

August 7th, 2019

Redwood Grove's Strategy

Redwood Grove Capital, LP is a thematic, value-oriented, public equity manager in the era of climate change. We look for strong absolute returns. Redwood Grove is not an index fund. Instead, we use a dual investment process that analyzes a company's fundamental strength as well as the economic impacts of climate change. We closely follow climate science to understand the economics of mitigation and adaptation strategies. Our focus is on finding the best investment opportunities we can, and less on correlation to a specific benchmark.

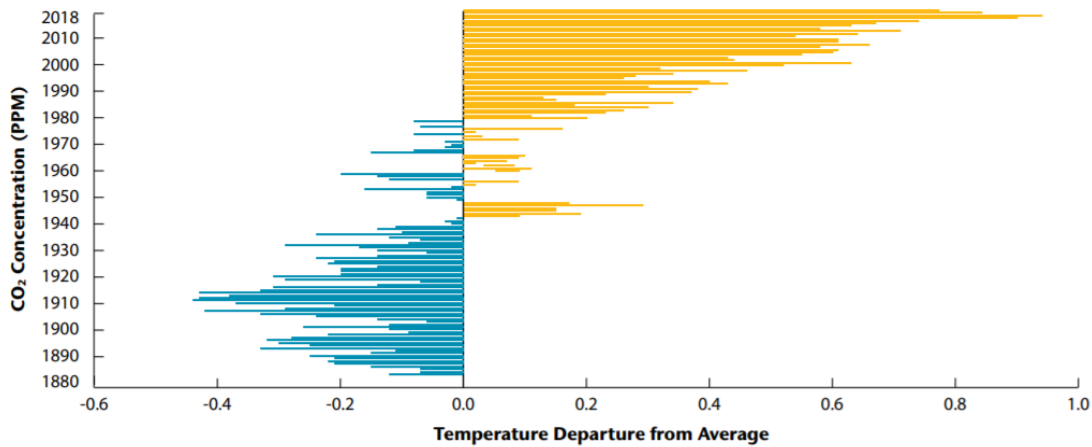
Despite being well forecast, many climate change trends are not being priced into the capital markets. In this letter we will talk about one adaptation investment and mitigation investments that derive from our four climate themes: innovative technology, regulation, physical effects and consumer behavioral patterns. (For more on these themes please see our March 2019 letter). On the mitigation side, we look at the technological leaps forward being made in urban environments and the opportunity to reduce city greenhouse gas emissions. On the adaptation side we analyze the health impacts of a changing climate and their implications for pharmaceutical companies.

Market and Climate Update

The Redwood Grove portfolio and the markets have seen increased volatility due to the macro political environment which we see as a short term, albeit meaningful, risk. The first half of 2019 saw a sharp reversal in the Federal Reserve Bank's monetary policy. By early June, in addition to a turbulent trade war, the pace of hiring slowed and there was a corresponding decline in consumer confidence. The market came to expect that rates would be cut 50 bps, a sharp change from the 50bps increase expected at the end of 2018. Ultimately, rates were cut 25bps. But every week seems to bring with it a new set of expectations for monetary policy. One of the reasons monetary policy has been hard to predict is the administration's trade war with China. Over the next six months, there will be more drama and the probability of trade discussions between China and the US becoming more constructive seems to be declining.

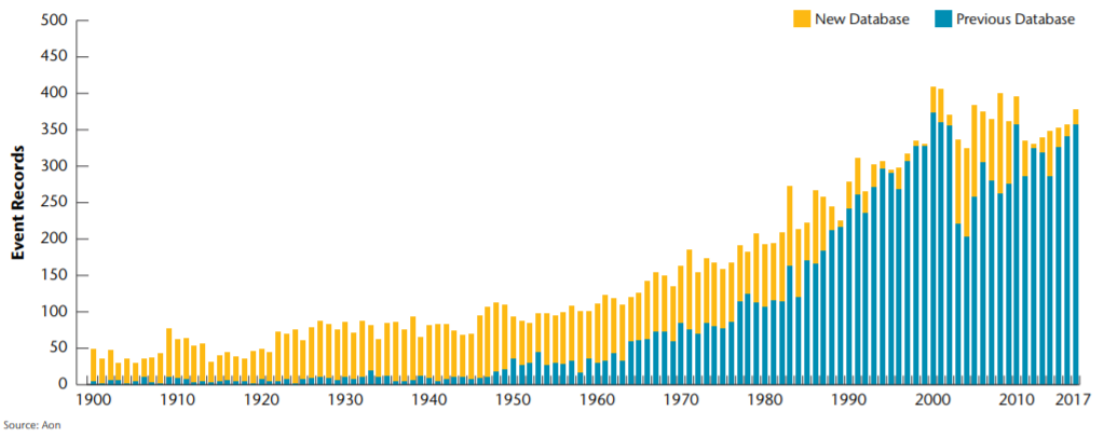
While not discussed by most market participants, the second quarter of the year saw the second hottest April and the hottest June in the history of recorded temperatures (May was the 4th warmest). Globally the month of June was 2 degrees Celsius warmer than historic norms and 6-10 degrees Celsius (18 degrees Fahrenheit) warmer throughout Europe. Greenland's ice sheet recorded record melting as temperatures peaked at 40 degrees F. Taking a step back from specific geographical regions, it's worth noting that each of the five warmest years on record have occurred in the past five years. 19 of the 20 warmest years have happened since 2001. The only exception was 1998 when there was a record El Nino event. As an additional point of perspective, the warmest year on record 2016 was +.94 C above historical averages. The coldest year on record was less than half that deviation at -.44 C. The last below average year for the globe happened in 1976. And the last month to record a below average temperature was in December of 1984. We are currently on a 413 month streak of above average temperatures.

Exhibit 33: Global Land and Ocean Temperature Anomalies: 1880-2018



Warmer temperatures have economic consequences. Aon recently published the results of a multi-year reanalysis project that produced a significant expansion of their natural disaster database. This has enabled them to conduct annual analyses for years “earlier and deeper” into the 20th century. They did this to be able to better identify the climate change signal, while acknowledging that it is already well established that nominal and inflation adjusted catastrophes losses are increasing at a statistically significant level. They found that the number of events has grown steadily throughout the century.

Exhibit 17: Old vs New Event Entries



Not surprisingly, the corresponding costs of these events have also been going up. In April this year, the Congressional Budget Office released a report titled “*Expected Costs of Damage From Hurricane Winds And Storm Related Flooding.*” The CBO is known as the non-partisan analyst and forecaster of government spending. In their April report they said total expected annual losses for just hurricane winds and storm-related flooding, will be about \$54 billion or the equivalent of .3 percent of the Gross Domestic Product. Given the United States GDP grew at 2.9% in 2018 and likely less in

2019, .3% is a meaningful percentage of GDP's annual growth. The CBO concluded that the costs are going to increase and the only way to slow these increasing costs is to reduce Greenhouse Gas Emissions (GHG).

Innovation, Cities and Climate Change

One of the greatest potential areas to reduce GHG emissions is urban design. Today 55% of the world's population, 4.3 billion people live in cities. By 2050, it is expected to be 68% of the world's growing population or approximately 6.8 billion people. Cities have a voracious appetite for energy, consuming about 66% of the world's annual energy, and emitting 70% of its emissions. Making cities more efficient is so important that "Sustainable Cities" is the title of one of the United Nation's four Sustainable Development Goals focused specifically on climate.

Not only do cities house most of the world's population and emit the bulk of its GHG emissions, they are disproportionately exposed to the physical impact of climate change. 90% of cities are in coastal regions, with 70% already dealing with the effects of climate change. A July research report from Crowther Lab and ETH Zurich, used state of the art climate models of existing data in a way that they hoped would be more meaningful to urban planners. They used existing science to predict the weather and climate for 520 of the world's largest cities.

If you moved to San Francisco because you liked its temperate climate, you'll find that same climate in Seattle in 2050. Sacramento, the capital of California, will have climate more like Irbil, Iran with an average August temperature 10 degrees Fahrenheit warmer than today's temperatures. Los Angeles' climate in 2050 can be found today in Hargeisa, Somalia. London's 2050 climate will look like Barcelona, where they recently had a record heat wave with June temperatures above 115 Fahrenheit. But these are the lucky cities. 115 of the 520 cities will experience weather conditions whereby temperatures, seasonality and precipitation are so variable, there is no current climate like it. This will happen for 16 American cities, including our nation's capital, Washington D.C..

This is where the opportunity exists. Cities' density, and exposure to damage create the opportunity and motivation for efficient planning to reduce emissions and build for adaptive strategies. Preparing these cities for more variable temperature and new climates will require significant new infrastructure and a smarter use of resources. The Internet of Things (IoT) future holds promise for both of those.

Smart Cities and the IoT will help increase resource efficiency

After nearly a decade of development, 5G technology is just starting to roll out to major cities. 2020 is expected to be the year of broad commercial viability for 5G. 5G will provide additional capacity, it will exponentially improve download and upload speeds, and lower latency (speed to transmit from point A to point B). If you're thinking, why do we need faster wireless speeds? You're not alone.

4G built the environment that enabled the transition to your mobile device. 5G is about connecting an entire area's infrastructure to the internet. The main improvement from 5G is not about getting your mobile phone to work faster (which it will), it is the system it creates of a billion devices all working together. At the outset of all new wireless standards, it's unclear exactly how it will be used. Looking back, when 4G first rolled out in 2010, one might have imagined an accelerated

transition to mobile devices, but few imagined it would transform the taxi industry with the ability to hail a cab on your phone. The same is true for this next generation: much of its potential remains to be determined.

One of the most anticipated areas of systemic change driven by the new technology is creating a more connected and efficient infrastructure, particularly in cities. Smart sustainable cities need a telecommunication infrastructure that is stable, secure, reliable and interoperable to support the enormous volume of IoT devices. The Internet of Things is a network of rapidly growing computing devices with built-in sensors and software to connect with each other and share data. This enables billions of devices equipped with smart sensors to connect with each other, collect real-time information and send this data, via wireless communication, to centralized control systems. These systems, in turn, manage traffic, enable autonomous vehicles, reduce energy and water usage and improve a wide range of urban operations and services. Since many of these devices will be embedded in difficult to reach (underground, tops of buildings), often dangerous locations, wireless connectivity will be key in enabling flexible design and on-the-fly reconfiguration.

Intra-connected cities are urgently needed. They will help create massive energy efficiencies, reducing greenhouse gas emissions, in the most densely populated areas of the world. But they will also help manage and mitigate the worst effects of more extreme weather events. A recent example, New York City, which suffered from massive deluges of storm water this summer, will be able to manage their storm water in real time.

Redwood Grove's portfolio is invested throughout the smart city ecosystem. Specifically, Qualcomm, Johnson Controls, Acuity Brands and Western Digital. Each of these companies produce products that will be components of smart cities. Qualcomm owns much of the 5G patents. If you make or sell a microchip with 5G technology in it, regardless of whether you buy a Qualcomm chip, you need to pay a royalty to Qualcomm. Western Digital is one of five manufacturers of NAND memory, which will be needed to store and analyze all the data collected from 5G sensors. Acuity Brands, an LED lighting manufacturer, is the leader in "smart lighting." Their brand Atrius, have built in sensors to all their lighting sockets. These sensors monitor human movement throughout buildings which enables more efficient energy use. For big box stores, in addition to energy savings, it captures customer loyalty, dwell time, visitor experience, and sales correlations. The Atrius business is growing at 15-20% and has already been rolled out to 20% of the floor space of big box retailers in the United States. Acuity is just now expanding into new verticals including airports and office buildings. Johnson Controls is a leading supplier of building products with a focus on energy efficiency through IoT. They design and build the "brains" of a building. They've long been leaders in developing green buildings. They are now leading the transition to IoT to make smart buildings.

We believe these companies have attractive prospective long-term growth rates at this confluence of 5G technology and the rising need to create more efficient cities. They have also been selected for our portfolio because they were at valuations, due to short term risks, that were below their 5-year averages and we believe are undervalued based on their core business, before considering their strong positioning relative to climate change.

Climate and Health

Sanofi is French-based biopharma company, with over \$40 billion in revenues in four major pharmaceutical areas (cardiovascular, oncology, diabetes and specialty). Further diversification is provided by selling branded, consumer products, generics and vaccines. Their sales are balanced among emerging markets, Europe and North America. With 17% of sales spent on research and development it has the significant scale advantage of a large pharma company.

As always, our investment process is looking for investment opportunities that are attractive when looking at the fundamentals: business, management and valuation. Management seeing a constructive change in leadership. Next month, Paul Hudson will replace the current CEO. He comes with significant commercial success at Novartis. We think he is compelled to join Sanofi with an eye to improving commercial development from the efforts of prior management. He has a new head of R&D and new CFO as well, both with excellent credentials.

Sanofi is valued at 12x '19P/E and 9x EV to EBITDA, representing a 15-20% discounts to its five-year average valuations and has a 4.2% dividend yield. This year, it has started to grow at a mid-single digit pace as new products more than offset patent expirations which had stopped revenue growth in recent years. Several examples, include Praluent (an amazingly effective cholesterol reducing drug in a new class of compounds) and a new treatment for Haemophilia which allows once a week injection of Factor VIII rather than the standard treatment today of 3-5 times a week. With modest expectations in the current valuation, a large business with several new products, considerable optionality coming from research, as well as a new and energized capable management team, we believe that the earning prospects are not reflected in the current price.

Here we look at the company's climate strategy, c-suite commitment and the material exposure to climate change. We believe Sanofi is a leader among its pharmaceutical peers. While Sanofi has a thoughtful sustainability report with greenhouse gas emissions reduction goals, we are more impressed by their commitments in their annual report, a legal filing made to all investors. In their 2018 report, they identify five major environmental challenges related to their business; greenhouse gas emissions and climate disruption, water, pharmaceuticals in the environment, waste and biodiversity. The company goes into detail, outlining goals originally made in 2010 and updated in 2015. Sanofi is working to "halve carbon emissions by the end of 2025 and reach carbon-neutral status by 2050 on our scope 1 & 2 (industrial, R&D and tertiary sites, including the medical rep fleet)." We have found it very rare that companies are willing to discuss climate risks in their annual reports, and even fewer are willing to outline emission reduction goals and corresponding plans.

We also look for companies with businesses, either through mitigation or adaptation strategies, impacted by climate disruption. Once such area, is in healthcare, particularly vaccinations. Warmer temperatures, like the ones we are already seeing, create more hospitable environments for disease transmission. According to a recent peer reviewed paper titled *Global Expansion and Redistribution of Aedes-borne virus transmission Risk with Climate Change*, by professors at The University of Florida, Stanford University and Virginia Polytechnic and State University, by 2050, the range for infectious diseases like dengue, Zika and Yellow Fever will include 385-725 million more people. By 2080 it will be 900 million people. Based on those numbers, Morgan Stanley estimates that there will be \$50-125 billion of incremental vaccinations.

Sanofi is a leading manufacturer of tropical disease vaccinations. To look at the impact of just one, let's zoom in on the *Aedes aegypti* mosquito. It is the primary carrier of Yellow Fever (as well as Zika, Dengue and other diseases). Its geographical range will increase to much of North America by 2050, exposing up to 55mm more Americans to these diseases. Sanofi currently has the only FDA approved vaccination for yellow fever. Yellow fever is just one disease that will spread further as the planet warms. 15% of Sanofi's sales, or approximately \$5.5 billion comes from vaccinations. Even using low vaccination rates, the spread of this one disease would have a meaningful impact on Sanofi's revenue. In addition, Sanofi has one of the most robust pipelines of vaccines and the ability to manufacture them at scale. This is an example of the innovation which we think will contribute to growth of new products that will be essential for humans to function in an increasingly hot climate.

A short business update: Ted Roosevelt is moving to New York in September to help raise East Coast awareness for our fund. As always, we welcome your comments and questions, and appreciate the confidence you have placed in us as we invest in the era of climate change.

Best,

A handwritten signature in black ink, appearing to read "Ted Roosevelt". The signature is written in a cursive, flowing style.