Thematic Investing at Chevy Chase Trust

In some ways, thematic investing is a throwback to investing in a simpler time. Before there were 15,000 mutual funds in 115 different fund categories. Before there were over 8,000 hedge funds and 2,000 ETFs traded daily. Before 17,000 new CFAs were credentialed every year, and before sell-side firms had analysts dedicated to specific sub-industries within each sector. Thematic investing doesn't fit into any of Morningstar's 115 fund categories or fit neatly into one of its style boxes.

The modern version of thematic investing emerged 15 to 20 years ago in response to the extreme segmentation of the investment industry. It gained greater visibility in recent years, as institutional investors and consultants, having turned to passive investing for larger and larger portions of assets, sought supplementary equity strategies that could generate alpha in a variety of different market regimes with some degree of reliability.

The term "thematic" is used to describe several different investment approaches, from single theme ETFs to portfolios where specific industries or sectors are deemed thematic. Here 's our definition:

> *Thematic investing seeks investable ideas that stem from economic or technological changes powerful enough to influence corporate performance across multiple industries.*

It is instructive to contextualize three of the essential terms in this definition.

"multiple industries"

Today, most Wall Street research, on both the sell-side and buy-side, is organized by industry, with each analyst tasked with being an expert in his or her niche. The result? Few researchers look at the big picture—or even know how to. This creates an inefficiency.

One of the first people who decided to exploit this inefficiency was Lewis Sanders, when he headed AllianceBernstein. In 2003, Sanders tapped Amy Raskin to run a new research group at AllianceBernstein dedicated to studying strategic changes that spanned multiple industries (essentially, thematic research). Broadband internet service was the first theme the Research on Strategic Change group tackled. The team thought about how this new technology would affect media, entertainment, advertising, video games, retail, and telecom services. It asked who would benefit, who would lose, and which industries would be disrupted. The group went on to study many other themes over the next 10 years, each time learning from its mistakes and refining the process.

Chevy Chase Trust adopted a similar investment philosophy when it acquired an investment boutique in 2001. The boutique's global, multicap, unconstrained equity strategy invested in secular themes influencing economies and markets around the world. In 2014, when Amy Raskin joined Chevy Chase Trust as its Chief Investment Officer, the firm integrated the best aspects of the two processes. One important and fundamental decision was to organize research analysts by theme, not industry. Each analyst was tasked with thinking about his or her themes holistically and uncovering relevant investment opportunities regardless of industry or geography.

"corporate performance"

Our approach to investing focuses on changes that are most likely to have a profound influence on corporate performance, seeking to buy companies that will be beneficiaries of thematic tailwinds and avoid companies that will be casualties of creative disruption. We think some thematic investors fail to distinguish between a trend and a potentially profitable investment theme. There are many significant changes occurring across the globe. But, in our vernacular, most of these

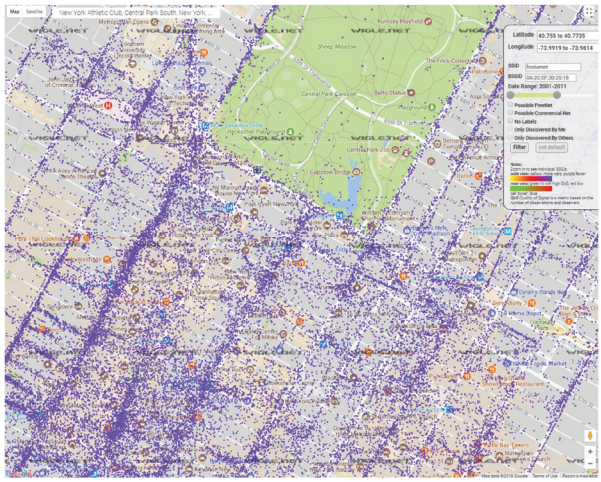
changes are simply trends and not investment themes because they are not likely to create economic advantages that will result in sustainable profits.

Wireless broadband, known as wi-fi, is one example of a disruptive technological change that would not have been a great investment theme. The top left map below is a Manhattan neighborhood south of Central Park in 2001. There were no wi-fi hotspots. The top right map is the same neighborhood in 2011, where the purple dots indicate how wi-fi hotspots had proliferated. The bottom map shows that in early 2018, wi-fi hotspots are almost everywhere.

2001

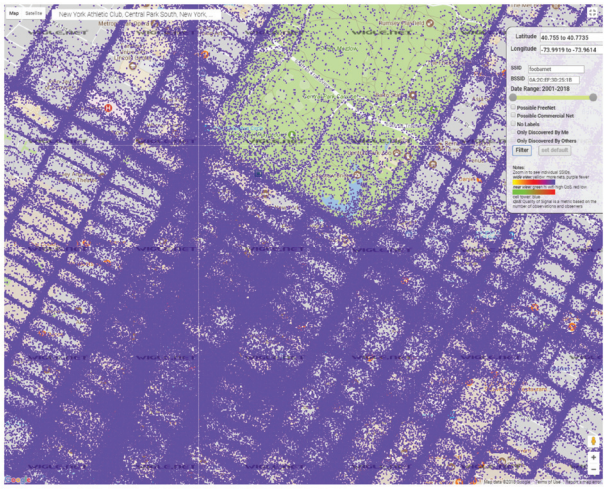
Source: Wireless Geographic Logging Engine 2001

2011



Source: Wireless Geographic Logging Engine 2011

2018



Source: Wireless Geographic Logging Engine 2018

It's amazing how this technology took off. Most people have wi-fi at home and would not think of staying in a hotel without wi-fi access. Coffee shops, restaurants, airports and subways provide it for free. A recent consumer survey ranked wi-fi second only to food in its importance in daily living.

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While unit sales of wi-fi router equipment boomed, the profitability of the equipment makers was never impressive. Wi-fi is based on a set of a well-defined standards, so barriers to entry were low, and the number of competitors was high. During the decade of explosive growth, average operating margins for wi-fi equipment makers were in the mid-single digits.

Investors focusing on disruptive change must be cognizant of a basic tenet: more often than not, technological change ends up benefitting consumers far more than the companies enabling it, particularly when barriers to entry are low and competition is intense. Consumers have benefited from virtually ubiquitous access to wi-fi, but the companies that manufactured wi-fi routers didn't profit enough to be great long-term investments.

Other examples of disruptive technological changes that we see as trends, not investment themes, include high-definition and smart television, activity trackers, streaming music, virtual worlds, home meal kits and ride-sharing services. While some of these may be surprising, the last is probably the most controversial. Here's why we think ride-sharing would be an unsuccessful investment theme.

Introduced by Uber, the concept of a simple, frictionless car-hire platform that matches riders with drivers fills a compelling consumer need. As the concept was embraced globally, business for Uber and Lyft rose from fulfilling rides worth less than $1 billion in 2013 to almost $40 billion in the 12 months ended September 2017.

But a great service is not necessarily a great business. Most of the ride-sharing revenue, roughly 80%, goes to drivers. Some goes to attracting customers. As a result, Uber and Lyft have been losing money at an accelerating rate, and revenue growth has slowed. Their combined losses were roughly $2 billion in 2015, $3 billion in 2016, and $5 billion in 2017. This is not the hallmark of a sustainable business model.

It might be a good business model if, after attracting drivers and riders, the platforms could retain them with fewer incentives. Unfortunately, Uber, Lyft and similar platforms don't appear to have a strong hold over either group. Drivers around the world are taking advantage of competitive services that give them a larger share of fares, and customers keep switching to new services with lower prices. Google's mapping app now offers riders direct price and convenience comparisons between ride-sharing platforms, which may dissolve any customer loyalty that the platforms have created.

Gett, Grab, Via, Ola, Didi, Sidecar, Zimride, BlaBlaCar, Carma, Ridejoy, Easy Taxi, Taxify, YandexTaxi and Careem, are all similar services. Over the past three years, Uber has lost its monopoly position in New York City, where its market share has fallen below 75%, with no sign of stabilization.

"investable"

We seek themes that are "investable," which includes two traits. First, there must be enough public companies that are beneficiaries of the theme with sufficient liquidity for us to invest at least 5% of our portfolios in the theme. Water as a scarce resource, nanotechnology and space travel may be fascinating trends that could have major impacts on the world, but they are not among our investment themes because we haven't found sufficient or appropriate investment candidates.

Second, we must believe that other investors will begin to discount the change or disruption into their valuation models within a reasonable time frame, which for us is three to five years. We don't have to expect the change or disruption to mature within that time frame, just that other investors will begin to expect it. The market is a discounting mechanism, so company share prices reflect investor expectations, not necessarily current reality. For example, the share price of NVIDIA, which manufactures a key component of self-driving cars, is now discounting widespread future adoption of autonomous vehicles, although only about 700 driverless cars are on roads today.

Having noted two trends, wi-fi and ride-sharing, that we think were not or are not investment themes, two trends that meet our criteria for investment themes are advances in molecular medicine and wealth migration in the U.S.

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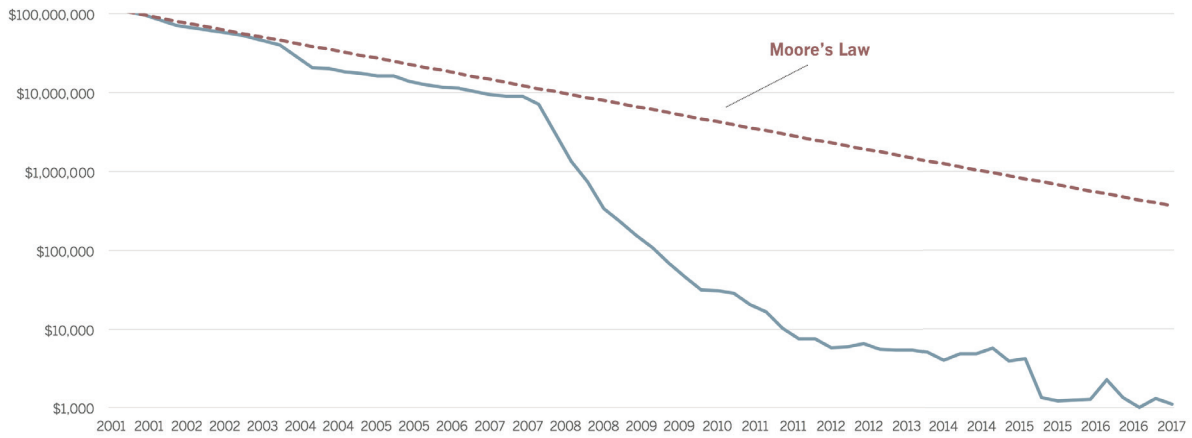
Molecular Medicine

Molecular medicine is the revolution in medical treatment created by the ability to detect tiny variations in the human genome that can cause disease. Molecular medicine is already providing both diagnostic tools and highly targeted treatments for certain cancers and other genetic diseases. Because almost all disease has some genetic component, the ability to pinpoint specific genetic mutations that can lead to disease and potentially alter or prevent the mutation's impact, will revolutionize healthcare. Millions of people with devastating diseases will be cured as a direct result of the breakthroughs made possible by the sequencing of the human genome. Yet all of this is relatively new. The first sequencing of a human genome was completed in 2003. It took 13 years and cost about $3 billion. Today, complete human genomes are sequenced in little more than an hour for less than $1,000. The chart below shows the extraordinary decline in sequencing cost. If the decline merely followed Moore's Law, which posited a 50% decline every two years for semiconductor technology, the cost of sequencing a genome would be 360 times higher than it is today.

COST TO FULLY SEQUENCE A HUMAN GENOME



Source: iamB Consulting, National Institutes of Health

The modest profitability of wi-fi equipment makers, despite soaring demand for routers, might lead one to conclude that investments in sequencing technology would also be a poor investment. Not so. Genetic sequencing is extremely complicated. Few companies can make this technology, and the number of competitors has actually declined as the market has grown. We estimate that Illumina, the market leader, now produces nine out of 10 new sequencers sold—and its gross margins have been flat to up over the past five years, averaging near 70%. Demand accelerated, the dominant player gained market share, margins improved and the leader wasn't buying market share with discount pricing. To us, this is what a great long-term investment opportunity looks like.

We expect stronger demand growth for genomic sequencing and related technologies than many other observers. Our view is that the industry is at the beginning of a steep upward climb in demand driven by new applications for sequencing. Most analysts are focused on the number of research labs, existing machines and remaining capacity, to predict growth. We believe they are missing the bigger picture, which will include applications for agriculture, veterinary care, and other uses still on the horizon.How do we invest in this theme? The opportunity set is broader than sequencing equipment. "Big data" investments are particularly interesting. Each human genome contains three billion base pairs and requires 200 billion bytes of digital storage. Genomics was one of the first fields requiring big data storage and processing solutions.

Taking a holistic, thematic research approach can lead to investments that may not be apparent to sector specific analysts. Few analysts covering healthcare or even life science tools were thinking about the investment opportunities in big data, and few semiconductor analysts were focused on the massive amount of data produced by genomics.

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Our molecular medicine theme has also broadened to include investments related to CRISPR, a genomic-editing process, and CAR-T, a form of cellular immunotherapy, both of which may disrupt traditional pharmaceutical companies.

U.S. Wealth Migration

Investment themes aren't always the result of technological breakthroughs. Another current theme in our portfolios is the massive U.S. wealth migration toward urban areas, which reflects new lifestyle preferences, influenced by social changes, secular changes in the economy, and improved urban planning.

Why does this matter to us as investors? Each year U.S. consumers spend $13 trillion dollars, so understanding shifts in spending is crucial. People in cities spend money differently than people in suburban or rural areas. Urban dwellers spend less on transportation, and more on cosmetics, restaurants and travel. Also, denser neighborhoods attract companies and services, such as GrubHub/Seamless, Instacart, Task Rabbit and Via, that wouldn't be profitable in less dense neighborhoods. The combination of convenience and choice that such companies provide reinforces the allure and advantages of urban living. There's a virtuous loop of sorts at work. For more on this theme, see our white paper, "Investing in Disruptive Change: The Great U.S. Wealth Migration."

Portfolio Construction

It's always possible to miss a crucial flaw in what seems like an exciting theme or get the timing wrong. This leads to considerations of risk management and portfolio construction, which is underscored by some recent research. In early 2017, an economist named Henrik Bessembinder published research showing that since 1926, four out of seven common stocks in a database of listed U.S. stocks had lifetime buy-and-hold returns lower than the return of one-month Treasuries. He also found that when market returns are stated in terms of lifetime dollar wealth creation, the best-performing 4% of listed companies account for the net gain of the entire U.S. stock market since 1926. All the other stocks collectively matched Treasury returns. Bessembinder concluded that these results "help to explain why poorly-diversified active strategies most often underperform market averages."

Some people have seized on Bessembinder's research as another reason to give up on active management in favor of passive. That doesn't make sense to us. Passive investing requires owning all stocks in the market index all the time. If the future is like the past, passive investors would dedicate virtually all their equity capital to obtain a T-bill like return, to get the upside from the tiny sliver of stocks that do well.

Instead, we conclude that active equity managers need to have a strong basis for selecting stocks with exceptional return potential and to diversify sufficiently to mitigate the impact of being wrong about a theme or an individual stock. We believe that thematic investing informs good stock selection and provides diversification.

The strong basis for stock selection comes from whittling down the thousands of public securities around the world to a manageable group of companies identified through our thematic research. This initial screening process is perhaps the most important part of investing.

Many firms use a quantitative screen, such as low price-to-earnings, or strong return on investment. Most, such as emerging markets growth managers, focus on geography and style. Our investments are largely defined by our themes. We invest almost exclusively in stocks that we think are likely to benefit from disruptive changes, because that's where we think the risk/reward tradeoff is in our favor.

We don't need to get everything right to be successful. If the places where we spend the majority our time and energy are even slightly more likely to provide fruitful investments than other areas, our odds of delivering strong performance go up meaningfully. Screening out companies whose business appear likely to be disrupted by new developments also improves our odds of success.

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Some thematic ETFs and mutual funds invest in just one theme. But there are often only a handful of companies that have enough exposure to any theme to impact performance significantly. As a result, most single-theme portfolios either have a very small number of holdings, so they lack diversification, or they include every company tangentially related to a theme and, as a result, bear other unintended risks.

Our portfolios, by contrast, typically have about 40 stocks and five to seven themes. Some stocks represent more than one theme; these tend to be our largest positions. We rarely invest more than 25% of the portfolio in any one theme, and we carefully size our positions in each theme, taking into account industry, geographic and factor exposures. Some of our themes, such as molecular medicine, are composed mostly of stocks in classic growth sectors, such as technology and healthcare. Others, like supply chain automation, are more heavily weighted towards value stocks in the industrials and real estate sectors. Our U.S. wealth migration theme is tilted toward consumer discretionary stocks.

Large-caps, small-caps, growth, value and multiple countries are represented both in our opportunity set and in our portfolios. Typically, the largest systematic risk in our portfolios is a skew to the U.S., because, a disproportionate share of innovation and disruptive technology takes place in the U.S. When we put it together, we get a relatively concentrated yet intentionally diversified global portfolio with high active share that generates alpha primarily from stock selection. We're proud of the results.

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