the overall approachability and, ultimately, adoption of impact investing more broadly. We continue to believe that data – and the use of technology to analyze, understand and utilize that data – will transform the private markets broadly, and impact specifically.

Opportunity and Momentum

Within the private markets, the dollars being dedicated to impact represent a meaningful amount of capital invested into a significant number of companies: over $35B into 11,000 companies in 2017 alone.

We're often asked for specific examples of what qualifies as an impact investment. While the range of investment types and strategies is quite broad, here are a few examples we've seen:

- An irrigation company that brings much needed water to arid land that creates an increased crop yield to feed a growing population and does so through the efficient use of water;
- A mobile healthcare practice that brings quality healthcare to previously underserved populations;
- A geothermal electricity producer that provides an important alternative to high emission fossil fuels. Through its geothermal resources and energy-generation technologies, in addition to generating millions of MWh of electricity, this company has prevented the emission of millions of tons of carbon dioxide.

These are just a sampling, but of course there are many, many others. Our review of direct investments and fund managers suggests that there is no lack of attractive impact investment opportunities to match with institutional missions and values going forward.

As the universe of opportunities grows, we predict that the spectrum of how we look at and define impact will also increase in sophistication. In the (not too distant) future, we can envision LPs' questions shifting from "What is impact?" to "How much of my portfolio should I allocate to impact strategies?" or "What types of impact strategies are best for my organization?" And, as the outcomes of these strategies become more measureable, private markets capital will stand to represent an even larger piece of the impact investment pie.

Jackie Rantanen *is a Managing Director and the head of Hamilton Lane's Product Management Group, where she has responsibility for the firm's funds including secondaries, co-investments, private credit, and multi-strategy. She is also an Investment Committee member at the firm.*

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Rising Interest Rates & REITs

'Interest rate increases' are not all the same, and can markedly drive different absolute and relative returns for REITs.

Introduction

In recent years, the question we hear most frequently from prospective REIT investors is how REITs will perform in a rising rate environment. Setting aside the suddenly pertinent question of whether we are still in such an environment, our typical response has been that REITs have often been solid performers when interest rates are moving up. This is especially true if those rate increases are being driven by an economy that is strong enough to keep rents and net operating incomes growing quickly. This can offset the impact of both more expensive financing and the upward pressure on cap rates we might see when other income vehicles begin offering more competitive yields.

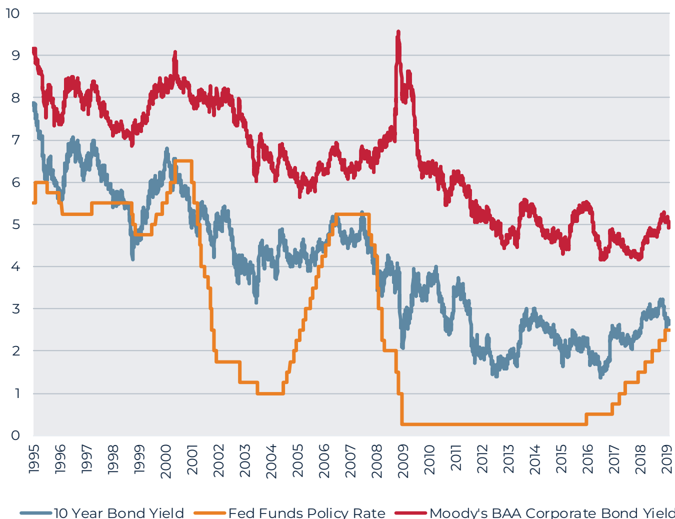
However, not all "interest rate increases" are the same, and this paper explores how REITs perform under different kinds of interest rate upcycles.

What Kind of Interest Rate Increases Do You Mean?

To many people, "interest rate increases" merely mean the Federal Reserve is increasing the Federal Funds target rate. Increases in the Federal Funds target rate tend to be long and steady and telegraphed well in advance, while both Treasury and corporate bond yields are much more volatile and sensitive to the day-to-day vagaries of financial markets. If the Fed is credibly reigning in inflation by hiking short rates, long Treasury rates may well move lower as the spread investors demand for longer-term lending narrows. On the other hand, if the market is worried that the Fed is being overly aggressive, corporate bond spreads may widen and yields may move up at the same time as Treasury yields of similar duration fall. As investors become concerned that the economy will weaken and corporate defaults will rise, they allocate to Treasury bonds in search of safety. In short, the term "rising interest rate environment" is often too muddled to be useful. Different types of interest rates have very different cycles.

The chart below shows three different benchmark interest rates over the period between January 1, 1995 (the start of the MSCI US REIT index) and February 15, 2019.

Figure 1: Long Term Interest Rate and Yield Trends



Source: Moody's BAA Corporate

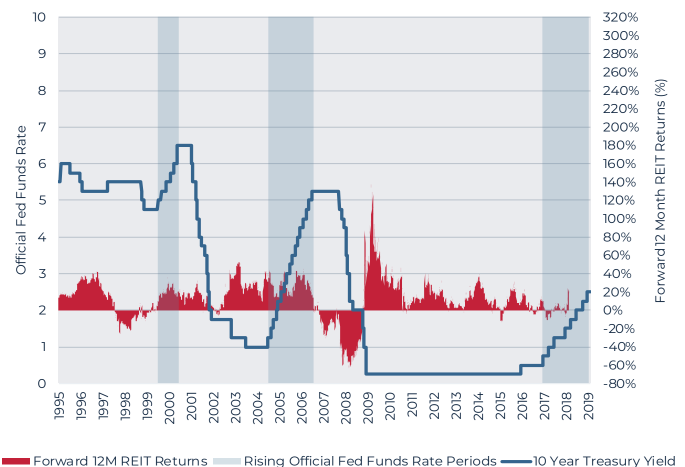
In order to explore rising rates' relationship with REIT performance, AEW Research created a flexible algorithm that allows us to investigate performance relative to each of these rate cycles. After experimenting with a variety of parameters to find the ones that best captured the beginnings and ends of rate cycles, we settled on periods where rates increased at least 100 basis points over periods of at least nine months. While there is nothing magical about these parameters, they did a good job of identifying tops and bottoms of sustained rate cycles for each of the interest rates depicted above.

The charts in each section below show how REITs performed at each point of the cycle for the Fed Funds rate, the 10 year Treasury yield, and the Moody's BAA corporate bond yield. Each chart contains shaded areas to identify the periods identified as "rising interest rate cycles" by the algorithm. The next 12 month's returns in the REIT market are denoted in green and scaled so that they are confined to the bottom of the charts so the interest rate cycles are more visible. REIT returns are on the right hand scale. These REIT returns are meant to indicate how REITs performed over the year after each point in the interest rate cycle in question.

Federal Funds Rate Increases

For the Federal Funds rate, there have been only three major rate cycles after 1995. The abbreviated cycle in 1996-97 and the one year pause after the first 25 basis point hike in December 2015 do not meet the "100 basis points in nine months" threshold.

Figure 2: Federal Funds Rate Upcycles



Source: Moody's BAA Corporate

The table below shows the performance of US REITs, the S&P 500 and the Bloomberg Barclays US Bond Aggregate over the highlighted periods[1] . REITs delivered positive returns in all three Fed Funds rate upcycles. They underperformed stocks in two of three periods, but wildly outperformed stocks during the June 2004-June 2006 cycle, increasing 59.5 percent while the S&P 500 was up 16.2 percent. REITs outperformed the Bloomberg Barclays bond index in all three cycles as real estate was able to capitalize on growing incomes in way that fixed income vehicles cannot. In the year following the end of the cycle, REITs delivered healthy double digit returns, beating stocks in one of two periods

and bonds in both. (We obviously do not have year-ahead returns for the most recent cycle.)

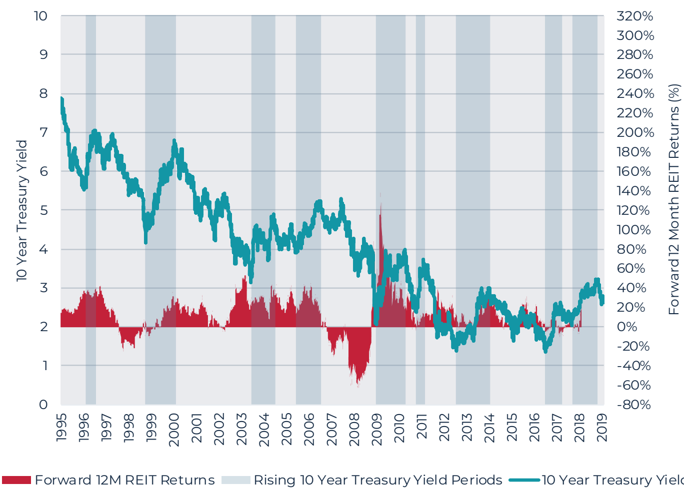
Table 1: REIT Performance During and After Fed Funds Rate Upcycles

			Total Returns During Cycle					Total Returns During Year After Cycle Ends				
Start	End	Cycle Rate Move	REITs	S&P 500	REITs +/-	US Bonds	REITs +/-	REITs	S&P 500	REITs +/-	US Bonds	REITs +/-
6/29/1999	5/16/2000	1.75	3.3%	9.7%	-6.3%	2.0%	1.3%	15.0%	-11.1%	26.1%	13.8%	1.2%
6/29/2004	6/29/2006	4.25	59.5%	16.2%	43.3%	6.1%	53.5%	16.1%	21.6%	-5.5%	6.7%	9.5%
12/14/2016	12/20/2018	2.00	4.5%	14.0%	-9.4%	3.8%	0.7%	NA	NA	NA	NA	NA

10 Year Treasury Yield Increases

The next chart illustrates how REITs have performed relative to cycles in the 10 year Treasury yield. The Treasury yield is set by the market and is much more volatile than the Fed Funds rate, and consequently there are many more cycles to explore. Here too, REIT have generally performed well during rising rate periods and have generally delivered positive returns both during and after such periods. As with the Fed Funds rate, the most prolonged periods of negative REIT performance have actually been during periods of falling 10 year Treasury yields, not rising yields. This is consistent with our experience that the biggest risk to REIT performance is not higher interest rates but rather economic downturns that weigh on rents and occupancy.

Figure 3: 10 Year Treasury Yield Upcycles



Source: Moody's BAA Corporate

The table below provides more detail on REIT performance for each period where the 10 year Treasury yield was moving upward. While REITs delivered positive returns in seven of nine such cycles, they did lag behind the S&P 500 in two-thirds of them. They outperformed bonds during all but one upcycle. On the other hand, looking forward a year from the end of each cycle they tended to outperform both stocks and bonds.

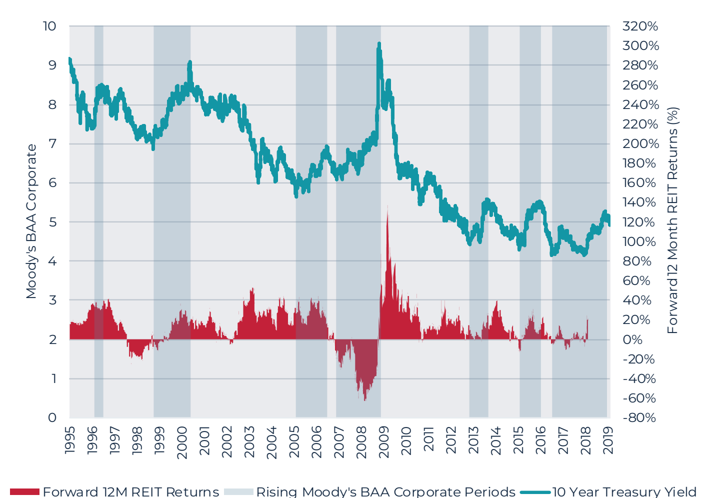
Table 2: Performance During and After 10 Year Treasury Yield Upcycles

			Total Returns During Cycle					Total Returns During Year After Cycle Ends				
Start	End	Cycle Rate Move	REITs	S&P 500	REITs +/-	US Bonds	REITs +/-	REITs	S&P 500	REITs +/-	US Bonds	REITs +/-
1/18/1996	7/5/1996	1.53	6.2%	9.2%	-3.1%	-3.1%	9.3%	35.0%	42.6%	-7.6%	10.9%	24.1%
10/5/1998	1/20/2000	2.63	2.0%	48.7%	-46.7%	-2.4%	4.4%	22.1%	-6.0%	28.2%	13.4%	8.7%
6/13/2003	6/14/2004	1.76	20.9%	15.8%	5.1%	-2.4%	23.3%	39.2%	9.2%	30.0%	7.5%	31.7%
6/2/2005	6/28/2006	1.36	20.7%	5.5%	15.2%	-1.3%	22.0%	15.4%	22.9%	-7.5%	6.8%	8.7%
1/1/2009	4/5/2010	1.93	45.7%	35.3%	10.4%	7.1%	38.6%	20.9%	14.8%	6.1%	5.5%	15.4%
10/8/2010	2/8/2011	1.34	9.0%	14.4%	-5.4%	-3.1%	12.1%	12.2%	4.3%	7.9%	9.6%	2.6%
7/24/2012	12/27/2013	1.61	5.6%	42.0%	-36.5%	-1.8%	7.4%	32.2%	15.3%	16.9%	6.0%	26.2%
7/8/2016	3/13/2017	1.26	-7.7%	13.1%	-20.7%	-3.8%	-3.9%	-1.5%	18.1%	-19.6%	2.1%	-3.6%
9/8/2017	10/5/2018	1.19	-0.6%	19.7%	-20.3%	-2.9%	2.3%	NA	NA	NA	NA	NA

Corporate Bond Yield Increases

REITs behave somewhat differently relative to corporate bond yields than to less risky government benchmarks. Spreads between corporate bonds and safer instruments tend to widen in times of economic stress, and there are several periods when corporate bond yields troughed and began upcycles right when forward REIT returns turned negative. The Long Term Capital Management[2] widening that began in October 1998 was the worst period of relative underperformance in any of the upcycles in this overview, and the late cycle widening that began in late 2006 was the weakest period of absolute REIT performance since 1995. Leases to corporate tenants are subject to similar credit quality risks as corporate bonds, so it makes some sense that the relationship between REIT returns and corporate bond yields is a bit tighter.

Figure 4: Moody's BAA Corporate Bond Yield Upcycles



Source: Moody's BAA Corporate

REITs still delivered positive performance in five of seven periods where the Moody's BAA yield climbed by at least 100 basis points. That said, they underperformed stocks in all but one such cycle, and while returns were robust in the 12 months after corporate bond yields peaked they were not consistently better than the S&P 500. In absolute terms, REITs did best in the long periods where BAA yields were trending down, most often due to improving economic conditions. They did generally outperform US bonds during and after corporate bond yield upcycles with

the notable exception of 2006-2008. During this period, credit spreads widened sharply even as underlying benchmark interest rates were flat or even down. Indeed, the two periods where REIT performance was weakest relative to bonds were when corporate bond spreads were widening markedly — the Global Financial Crisis and in 2015.

Table 3: Performance During Moody's BAA Yield Upcycles

			Total Returns During Cycle					Total Returns During Year After Cycle Ends				
Start	End	Cycle Rate Move	REITs	S&P 500	REITs +/-	US Bonds	REITs +/-	REITs	S&P 500	REITs +/-	US Bonds	REITs +/-
10/11/1995	6/11/1996	1.16	10.9%	17.6%	-6.7%	0.7%	10.2%	31.6%	34.5%	-2.9%	9.8%	21.8%
10/2/1998	5/17/2000	2.23	7.9%	47.4%	-39.5%	-0.4%	8.3%	16.2%	-9.7%	25.9%	14.0%	2.2%
2/8/2005	6/23/2006	1.30	28.8%	6.2%	22.6%	0.0%	28.8%	15.7%	22.2%	-6.5%	6.4%	9.3%
11/30/2006	10/29/2008	3.49	-49.0%	-31.0%	-18.0%	4.7%	-53.8%	11.7%	14.4%	-2.7%	13.5%	-1.8%
11/7/2012	8/16/2013	1.16	2.4%	20.8%	-18.4%	-3.3%	5.8%	25.0%	22.2%	2.8%	5.7%	19.3%
1/30/2015	12/28/2015	1.25	-3.8%	5.1%	-9.0%	-1.4%	-2.5%	5.9%	11.9%	-6.0%	2.0%	3.8%
12/14/2017	11/28/2018	1.14	2.6%	5.4%	-2.8%	-2.0%	4.5%	NA	NA	NA	NA	NA

The Blind Taste Test

The above comparisons suggest that REITs can perform well during and especially immediately after upward moves in interest rates of various types. That said, they all assume perfect hindsight – we rarely know how far any given rate increase cycle has to go when we are in the middle of it. What if we don't know whether we are closer to the beginning or the end of the cycle?

To test this, we set up a blind test that knows nothing about where we are in the cycle. We kept the period a bit shorter (6 months) and the rate increases a bit smaller (50 bps) in order to capture the murky reality of those situations where you are a few months into an upward rate move and don't know what will happen next. We tested all trading days between July 1, 1995 and August 15, 2018 (six months after the MSCI REIT index data starts and six months before our February 15, 2019 end date). For dates that met the threshold of a 50 basis point move in the past six months, we calculated average returns for the trailing six months as well as the subsequent six months.

Table 4: Returns During and After 50 bps Increases in Interest Rates

	Fed Funds Rate	10 Year Treasury	Moody's BAA
Number of Days	6033	6033	6033
Number of Days with a 50 bps Rate Increase in Trailing Period	706	1108	794
Average REIT Return During Those +50 bps 6M Windows	11.7%	6.4%	-6.5%
Average S&P 500 Return During Those +50 bps 6M Windows	5.3%	10.6%	-1.4%
Average Bond Return During Those +50 bps 6M Windows	1.8%	-0.5%	-0.5%
Average REIT Return for the Six Months Afterward	12.5%	9.0%	3.8%
Average S&P 500 Return for the Six Months Afterward	2.9%	6.5%	4.2%
Average Bond Return for the Six Months Afterward	2.8%	3.3%	3.1%

These results mostly mirror the prior analysis. When the Federal Funds Rate was up more than 50 bps in the prior six months (which amounts to at least 75 bps since it generally moves in quarter point increments), REITs on average outperformed stocks and bonds both during and after the move no matter what direction rates moved next. When the 10 year Treasury yield increased more than 50 bps over the prior six months, REITs lagged the S&P 500 but still delivered good returns averaging 6.4 percent, and they outperformed over the next six months. The Moody's BAA was again more indicative of underperformance for the REIT market as they lagged well behind both stocks and bonds while corporate bond yields were moving up. They did provide competitive returns over the next six months that were just below stocks and ahead of bonds.

Conclusions

Casual followers of the REIT market routinely worry about "rising interest rates" as though all interest rates move in lockstep with the Federal funds rate and assume that REITs will necessarily be poor performers during the upward-moving part of those cycles. In reality, the biggest risk to REIT returns is not higher interest rates but rather economic downturns that weigh on rents and occupancies. On the other hand, expectations about REIT performance during rising rate periods must distinguish between the different types of interest rates in the economy. REITs often provide quite competitive returns when "safe" yields like the Fed Funds rate or even those on long duration Treasuries are moving up, in large part because these movements usually correspond with periods where the economy is performing well. Fears of a REIT selloff based on these kinds of interest rate increases are usually overdone — REIT returns are not always better than stocks but they are positive much more often than not. On the other hand, corporate bond yield increases correspond more closely with subpar REIT returns, an outcome which likely rests on the fact that corporate borrowers and REIT tenants are often one and the same and deteriorating credit impacts both asset classes negatively. REITs have still delivered very competitive returns relative to the overall bond market both during and after interest rate upcycles. REITs provide income, diversification and competitive returns to multi-asset class investors and they can contribute to overall portfolio performance even when rates happen to be rising. As a result, REITs should be in most well-diversified portfolios.

Russell Devlin, CFA is Director at AEW Capital Management, L.P. (AEW). Founded in 1981, AEW provides real estate investment management services to investors worldwide. One of the world's leading real estate investment advisors, AEW and its affiliates manage approximately $73.7 billion of property and securities in North America, Europe and Asia (as of September 30, 2018).

ENDNOTES

1 REIT performance is measured by the MSCI US REIT index. Bond performance is measured using the Bloomberg Barclays US Bond aggregate that includes a value weighted mix of both sovereign and corporate bonds as well as various mortgage backed securities. Returns during rate cycles are not annualized and are based on daily data beginning at the bottom of the interest rate cycle. All returns are calculated using daily data and standardized trading years of 262 days. Nine month periods use 197 trading days and half years use 131 trading days. Due to weekends and other trading holidays, these periods may be slightly different than simply moving six, nine or twelve months forward or back from a given date, but they are a close approximation.

2 Long Term Capital Management was a large, highly levered hedge fund that nearly defaulted in 1998 before a Fed-led bailout stabilized the situation. A default would have triggered a global financial crisis due to the write-offs its creditors would have had to make, and credit spreads widened markedly before the bailout.

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Paradise Point Resort & Spa
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FALL 2020

November 10-13
Renaissance Indian Wells
Resort & Spa
Indian Wells, CA

SPRING 2021

May 11-14
Hyatt Regency Long Beach
Long Beach, CA

FALL 2021

November 9-12
Loews Hollywood Hotel
Hollywood, CA

SPRING 2022

May 10-13
Omni Rancho Las Palmas Resort & Spa
Rancho Mirage, CA

FALL 2022

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Hyatt Regency Long Beach
Long Beach, CA

SPRING 2023

May 9-12
Paradise Point Resort & Spa
San Diego, CA

FALL 2023

November 5-11
Omni Rancho Las Palmas Resort & Spa
Rancho Mirage, CA