REDWOOD
GROVE
CAPITAL

Oct 26th, 2018

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As fundamental investors, we analyze a company's business prospects, management team and valuation. Long-term macro trends are also assessed. Particularly the economic consequences of climate change. This gives us the conviction to hold our investments through periods of volatility and for years to come.

The portfolio is designed to be diversified, with aligned management teams and undervalued long-term prospects. We are invested in 8 of the 11 S+P 500 sectors (we do not currently have exposure to Energy, Materials or Real Estate). Because of our emphasis on valuation our portfolio has a weighted average P/E less than 13x forward earnings and 10x EV/EBITDA, 20% and 30% discounts respectively to the S&P 500 Index average valuation. Each of these companies has a profitable long-term strategy and is well-prepared for the impact of climate change.

We have found valuations more compelling in certain areas of the Industrial and Technology sectors, particularly semiconductors. Accordingly, those two sectors account for 22% and 29% of the portfolio. Attractive valuations exist for a reason. They are paired with known risks. Recognizing the risks, we look for companies that have quantifiable earning floors, financial flexibility to manage their way through the short-term challenges, and attractive undervalued long-term prospects.

Commonly, it is the selloff that attracts our attention to a name. A good example of this is our investment in Western Digital, which saw its stock drop over 30%. One of their two main products, NAND, is expected to see steep prices declines as a well-documented increase in memory capital spending creates a temporary oversupply. But we believe their stable HDD business provides a floor for earnings, and the market has overreacted to NAND pricing pressures. As the market prices in these risks, we looked for an entry point where the short-term risk has been over-weighted relative to its long-term outlook. Of course, it is hard to pinpoint the very end of a stock's negative momentum and more typically we are buying names as they continue to sell off. We discuss WDC in more detail later in this letter.

## Economic Update

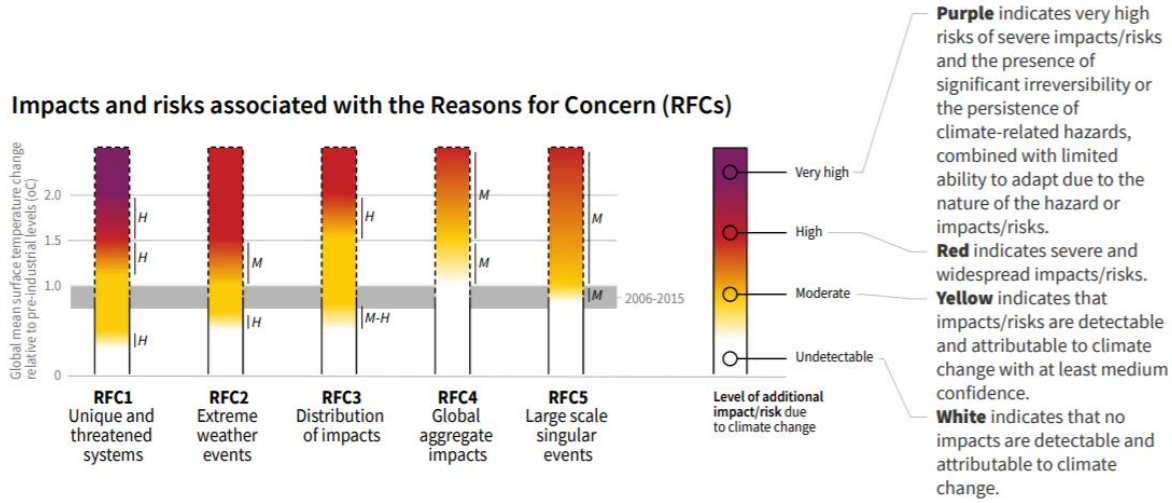
Global monetary policy and financial conditions have generally been favorable for the past decade. More recently, in the U.S., tax cuts and deregulation have accelerated corporate spending. However, the earnings growth stimulus provided by the tax cuts is fully incorporated this year. And with corporate margins at historic highs, the margin benefits from the tax cuts will likely be competed away. While financial prognosticators have been concerned about the end of the economic expansion for a couple of years now, the Federal Reserve continues to raise rates with the Fed Chairman Jerome Powell describing the U.S. economic outlook as "remarkably positive." This prospect of more rate increases has recently cast a cloud over the stock market.

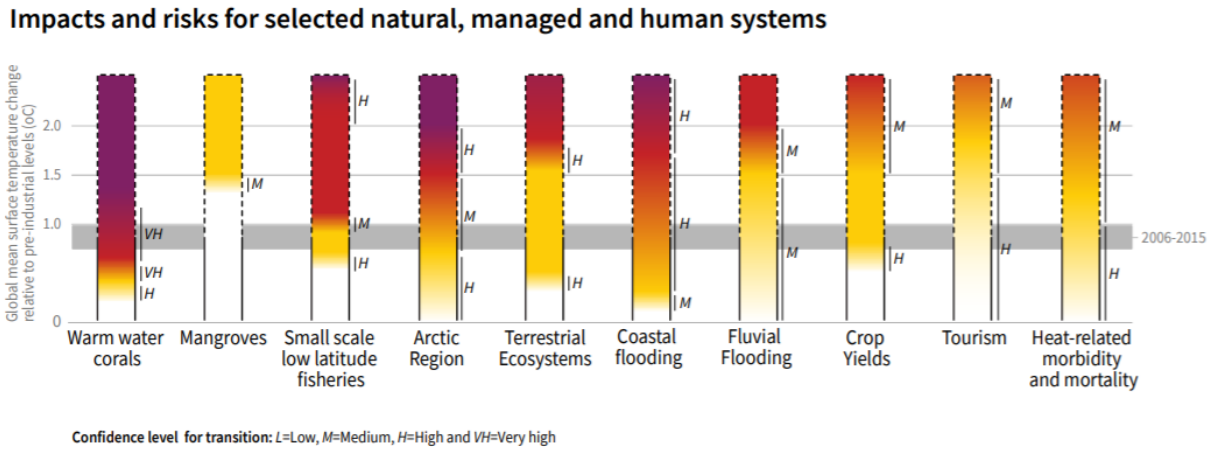
Another headwind to the global economy is the increasing risk of an escalating trade war between the world's two largest economies. Expectations for 2019 U.S. GDP growth have slowed as trade concerns increase, though there are some like David Rubenstein who think "this trade dispute will be more of a skirmish, not a war." On January 1st, U.S. tariffs are scheduled to go up to 25% (from 10%) on $200 billion in Chinese imports. This equates to a $30 billion tax on U.S. importers some of which will be passed on to U.S. consumers. Economists differ on the impact of these tariffs on GDP (the IMF recently reduced their expected US GDP growth by .2% to 2.7% for 2019). Then, how China will respond? With only $60 billion of imports, China's like-for-like response options are limited. However, China can devalue the Yuan, restrict Chinese tourism to the U.S., sell down U.S. Treasuries, and continue to make life difficult for U.S. companies operating in China. Regarding Redwood Grove, semiconductor companies and auto and industrial manufacturers are all negatively impacted by an escalation in tariffs. This has provided us with some opportunities to add to companies that we think will be attractive investments over time. We see the tariff concerns as a short-term (less than 1 year) risk, as neither China nor the U.S. benefit from an extended fight. And many of the President's constituents will be hurt severely.

## A Different Kind of Short-Term Risk

The public equity market measures the short term in weeks. Scientists have traditionally measured climate change in thousands of years, although change is occurring so quickly, it is now measured in decades. On October 8th the UN Intergovernmental Panel on Climate Change released a special report on the impacts of a 1.5 Celsius degree (2.8 F) increase in global temperatures above pre-industrial levels. The report reiterates that human activities has likely already caused 1 C (1.8 F) of warming. And that if we continue to emit emissions at the current rate, warming is likely to reach 1.5 C degrees as early as 2030.

Even though the report does not address several real risks, such as tipping points or the impact of climate refugees, it highlights a frightening acceleration of potential impacts of global warming. The IPCC report, written by 132 authors and based on 6,000 peer reviewed papers, concludes that 1.5 degrees of warming is significantly worse and happening faster. Extreme heat will be 2.6x's more common, the planet will lose twice as many vertebrate and plant species, and 99% of the coral reef will die. The below infographic from the IPCC report, highlights the increased dangers to our economy and ecosystem by passing the 1.5 C degree threshold.




The report's intention is to help motivate government action at COP24 in Katowice, Poland. It is a much-needed call to action, because even those nations that ratified the Paris Accord are pursuing fossil fuel extraction counter to stated goals. Britain just allowed new gas fracking after reversing a 2011 moratorium. Norway has proposed a record number of 93 blocks for oil and gas exploration in the Barents Sea, doubling its current fossil fuel reserves. And Germany is looking to raze the Hambach forest for a coal mine. The latter was stopped temporarily by large gatherings of anti-coal demonstrators and an unexpected court ruling.

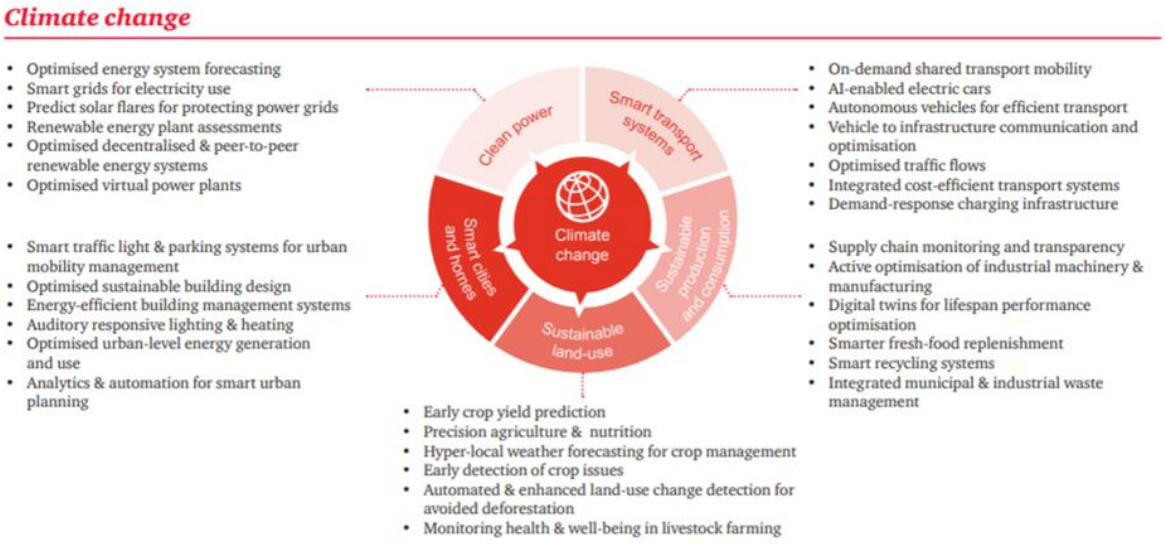
The worrisome reports do not just come from the United Nations. Last month, the U.S. National Highway Traffic Safety Administration (NHTSA) released a 500-page environmental impact statement to justify their decision to freeze federal fuel efficiency standards for cars and light trucks built after 2020. The justification to reverse this policy was not a rebuttal of the scientific community's consensus on climate change. Instead, the environmental impact statement was an affirmation that the planet was going to warm 3.5 degrees C by the end of the century, putting Miami and New York mostly underwater. But the report concluded that increasing fuel efficiency today would have a nominal impact on the total GHG emissions, so was not worthwhile. Instead, meaningful change requires "substantial increases in

technology innovation and adoption compared to today's levels and would require the economy and the vehicle fleet to move away from the use of fossil fuels…" We would agree.

## System Efficiencies

If Climate Change represents the greatest challenge to civilization, it is fortunate that it is happening at a time of significant technological innovation. Artificial Intelligence, for example, presents an opportunity to significantly reduce emissions across the economy through increased efficiencies. We have already seen companies like Google use their AI capabilities to reduce their data center's energy needs by 40 percent. Just last month, Google turned over energy management of their data centers entirely to their AI team, DeepMind. To put this reduction in context, about 2% of global greenhouse gas emissions are produced by data centers. That is about the same amount as air travel. DeepMind is also working with the U.K.'s National Grid to attempt to reduce energy usage by 10% without adding any new infrastructure.

Artificial Intelligence ability to create system efficiencies go way past energy management. It will help develop clean power, smart transportation options, sustainable production, smart cities and homes, and sustainable land use. The chart below highlights a handful of the areas where AI will be instrumental in the development of greater economic and environmental efficiencies.




In 2006, Clive Humby the UK mathematician said "Data is the new oil." Going on to say "It's valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc. to create a valuable entity that drives profitable activity; so must data be broken down, analyzed for it to have value." In this analogy, Artificial Intelligence (AI) is the data "refiner." Combined, AI and data will play a central role in reducing our dependence on fossil fuels.

That data needs to be stored, much of it in the cloud. To meet the increasing demand for AI and other data storage, cloud data center capital expenditure is expected to increase 2.6x from $41 to $108 billion from 2017 to 2021. Mobile, Automotive and IoT driven demand is also expected to grow from 1.2x to

2.4x's. As a result, NAND (solid state storage) growth is expected to grow at a 40-45% CAGR over the next 2four years.

Western Digital has approximately 14.5% of the NAND market. It's share price has dropped from a 52-week high of $106 to $54 in the past six months as concerns about NAND oversupply has caused the market to worry about significant pricing pressure in 2019. The company is trading at a 22% 2018 free cash flow yield, and 4.7x LTM P/E. We expect NAND oversupply to get sopped up by the significant growth rate for NAND and pricing pressure to stabilize as capital expenditures are cut back over the next six months to a year. In addition, even if we completely eliminate earnings from the NAND business, WDC's HDD business gives us a valuation floor.

Seagate Technologies and WDC are the two leading manufacturers of HDD making up over 80% of the total market. If we apply a comparable market value to WDC's HDD business (even though it is larger), the remaining NAND business is valued at 2-3x earnings or approximately $6bln. This gives us the opportunity to buy a growth company at deep value prices. Furthermore, a consortium of buyers led by Bain recently bought a very similar NAND business for $18 bln. Despite the attractive long-term market for NAND, and the attractive valuation on the business, we expect continued NAND pricing to weigh on the company's share price in the foreseeable future. Because of Western Digital's role in the transition to a low carbon economy, and its attractive valuation, it is part of our portfolio.

Another name we added this quarter is Infrastructure and Energy Alternative (IEA). The company, formally known as White Construction, pivoted from a traditional construction company to one with a focus on renewable infrastructure. Oaktree Capital Management saw the growth potential in this pivot and bought the company in 2011. In March of 2018, IEA was IPO'd and Oaktree remains a significant owner and on the board. The pure play energy engineering, procurement and construction company has a leading share of the wind market. Its customers include NextEra Energy, Southern Power, Exelon and NRG. Installed wind capacity is expected to grow at a 11.6% CAGR through 2020. In addition, they are attempting to move into utility scale solar, which could help accelerate growth. With a record backlog creating a stable shelf of business we believe this is a unique way to participate in continued growth in renewables at an attractive valuation of 7x EV/EBITDA and 5.5x Free Cash Flow.

At Redwood Grove, we are watching all these trends closely, but we do not know what the future will hold. What we do know is that the laws of thermal dynamics are not going to change, and that we either need to change our global energy system over the next decade or face the physical impacts of climate change. The future is not binary and so we expect to see growing markets for companies that help mitigate the impacts of climate change as well as companies that help humans adapt to a warming planet. That is why we invest in both mitigation and adaptation strategies. We believe that the economic consequences of climate change remain an inefficient corner of the capital markets.

Thank you for being invested along side us. If you have any questions about our strategy, performance, or our general wellbeing please do not hesitate to reach out directly to us.

Best,

Ted and Greg