Global Intelligence
Our 2H 2019 outlook

- Macroeconomic update
- Infrastructure investing
- ESG investing
- Global fixed income
- Emerging markets
- Liability-driven investing

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Market muddle

Hope and despair continue to struggle for dominance this year. Geopolitical shocks and disappointing macro data are followed by the promise of central bank intervention and improved relations around the world, with investors left wondering where it’s all headed. Our Chief Economist and Head of Macroeconomic Strategy Frances Donald assesses the growing uncertainty and discusses the risks and opportunities in the back half of 2019. Dan Janis, our head of multi-sector fixed income, looks at where we are in the credit cycle and the implications for investors.

With broad-based growth in increasingly short supply around the world, we offer insight on two areas where our teams are finding investment potential. Recep Kendircioglu, our head of private markets infrastructure investing, explores the edges of this durable asset class at this late stage in the business cycle. Veteran Portfolio Managers Kathryn Langridge and Philip Ehrmann embark on a company-specific examination of growth opportunities in emerging markets.

We also look beyond this year’s market dynamics at two investment disciplines likely to have long-term, far-reaching impact. Emily Chew, our head of ESG research and integration, surveys the frontiers of climate change and sustainable investing, while Serge Lapierre, our global head of liability-driven investment research, makes the case for how LDI can help secure a more sustainable retirement income for millions of individual investors in workplace retirement plans.

We hope you enjoy this midyear update of Global Intelligence, and we welcome your feedback.
Global economic outlook: the fog of uncertainty has thickened

Global Intelligence | Macroeconomic update

Frances Donald
Chief Economist and
Head of Macroeconomic Strategy

Key takeaways

• The escalation of the U.S.-China trade war has led to a growing concern that we’re much closer to the beginning of a protracted period of heightened trade tensions than previously thought. As prospects of a near-term resolution dim, market volatility will continue to feature prominently in the months ahead.

• The U.S. Federal Reserve’s (Fed’s) review of its monetary policy framework has significant implications for financial markets. Investors risk missing the forest for the trees by choosing to focus their attention solely on the timing of the Fed’s next interest-rate cut.

• While China’s most recent round of stimulus has managed to stabilize the Chinese economy, it’s unlikely to translate into a tailwind for the global economy.
### The asset allocator’s view

#### Our asset allocation team's 6–12 month views on various asset classes

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**Source:** Asset allocation's macro strategy team, Manulife Investment Management, June 6, 2019. Projections or other forward-looking statements regarding future events, targets, management discipline, or other expectations are only current as of the date indicated. There is no assurance that such events will occur, and if they were to occur, the result may be significantly different than that shown here. Individual portfolio management teams may have different views and opinions that are subject to change without notice.
Generating economic forecasts is never an easy task. Models can help us most of the way there, but data can suddenly and unpredictably become distorted by a whole host of issues, from weather to labor strikes. Reliable correlations that have existed for decades break down, geopolitical events can spark sharp moves on the commodity front, and central banks can change their monetary policy decision-making functions in unpredictable ways. In a way, the forecaster’s job has become even more difficult in 2019, as new and unprecedented developments have created an elevated level of uncertainty that complicates the global economic outlook further.

In our view, there are three evolving themes that will shape the second half of 2019, with uncertainty being a common denominator. The interrelated nature of these themes means that developments in one area can lead to a reaction in the other, making the task of formulating a clear narrative even more arduous.

### Rising global trade tensions

The market’s heavy focus on rising trade tension is justified. In our view, the combined impact of tariffs that have already been implemented and those that could yet come has the potential to significantly alter the outlook for the global economy and the financial markets over the next 12 months. The combined impact will also likely have a considerable effect on global central banks, specifically their approach to monetary policies in the foreseeable future. The issue at hand is highly complex—we identified at least four trade-related developments in May that carried separate and important messages to the markets. We believe each of them should be recognized as an individual economic shock with its own set of outcomes and required solutions.

1. On May 10, Washington unexpectedly increased tariffs on US$200 billion worth of Chinese imports...
into the United States from 10% to 25%. The decision is problematic for markets in three respects. Most economic models that we’ve seen suggest the latest set of tariffs could shave an additional 0.1 percentage point (ppt) off U.S. growth, meaning the overall drag on U.S. GDP could hit 0.3ppt as a result of tariff-related decisions since March 2018. This might appear mild from a macroeconomic perspective, but it nonetheless remains relevant from a corporate perspective. It’s also highly likely that U.S. consumers will end up bearing the lion’s share of the higher import costs. While it isn’t unreasonable to assume that most companies can absorb a 10% hike in costs, a 25% jump could seriously impair profit margins. Crucially, the latest developments have shifted the consensus narrative from trade tensions are de-escalating to a growing recognition that we’re much closer to the beginning of a protracted period of heightened trade tensions than its conclusion—no wonder investors are jittery.

The U.S. president also noted that the process has begun to impose a 25% tariff on the remaining US$325 billion worth of Chinese imports that are currently untaxed. While most economic models suggest the United States is likely to emerge as the economy that will be least hurt by such a development relative to China and Europe, the negative impact to U.S. growth in 2020 is still likely to be around 1% (i.e., far from insignificant). U.S. consumers are likely to be the worst affected in this scenario since consumer goods make up a significant portion of Chinese imports that have so far been spared from tariffs. Given that consumer spending remains the main engine of economic growth in the country, higher prices on electronics, apparel, and footwear could create a much larger confidence shock than we’ve witnessed so far. In other words, the economic impact of a further escalation in trade tensions is nonlinear and could be bigger than expected.

3 On May 30, the U.S. administration announced that a 5% tariff would be applied to all Mexican imports beginning June 10, and that the tariff would gradually rise to 25% by October “if Mexico still has not taken action to dramatically reduce or eliminate the number of illegal aliens crossing its territory into the United States.”

U.S. inflation has consistently fallen below the Fed’s 2% target in the past few years

Source: Thomson Reuters Datastream, Manulife Investment Management, as of April 15, 2019.
States. By June 7, however, the U.S. administration reversed its position and announced tariffs would not be applied after both sides managed to reach an agreement. In our view, what transpired during this period signaled that the U.S. administration isn’t singularly focused on using the threat of tariffs as a negotiation tool with China. It also added to general trade policy uncertainty and may create some short-term distortions in U.S. business confidence and trade data.

Finally, the U.S. administration’s decision to cite national security risks as a way to target key Chinese companies suggests that the issue at heart goes beyond trade deficits; as a result, the dispute is unlikely to be resolved in the near term. In particular, we believe intellectual property rights will remain in focus for the next few years, regardless of the outcome of next year’s presidential election.

A potential evolution in the Fed’s inflation targeting framework

Markets are currently expecting the Fed to cut interest rates almost three times in the next 18 months, with the first cut arriving in September. Our view isn’t as aggressive: We expect the Fed to cut interest rates twice, starting in the fourth quarter, in response to a deteriorating economic outlook. Should trade tensions escalate further and the economic consequences of this uncertainty manifest themselves in weaker data over the summer, the probability of earlier rate cuts and/or more than two rate cuts will rise.

Markets will no doubt obsess about when the Fed will cut rates, but I think that risks missing a more important development that’s currently taking place and could have important longer-term implications for investors. Recent communications from the Fed suggest it might be shifting its monetary policy framework. Having consistently missed its inflation target, the Fed has expressed concerns about the structural weakness in price pressures and appears to be increasingly focused on allowing a prolonged and persistent inflationary overshoot that will bring average inflation higher and closer to its 2% mandate.

Fed Vice Chair Richard Clarida noted that any shift resulting from the Fed’s review of its monetary policy framework is more likely to be an “evolution” as opposed to a “revolution.” We don’t expect the Fed to announce a radical or formalized shift in its framework this year. However, if the Fed were to evolve—even informally—toward an “average” inflation framework, it would represent a significant and structural dovish pivot on its part, signaling its intention to stoke inflationary pressures more aggressively than at any time in the past 10 years. Note that this would imply that an overheating economy is no longer by itself a sufficient reason for the Fed to hike rates if inflation is trending below 2%. More important, if the Fed were indeed successful at nudging inflation expectations higher, we could expect the U.S. yield curve to steepen, as the front end will likely remain anchored as the longer end rises. For now, however, we’ll wait for the outcome of the Fed’s policy review.

China’s stimulus is different and more complicated

The various stimulus measures that China introduced in the last three quarters are starting to produce an observable stabilizing effect on its economy. Theoretically, this should be good news for all—in the past, Chinese stimulus has lifted Chinese demand for industrial goods, which had in turn supported global trade activity, giving the global economy a boost, particularly emerging economies. This time, however, is different: There are a few key reasons why this wave of Chinese stimulus may be less effective at lifting all boats and why the China-influenced outlook is murkier than usual.
Over the past year, China's fiscal stimulus has been predominantly focused on boosting domestic consumption; for instance, authorities announced the country's largest-ever personal income-tax cut, which has boosted middle-class incomes. This is in stark contrast to previous rounds of stimulus that focused on the property sector—the most commodity-intensive sector—and infrastructure projects, which created demand for intermediary goods, commodities, and foreign products.

Elevated inventory levels

Economic data suggests that individual Asian economies are suffering from issues such as elevated inventories, particularly in South Korea and Taiwan, which wasn't the case in 2015/2016. This implies that a potentially longer lead time could be necessary for real economic growth in Asia to take place after trade channels have been reawakened.

Reversing production cuts and keeping a lid on commodity prices

China hasn't engaged in production/capacity cuts that, in the past, had lifted commodity prices. Production cuts in 2015/2016 led to higher capacity utilization rates that pushed prices higher, boosting profits in the sector. This time around, however, the opposite occurred—some production cuts were reversed, keeping a lid on commodity prices and, by extension, any positive impact on emerging market (EM) economies that would typically benefit from the exercise.

Critically, while investors are likely to train their focus on the Fed's next move, we believe the next big policy shift with global consequences could come from China—in the form of additional easing measures.

The fog of uncertainty has no doubt thickened, making it even more difficult to paint a clear picture of the future. As economists, we're armed with models and data gleaned from past experiences, and we have an intimate understanding of the cyclical nature of economic growth. From an investment perspective, the somewhat murky outlook may call for additional vigilance in the near term, but as with most cycles, this too shall pass; at some point, the fog will lift, and the path ahead will become clear again.

Infrastructure investing in the digital age

Recep C. Kendircioglu, CFA
Head of Infrastructure Investments
Portfolio Manager

Key takeaways

- As the market cycle matures, we’re seeing private capital being deployed in uncommon ways, some of which we view as investments on infrastructure’s cutting edge, and others we see as lacking characteristics that discerning investors find desirable in the asset class.

- Physical characteristics of an asset represent only half the story for infrastructure investors; terms and the risk/return profile of a deal are every bit as crucial in determining the merits of an opportunity.

- As infrastructure investing continues to evolve, it makes sense to remain alert and open to new opportunities, emphasizing the importance of strong underwriting, which can help investors avoid overpriced trophy assets and hidden risks that plague more complicated projects.
Exploring the evolution and edges of an asset class as the cycle matures

As old as civilization itself, infrastructure has been the backbone of societies around the world. In 20 B.C., Augustus assumed the title of curator viarum, or superintendent of roads, and constructed a column listing “distances to all the major cities from the imperial capital,” establishing Rome’s Forum as ground zero for the empire’s vast system of roads, bridges, and ports.¹

While networks of prominent physical structures remain as integral today as in earlier eras, more recent interpretations of infrastructure include less visible networks every bit as vital to modern life. Here we explore infrastructure as an asset class, highlight newer areas of opportunity around its edges, and share our outlook on a selection of its subsectors.

Infrastructure investors view current valuations as a challenge

What do you see as the biggest challenge for return generation in 2019?

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<tr>
<th>Challenge</th>
<th>Percentage</th>
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<tr>
<td>Asset valuations</td>
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<tr>
<td>Competition for assets</td>
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<tr>
<td>Rising interest rates</td>
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<td>Geopolitical landscape</td>
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<td>Regulation</td>
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<td>Deal flow</td>
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<td>Stock market volatility</td>
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<td>Commodity market volatility</td>
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<td>Exit environment</td>
<td>11%</td>
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<td>Currency market volatility</td>
<td>9%</td>
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Source: Preqin survey of over 400 institutional investors in November 2018.

Infrastructure blends benefits of different asset classes

A hybrid asset class, infrastructure typically blends some of the most beneficial characteristics from a range of other investment categories, including fixed income, real estate, and private equity. Specifically, infrastructure provides investors with an opportunity to pursue:

- Yield
- Inflation protection
- An illiquidity premium

While many asset classes, including stocks and bonds, are sensitive to changes in the business cycle, the infrastructure segment tends to demonstrate a greater degree of insulation against macro risks, such as economic recession or unexpected inflation. Such exposure tends to bolster portfolio resilience to market downturns, a particularly attractive feature in today’s late-cycle environment.

Infrastructure enterprises engaged in providing essential public goods and services—through electric, gas, and water networks; power-generation plants; highways,
railroads, and ports; and telecommunications towers—may benefit from limited competition and stable demand from consumers. Investments in long-lived infrastructure assets can help generate steady cash flows, supported by either long-term contracts or regulated inflation-adjusted rates of return.

**Resist the temptation to overpay for trophy assets**

Over 60% of alternative asset holders believe we’re at the peak of the equity market cycle, and valuations across public and private markets have climbed in recent years. When infrastructure investors were asked about the biggest challenges to return generation prospects in 2019, asset valuations rose to the top of the list.

Especially in a late-cycle environment, disciplined underwriting and price discipline are key. Infrastructure’s favorable portfolio characteristics can get lost in deals priced to premiums and can leave investors more exposed to financial and operational leverage. Our analysis points to an alarming prevalence of poorly structured deals relying on overly optimistic assumptions that are unlikely to perform as investors expect. For example, certain toll roads encountered financial trouble after experiencing sharp drops in traffic during the 2007/2008 global financial crisis, ultimately demonstrating far more sensitivity to economic downturn than investors had expected. Best practices in underwriting call for thoughtful consideration of a prospective base case, a downside case, and an upside case, taking into account implications of a wide range of potential developments at both the macro and asset-specific levels. Prospective investors often focus on the upside case, but before proceeding, they need to be equally prepared for the consequences of the base case—and the downside case—no matter how prestigious the asset.

**Investment opportunities on the cutting edge: data infrastructure**

As the asset class continues to evolve, technological innovation, intelligent urbanization, and the rise of the network economy are reshaping opportunities for institutional investors. Current priorities at the Federal Communications Commission include “closing the digital divide in rural America and advancing United States leadership in 5G, the next generation in wireless connectivity.”

Taxpayer and government resources are unlikely to meet the capital requirements to modernize existing digital infrastructure and develop needed new projects without growing participation from private enterprise.

Processing, storing, and transmitting data are playing more prominent roles in the infrastructure sector as society’s digital transformation expands the range of services we now regard as essential to our daily lives. Data infrastructure includes traditional cell towers, fiber optics, distributed antenna systems, and small cells for 5G technologies that will increase network speed and capacity, paving the way for artificial intelligence, machine learning, automated vehicles, and the Internet of Things.

Residing at the intersection of infrastructure and real estate, data centers represent a key expanding area. Companies continue to outsource information technology needs at a rapid clip, leading to extensive third-party ownership of infrastructure assets. Data storage needs are large, and the processing needs to take place close to the end consumer. We’re seeing growth of large-scale cloud deployments and numerous edge locations, and the demand for data centers is increasing.

Meanwhile, the entry of new financial investors in fiber optics is increasing valuations, so it’s critical to remain disciplined in finding the right companies at the right price. Across all areas of the segment, we believe it’s important to seek value in scalable platforms with...
attractive geographic locations, low churn rates, and credible counterparties, which helps manage risks in data infrastructure investing.

**Beware of overly complex deals and their underappreciated risks**

While paying too much for high-quality assets represents one way infrastructure investors can go wrong, taking on projects with long, complicated paths marked by multiple contingencies along the way represents another. In the race to gain exposure to promising ventures, prospective owners often make erroneous assumptions that cost them dearly.

For example, development risk—including entitlement, permitting, and escalating construction costs—can be difficult to quantify. Mispricing the probability of something going wrong, or the magnitude of losses if it does, may raise an investor’s overall risk profile beyond the intended level.

When wind farms were first developed, for example, initial energy production forecasts exceeded realized output by a substantial margin. Now established, renewable energy can pose new challenges. Fiercely competitive and quickly changing, renewable energy represents great promise with great expectations, which may already be priced into the market. If realized growth rates don’t meet those now envisioned by the consensus, renewable energy investors could be exposed to future valuation risks. Technological advancements and declining costs have solidified wind and solar power as economically viable alternatives to fossil fuels, but infrastructure investors need to be selective. Falling costs, while good for consumers, squeeze profits for producers, heightening the importance of each prospective assumption and leaving less room for forecasting errors.

“Data infrastructure includes traditional cell towers, fiber optics, distributed antenna systems, and small cells for 5G technologies that will increase network speed and capacity, paving the way for artificial intelligence, machine learning, automated vehicles, and the Internet of Things.”

**Crematories: infrastructure of the afterlife?**

Far from the cutting edge of technological innovation lies a highly unusual yet equally intriguing investment idea almost beyond infrastructure’s periphery: the funeral industry, one of the least sensitive to the economic cycle. However constant death may be, the way we deal with it has been changing in recent years. In fact, being buried isn’t as popular as it was only a few years ago, and cremation rates are on the rise. There were 31,521 burials in New York City in 2016, down nearly 14% from 2008; by contrast, there were 19,883 cremations there in 2016, an increase of over 40% since 2008. The premium required to occupy more space in death, as in life, is part of what’s driving the shift away from the cemetery and toward the crematory. Storing cremated remains, or cremains, calls for only a tiny fraction of the space occupied by a coffin. One cemetery in Queens is quickly running out of space for burials and has built its first mausoleum containing 168 crypts and 3,400 niches over an area that would have held only a few hundred graves—a move that “will extend the life of the cemetery.”

Why can a crematory be considered infrastructure? An unceasing part of life, dealing with the logistics of death is an essential service, and doing so improperly would have public health implications. While all crematories are regulated and must be licensed, each country and state has its own rules and barriers to entry governing cremation business practices. Finally, the need for cremation services remains relatively inelastic, as modest changes in prices don’t much alter the quantity demanded.
Moreover, long-term purchasing power agreements (PPAs) with traditional utilities are on the decline as less favorable corporate PPAs become the norm. From an infrastructure investor’s perspective, this shift introduces new risks. Corporate PPAs are more likely to call for common delivery points. If a renewable energy project holds assets that don’t reside near a preferred common delivery point, the project owner may be assuming risks of congestion along transmission lines connecting the site of generation with the site of delivery. Known as location basis risk, we’ve observed unprepared renewable energy investors encountering such challenges, particularly in Texas.

While the need for sustainability lays a long runway for renewable power generation, the segment’s great momentum has created a crowded and hypercompetitive market. Transactions involve multiple, continually shifting factors that require thoughtful review. We believe it’s wise to begin by casting a wide net and to choose only high-quality projects with best-in-class operating partners known for rigorous cost management practices. Geography also matters immensely: Investors should aim for projects residing near end customers or common delivery points, which decreases location basis risks that can weigh down a project’s profitability with unanticipated congestion costs.

“Data centers and digital infrastructure, parking lots, land registry software services, nursing homes, and even crematories can all be fair game for infrastructure investors ...

Evolving physical characteristics and enduring investment characteristics

As the asset class continues to change with the world, we believe legitimate opportunities exist on infrastructure’s cutting edge. Data centers and digital infrastructure, parking lots, land registry software services, nursing homes, and even crematories can all be fair game for infrastructure investors who take a rigorous approach to selecting and underwriting transactions. The tactical opportunity set of assets may evolve over time, but when infrastructure investing is done well, the favorable combination of predictable yield, inflation protection, and an illiquidity premium endures.

While the asset class faces challenges, including cyclical valuation risk and limited availability of private investment opportunities, those challenges are in many ways outweighed by emerging roles for alert infrastructure investors in areas involving technological innovation, intelligent urbanization, and sustainability solutions. Renewable energy and the systemic shift toward greater data needs by institutional and individual consumers, for example, present promising prospects for infrastructure investors with robust underwriting practices.

Sustainable investing in a time of climate change

Global Intelligence | ESG investing

Key takeaways

- As the world sees climate risks more clearly than ever before, investors focused on sustainability are leading global efforts to define new paths for shared action.

- Financial modeling is playing catch-up to scientific documentation of the likely impact of climate change, with crucial headway being made in the area of climate value at risk analysis under different climate scenarios.

- Company engagement is an art that should be driven by science: Asset managers who exercise active ownership with investee companies by building partnerships based on shared interests are in a unique position to translate climate analysis into quantifiable portfolio resilience.
As of mid-2019, three years after the Paris Agreement was adopted, and not quite two years since this landmark effort to combat climate change was ratified by a majority of the world’s governments, the global community is still in the early stages of determining how to best share the burden of responsibility for reducing the greenhouse gas (GHG) emissions that are the primary driver of climate change.

The attention of governments, companies, and investors is centering on the global temperature targets that scientists have identified as must-win battles for humanity and the planet. Under the Paris Agreement, this entails limiting the global average temperature increase to less than 2.0°C, or—significantly better if much more difficult to achieve—1.5°C above preindustrial levels. We also know much about the likely environmental, social, and economic impacts of climate change at +1.5°C, +2.0°C, and +3.0°C (or higher) temperature scenarios, which range from bad to dystopian. But as communities, corporate entities, investors, and governments, we have yet to clearly map how we can or should share responsibility for mitigating the effects of our rapidly worsening climate catastrophe.

Recent initiatives that Manulife Investment Management has been involved with may give hope that the investment industry is increasingly ready to play its necessary part. A mounting body of climate risk evidence is redefining the concept of investment risk

Asset managers continue to weigh how this gradually unfolding global disaster might affect their responsibility to generate returns for their clients. It’s commonly accepted in the investment industry that the fiduciary duty owed to clients, whether institutional or retail, broadly entails asset managers acting in their clients’ best interests, abiding by the terms of their investment mandate, and suitably calibrating exposures to different forms of asset and investment risk in the pursuit of attractive risk-adjusted returns. The concept of fiduciary duty hasn’t yet, under most legal regimes, formally incorporated climate risk management. However, the concept is set to be tested by legislators and courts, as there’s now arguably sufficient evidence available to support the idea that forward-looking climate risk analysis is an integral part of understanding the true scope of asset and investment risk.

Consider some of the well-known headline risks concerning the impacts of climate change. In October 2018, the U.S. federal government provided a fairly provocative outline of its domestic predicament:

• “Climate change creates new risks and exacerbates existing vulnerabilities in communities across the United States, presenting growing challenges to human health and safety, quality of life, and the rate of economic growth.
• Without substantial and sustained global mitigation and regional adaptation efforts, climate change is expected to cause growing losses to American infrastructure and property and impede the rate of economic growth over this century.
• Climate change affects the natural, built, and social systems we rely on individually and through their connections to one another. These interconnected systems are increasingly vulnerable to cascading impacts that are often difficult to predict, threatening essential services within and beyond the Nation’s borders.”

Climate risks, which are macroeconomic in scope but will be intensely experienced at the local, microeconomic level, are material considerations that are projected to worsen over time based on our current trajectory. For institutional and retail investors alike, these risks are therefore urgent and pervasive.
Consider the distributed nature of economic exposure in a diversified investment portfolio: Where do its climate risks cluster or appear less material, and can these risks be mitigated without changing the nature of the portfolio’s asset allocation? Or think about the long-term framework of the typical asset-liability management plan: If exposure to climate risks worsens over time, how does that intensification change the basic understanding of any mismatch of assets and liabilities? Put more simply, is there any security in saving and investing for retirement when the world we know today may in a few decades become much less safe, prosperous, and habitable? The closer we look, the more we find that questions of climate risk are relevant to investment vehicles and strategies used by investors at all levels of size and sophistication.

**The distribution of climate risk varies**

What adds complexity to applying climate analysis to global investing is that there’s no one-size-fits-all approach. Climate analysis needs to be responsive not only to different scenarios of climate change, but also to the variable effects of those changes on geographies, sectors, and individual companies.

In a research report we co-published with two organizations based in Asia, we found that long-term risks to investors with exposure to Asia are particularly acute due to the rapidly compounding effects of climate change on key resources such as water. With vast cities in 16 Asian countries and territories clustered along 10 key rivers—all of which are fed by the seasonally melting snowpack of the Hindu Kush Himalayan mountains—rising global temperatures are literally drying up the single most relied on water source in the world. And even as this water capacity is disappearing as the atmosphere heats up, rising urbanization rates in Asian cities are putting ever greater pressure on the same shrinking water source, precipitating hard choices about agriculture, industry, and regulation.

We’ve also documented how climate risks will multiply sector-specific risks, such as waste management and storage in some areas of the global mining sector. As the frequency and intensity of rainfall rise in locations such as the state of Minas Gerais in Brazil, that spells trouble for both active and inactive tailings dams—fortified storage pools of toxic mining waste—which increasingly run the risk of catastrophic failure due to accelerated erosion.

As we know from recent disasters in this region, the loss of human life, property, and agricultural capacity—not to mention civil liabilities that arise from these events—can substantively affect company valuations. It’s hard enough for a mining company to run a profitable business given declining ore quality and strengthening environmental regulation; when you layer on the multiplicative uncertainties of climate change, the total risk mosaic may seem to threaten the sustainability of specific companies’ growth.

**Measuring the risks—and opportunities—of climate change**

While the complexity and interconnectedness of climate change pose a unique challenge to asset managers, standards and best practices for taking action are beginning to take shape. One of the goals of our ESG integration efforts is to manage climate risks in investment processes in order to improve the climate resiliency of portfolios. To sharpen our methods and get ahead of this critical investment issue, we recently participated in a year-long pilot program convened by the United Nations Environment Programme Finance Initiative (UNEP FI). The pilot involved 20 investment institutions from around the world and focused on developing guidance for implementing the Financial Stability Board’s Task Force on Climate-Related Financial Disclosures recommendations.

The group’s objective was to operationalize a methodology of climate risk assessment developed in collaboration with Carbon Delta, a data analytics firm that quantifies investment risks for more than 30,000 companies under numerous climate change scenarios by modeling vast...
amounts of data, including weather projections and operational locations, among others. The output is used to identify and rank companies based on exposure to climate-related risks or adaptive capacity to mitigate that risk. The pilot demonstrates, for the first time ever in a coordinated manner, how a group of institutional asset managers can effectively collaborate to create a new bottom-up method of fundamental analysis on an ESG theme of critical importance.

**From climate risk measurement to climate risk management**

Using Carbon Delta’s Climate Value-at-Risk (CVaR) model, our aim for Manulife Investment Management was to understand how climate risks can be assessed at the level of individual securities and at the aggregate portfolio level to inform portfolio construction and how distinct geographical exposures can be identified and managed through asset allocation.

In comparing a portfolio of Canadian equities with a portfolio of Asian equities, we obtained several notable results. First, we found that the Asian equity portfolio is subject to greater relative transition (i.e., policy) risk under all three climate scenarios—+1.5°C, +2.0°C, and +3.0°C—as well as a greater potential opportunity from technological innovation. Notably for both portfolios, we found that the total cost for companies to transition to a lower carbon future (1.5°C) increased by several multiples of what it would cost for a less restrictive, business-as-usual 3.0°C scenario. Similarly, the company-level business opportunities of climate change—such as clean and alternative energy, greener technologies, and climate adaptation innovations—also become larger in a nonlinear fashion as economies move in the direction of climate resilience.

However, while we found that tech opportunities between these two geographically focused portfolios can vary substantially, it appeared unlikely that the transition risk for either would be canceled out by its corresponding technological opportunity. This asymmetry is important to bear in mind for climate-conscious investors: Even for a diversified portfolio, we believe intention and focus in both asset allocation and security selection are required for the technological opportunity of climate change to outweigh and potentially hedge the negative impact of climate transition and physical hazard risks. Armed with issue- and portfolio-specific VaR modeling, asset managers are in a better position to shift exposures and

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**Climate risk and opportunity increase with more aggressive goals to limit rising temperatures**

Unweighted aggregate VaR among holdings for two portfolios

<table>
<thead>
<tr>
<th>Canadian equity portfolio</th>
<th></th>
<th>Asian equity portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>VaR from transition risk</td>
<td>VaR from tech opportunity</td>
<td>Change in average global temperatures above pre-industrial levels</td>
</tr>
<tr>
<td>-12.65%</td>
<td>0.77%</td>
<td>3.0°C</td>
</tr>
<tr>
<td>-48.78%</td>
<td>2.87%</td>
<td>2.0°C</td>
</tr>
<tr>
<td>-99.77%</td>
<td>6.91%</td>
<td>1.5°C</td>
</tr>
</tbody>
</table>

Source: Manulife Investment Management, Carbon Delta, August 2018. Value at risk (VaR) is a measure of the risk of loss for investments. It estimates how much a set of investments might lose (or gain, if expressed as a positive percentage), given normal market conditions, and based on a terminal period of approximately 30 years with a declining carbon avoidance cost that eventually reaches zero.
asset allocation models in favor of harnessing climate opportunity rather than purely mitigating climate risk.

**Engaging on climate change: redefining a shared responsibility**

Being able to apply CVaR analysis to identify company-specific risk and opportunity in turn opens up promising avenues for active engagement with company management—both to improve disclosure transparency and to discuss strategies for improving the actual mitigation of climate risks.

There are two common misconceptions about engagement that are worth addressing in the context of this discussion. The first is that asset managers go into climate-related conversations with companies with an adversarial or politically activist agenda, which aims to put high carbon companies out of business. Aside from the fact that precipitating company failure would contradict the aims of the vast majority of investors, the purpose of engagement is rather to exert influence on corporate strategy to ensure alignment with investor interests. That means engagement is about partnership—about asset managers building trust and credibility with investee companies and emphasizing how climate risk mitigation, for example, is a shared responsibility that’s in everyone’s best interests.

Engagement as a partnership is an iterative process; like any relationship, it involves care and attention. Company management is less inclined to hear an asset manager’s concerns if the latter betrays unfamiliarity with their business, industry, or the particular challenges a company may have to grapple with in connection with climate risk mitigation. Of course, where an asset manager can’t know, for example, the physical location of plants, factories, facilities, or related logistics because these elements aren’t effectively disclosed, then that may become a useful topic for enhanced disclosure, which in turn can support more effective planning and target setting.

The second misconception is that engagement is an ineffective channel of influence that merely sponsors asset managers’ greenwashing of their own response to climate change and sidesteps the call for divestment from high carbon-emitting companies raised by some quarters. This view can fundamentally misconstrue the nature of the investor-investee relationship, particularly in the context of share ownership, where active managers can and are forthrightly bringing climate into regular discussions held with companies in which they’re invested.

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**Manulife Investment Management—engagement by theme**

Frequency of topical inclusion in company discussions, 2018 (%)

<table>
<thead>
<tr>
<th>Topic</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHG emissions</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>Data security/privacy</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>ESG disclosure</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Board structure/practices</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Regulatory risk</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Market opportunities</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Climate change vulnerability</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Executive compensation</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Human capital development</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Supply chain related</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Human rights/community relations</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Disruptive industry force</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Energy</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bribery and corruption</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Land use</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Water usage</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pollution and waste</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Workplace safety</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Business ethics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Product quality/safety</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Further, if engagement as a tool is used legitimately and on the basis of shared interests, it can be a potentially powerful lever for supporting companies to transition to a lower carbon business model, and can counterbalance the pressure for corporate decision-making to pursue short-term profits at the cost of long-term sustainability. Our focus at Manulife Investment Management on long-term issues in our company engagements is reflected in the fact that we engaged with companies on climate change-related issues most frequently in 2018 (20% GHG emissions and 4% climate vulnerability among all issues engaged on), and this has continued in 2019 year to date (20% GHG emissions and 12% climate vulnerability).

New frontiers in collaborative engagement

Through collaborative ESG engagement with other investment institutions, our experience is that asset managers can amplify their global impact on the companies, industries, and markets in their collective orbit of influence. And for the companies engaged with, collaborative efforts reduce the noise of numerous points of view, helping focus on goal setting and making consensus part of the conversation from the start.

Among the various initiatives we’re a part of, Manulife Investment Management is a steering committee member of Climate Action 100+, a five-year initiative led by investors to engage systemically important GHG emitters and other companies across the global economy that have significant opportunities to drive the clean energy transition and help achieve the goals of the Paris Agreement.

This initiative is helping to shape a global approach to managing climate risks, calling on companies to improve governance on climate change, curb emissions through adopting targets, and strengthen climate-related financial disclosures. The response from certain key GHG emitters to these three specific requests has already been swift and significant, and includes major emissions-reduction commitments from Royal Dutch Shell and BP, and new commitments to align business strategy with the goals of the Paris Agreement by oil and gas major Equinor, global mining giant Glencore, and the world’s largest shipping company, Maersk. Climate Action 100+ is proving that collective action brings structure to difficult and urgent conversations and gives meaning to the Paris Agreement while also improving visibility of companies’ intrinsic valuations over time.

The imperative of sustainable investing

Climate risks are increasingly recognized as urgent and globally significant, with almost daily reports on how different facets of climate change are bringing worst-case scenarios for future generations into sharper view. As part of the interconnected ecosystem of stakeholders grappling with these risks, we’re committed to being nimble in our response to evolve and adapt in the way we do business.

We believe this requires rapid and extensive innovation—in the realms of analysis, portfolio management, and active ownership practices. We believe asset managers must act in the vanguard of collaborative efforts and do what they can to support companies to run their businesses in harmony with our natural ecosystems. In this way, sustainable investing is redefining our collective ability to make a positive contribution to society that transcends financial performance.

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1 Fourth National Climate Assessment, Volume II: Impacts, Risks, and Adaptation in the United States, U.S. Global Change Research Program, https://nca2018.globalchange.gov/, October 2018. 2 “Are Asia’s pension funds ready for climate change?” Manulife Investment Management, China Water Resource, Asia Investor Group on Climate Change, manulifeam.com, May 2019. 3 “Dam failure: addressing risk management challenges in the global mining sector,” manulifeam.com, April 25, 2019. 4 “Changing course: a comprehensive investor guide to scenario-based methods for climate risk assessment, in response to the TCFD,” unepfi.org, May 2019. 5 As noted in our case study, the Canadian portfolio invests primarily in large-cap Canadian equities, benchmarked against the S&P/TSX Index, while the Asian portfolio invests in equities with primary interest in China, benchmarked against an aggregated MSCI China/Hong Kong Index. The methodology used for scenario analysis is only focused on Scope 1 (direct) emissions and doesn’t consider the impact of climate change risks on Scope 2 and Scope 3 (indirect) emissions. 6 See, for example, “Corporate Climate Coups Averted,” Wall Street Journal editorial board, June 2, 2019. 7 See http://www.climateaction100.org/ for specific announcements.
Where we are in the credit cycle—and why we still have room to run

Key takeaways

- Volatility is back in many segments of the bond market, but there’s no reason to think we’re heading toward a recession in the near future.

- The risks to the corporate bond markets are mostly geopolitical in nature, rather than fundamental or macroeconomic.

- Although we believe there’s still time left in the current expansion, we think there are steps investors can take today to adopt a more cautious stance, including being selective about where on the yield curve to invest and derive their interest-rate exposure, diversifying their portfolios internationally, and being mindful of liquidity risks.
Over the past year, fixed-income investors have become increasingly concerned with trying to assess where we are in the credit cycle and exactly how much longer the macroeconomic tailwinds for bonds can last. Investors are right to pose those questions. It’s been a decade since the end of the last recession, the stock market has set multiple all-time highs in recent months, and consumer confidence is back to prerecession highs. Meanwhile, the U.S. Federal Reserve (Fed) has for three years been normalizing monetary policy, and the yield curve today is as flat as it’s been in years. It’s an environment in which investors are becoming more concerned about a less attractive global growth outlook and rising market volatility, but does the data actually suggest there’s trouble on the horizon?

**Understanding the anatomy of a typical credit cycle**

Before we try to pinpoint where we are in the credit cycle, it’s worth unpacking exactly what that term means. The credit cycle is typically divided into four phases:

1. **Expansion**—companies are growing and often issuing new debt
2. **Downturn**—companies experience deteriorating fundamentals and defaults increase
3. **Repair**—companies begin cutting costs and restructuring debt, if necessary
4. **Recovery**—companies are benefiting from improving economic conditions, but remain conservative in their use of capital

The length of each part of the cycle varies. For example, the last downturn, during the 2007/2008 global financial crisis, was short, steep, and severe; the recovery, by contrast, was long and gradual. With that in mind, we believe the U.S. corporate debt market is clearly still in the expansion phase. But the bigger and more significant questions are: How late in the expansion are we? And how much longer can it last?

**Credit cycles have distinct phases, but rarely adhere to a timetable**

- **Expansion**:
  - Rising levels of leverage
  - Increased M&A, LBO activity
  - Easy access to capital

- **Downturn**:
  - Peak leverage
  - Deteriorating earnings and fundamentals
  - Spike in defaults

- **Recovery**:
  - Rising free cash flow and margins
  - Falling leverage levels
  - Conservative use of capital

- **Repair**:
  - Restructuring activity
  - Increased equity issuance
  - Focus on cost cutting and cash flows

Source: Manulife Investment Management, as of May 31, 2019. For illustrative purposes only. M&A refers to merger and acquisition; LBO refers to leveraged buyout.
It’s an old adage that economic expansions don’t die of old age—and we don’t believe the current one is any exception. The unemployment rate in the United States is the lowest it’s been in half a century, top-line economic growth (as measured by GDP) has been solid and relatively steady, and corporate profits are generally quite strong. There are no truly systemic risks that threaten to cause the kind of global contagion we saw in 2007/2008. There are some very specific risks in the fixed-income market—securitized student loan debt, for example, or the ballooning size of the BBB-rated segment—but we don’t see a scenario that, in the short term, would lead to a significant downturn in the credit markets.

The risks to the markets are mostly political

The biggest risks to the current expansion—already among the longest on record—are primarily geopolitical, in our view. While the ongoing trade dispute between the United States and China has captured plenty of headlines, the tariffs themselves may not be the real threat. Estimates suggest the likely damage rising tariffs would inflict on economic activity in either country remains low. For the United States, total exports to China represent less than 1% of GDP; for China, if President Trump introduced tariffs on all U.S.-bound exports, the cost would be a 0.7% hit to its economy.¹

Most economists don’t expect a recession until 2020 at the soonest

Likelihood of the next recession, by calendar year (%)


High-yield spreads—often a leading indicator—remain tight by historical standards

Source: Federal Reserve Bank of St. Louis, as of May 31, 2019. The Intercontinental Exchange (ICE) Bank of America Merrill Lynch (BoA ML) U.S. High Yield Master II Index tracks the performance of globally issued, U.S. dollar-denominated high-yield bonds. It is not possible to invest directly in an index. Past performance does not guarantee future results.
That said, the economic saber-rattling has, in our view, limited upside for either party—particularly given that the real risk to the United States is tied up in investors’ perception of the trade situation. The stock market has been whipsawed in recent months as investors have tried to digest the latest stances coming out of Washington and Beijing, and a prolonged risk-off trade in equities could have a material effect on the real economy in the United States; it’s a risk that shouldn’t be discounted.

In Europe, Brexit remains an ongoing source of uncertainty and market turmoil. British Prime Minister Theresa May resigned on June 7 after multiple failed attempts to gain backing in Parliament for the Brexit agreement she negotiated with the European Union. The situation is far too fluid to predict how it might ultimately pan out, but it’s safe to say that the uncertainty will likely bring with it patches of volatility as investors digest the latest developments.

Why we believe there’s still runway left for the expansion

Despite the risks, there are a number of compelling reasons to believe we’ve got time left in the expansionary phase of this credit cycle; we think three factors in particular are worth highlighting.

1 Spreads and defaults are relatively low

As a general rule, by the time bond defaults materially increase, economic expansions are already over. The better leading indicator of the health of the corporate debt market is spreads, or the incremental yield investors demand for taking on credit risk. Since the beginning of 2000, the average spread in the high-yield market has been 584 basis points (bps) (100bps equals 1%); today, the spread in that market is just 378bps. Defaults, meanwhile, are also running below their long-term average, which is 3.3% over the past 20 years. Last year, just 1.9% of the market defaulted, and this year we’re on pace for an estimated default rate of an even lower 1.5%.

The Fed has become much more conservative in its outlook for rates

FOMC participants’ assessments of appropriate monetary policy (%)

Source: bloomberg.com, as of May 31, 2019. Each dot represents the level of short-term rates anticipated by a member of the Federal Open Market Committee (FOMC). The size of the dot represents the number of members with that view (i.e., larger dots indicate more members).
The takeaway here is that the risks investors perceive in the high-yield market—as reflected by spreads—remain quite low.

2 The Fed is done tightening
The Fed has become significantly more dovish in recent months, which has been welcome news to the markets. After three years of rate increases, the Fed seems to have hit the pause button. Its own projections of future rate levels (which are to be taken with a generous dose of salt) have come down materially over the past year; as of June, the consensus market view seemed to suggest two, if not more, rate cuts by the end of 2020. The outlook for short-term rates matters because it affects both companies’ and individuals’ access to capital; when money is cheap and access is relatively easy, firms and households are both more likely to borrow and reinvest. A more conservative trajectory for rates makes this trend more likely to continue. Absent a full-blown trade war that pushes the economy into recession, however, the risk is that the market is currently pricing in too many cuts in the short term.

3 Balance sheets are strong
Stable and relatively low borrowing costs are particularly relevant in the context of today’s strong corporate and consumer balance sheets. Corporations remain less leveraged today than they’ve been for most of the past decade; consumers, meanwhile, aggressively deleveraged in the wake of the Great Recession and have remained cautious about taking on new debt. The point here is twofold. First, there hasn’t been any evidence of excessive risk-taking in the financial system that could become a catalyst for the next recession. Second, mild increases in risk appetites from either corporations or consumers—or both—could actually help extend the current expansion. As so often is the case, moderation is the key.

“\textit{It’s an old adage that economic expansions don’t die of old age—and we don’t believe the current one is any exception.}”

Both consumers and corporations have strong balance sheets

- Financial conditions leverage subindex (left axis)
- Household debt service payments as a % of disposable income (right axis)

Source: Federal Reserve Bank of St. Louis, as of May 31, 2019. The Chicago Fed’s National Financial Conditions Index (NFCI) provides a comprehensive weekly update on U.S. financial conditions in money markets, debt and equity markets, and the traditional and shadow banking systems; the leverage subindex consists of debt and equity measures. A positive value for an individual subindex indicates that the corresponding aspect of financial conditions is tighter than on average, while negative values indicate the opposite. The household debt service ratio is the ratio of total required household debt payments to total disposable income.
Factors to consider in the second half of 2019

If we’re ultimately in the late innings of the current expansion, but don’t foresee a recession or significant downturn over the next 12 months, the question still remains: How might investors take a more cautious stance in their portfolios without retreating to the sidelines?

Be flexible with duration

While the short end of the yield curve may be fairly stable over the near term, it’s anybody’s guess where yields on longer-dated securities are headed next. Our belief is that there are more forces working to push yields higher in the United States than there are lower, but that trend may take a significant amount of time to fully manifest itself. The point here is that taking big bets on the direction of long-term rates—especially through exposure to the U.S. Treasury market, the prices of which are driven primarily by investors’ views on rates—may not be a prudent strategy in today’s environment. The source of a portfolio’s duration, or interest-rate exposure, matters quite a bit; we believe a more attractive way to attain it is through allocations to investment-grade corporate bonds and foreign government debt, especially in markets with higher yields and fewer forces likely to push rates higher.

Look overseas for opportunities to diversify

While the U.S. bond market may be in the late stages of the expansion, other markets are in much earlier phases. Brazil, Colombia, and Indonesia, for example, are markets that are all showing signs of strengthening fundamentals, stable inflation, and improving political climates. Emerging markets—especially those where governments aren’t reliant on foreign capital to fund domestic operations—generally offer higher yields than U.S. Treasuries and, in the case of debt issued in local currencies, a meaningful potential way to diversify away from U.S. dollar-denominated debt.

Be cognizant of liquidity risks

Liquidity is, too often, a characteristic investors don’t give a lot of thought to; we don’t tend to miss it until it’s gone. But in an environment where many investors are starting to take notice of where the exits are, having a strategy for managing liquidity is vital. Beyond general precautions around issue size and setting a cap on the percentage of assets invested in any one name, we’d suggest investors take a second look at their sector allocations. Frontier emerging markets and lower-quality high-yield corporate credits, for example, are areas of the market that could experience a lack of liquidity and higher price volatility as expectations for global growth and subsequent central bank policies change over time.

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Global Intelligence | Emerging markets

Understanding the growth opportunity for today’s top emerging-market companies

Key takeaways

• Favorable demographics, rapid technological innovation, and progressive economic reform have offered unique equity investment opportunities in a select group of leading emerging-market (EM) companies.

• Many of these companies possess nuanced local understanding of these trends, leading to sustainable competitive advantages within their domestic markets in the face of competition from regional and multinational players.

• Developments in wireless technology and in fintech applications, such as mobile payments, support a wealth of growth opportunities within EM for select domestic companies.
Investors in today's emerging markets (EM) face a host of risks, ranging from rising trade tensions to cyclical challenges stemming from the prospect of any slowdown in the global economy. Against this difficult backdrop, however, a number of powerful fundamental trends are converging to create a potent set of dynamics that could continue to define medium-term opportunities within EM equities. An understanding of these trends is critical in identifying those companies that we believe may succeed in becoming tomorrow's domestically grown stars across EM broadly.

The intersection of favorable demographics, rapid technological innovation, and progressive economic reform with the scale of EM creates a unique environment. Which critical factors should be considered to help identify the EM companies that are best positioned to exploit these dynamics? How are these companies strategically positioned to take advantage of these opportunities profitably and sustainably? What differentiates their competitive positioning and creates the potential to generate persistent superior returns?

In addressing these questions, we describe the structural trends that define the framework for the global EM equity market, show how these trends influence investment decisions, and explore elements of the trends that could reshape the investment landscape for a range of EM companies, using financial technology—or fintech—as a case study.

Favorable demographics and the emerging-market growth opportunity

The broader context of demographic trends in EM is well known. The most powerful among them is the growth of middle-class and related consumer disposable income, with the 12 largest emerging economies expected to account for as much as 33% of global consumer spending by 2030. Understanding the nuances of these trends as they evolve is vital in anticipating how they may influence the underlying investment case for individual companies.

For example, it's widely understood that China is an aging society. Less recognized is the significant size both of its millennial population and female labor market participation, all contributing to shrinking household size. These characteristics result in incremental spending power—both in the hands of empty nesters as their one child grows up and of a generation of young affluent adults.

On the one hand, lengthening life expectancy for China's growing “silver generation” exerts pressure on this cohort of aging citizens to ensure they don't outlive their savings as state support diminishes—a new dynamic of self-reliance that gives rise to increased individual retirement savings and growing needs for insurance protection and healthcare. (It's notable that healthcare spending in China makes up a mere 5.5% share of GDP, compared with 17.2% in the United States.)

However, China's consumption patterns are evolving most rapidly among the generations born after 1980. Just as members of the postwar baby boom generation in the United States and Europe powered economic activity as they entered their prime earning years, today's younger generations will drive consumption patterns in China and elsewhere in EM. These young people are predominantly urban dwellers and technology literate, having grown up with smartphones and always-accessible data. In China, younger generations are relatively optimistic, having entered adulthood on a reasonably secure footing as financial beneficiaries of the government's former one-child policy. With increasing discretionary income comes the propensity to trade up—to buy better-quality food and fashion, spend more on lifestyle and experiences, and invest in property and savings products, even while China's official GDP growth rate may be slowing.
As these demographics play out and reshape patterns of consumer behavior, it’s important for investors to understand the defining characteristics of the businesses—which may be domestic, regional, or multinational—that appear most likely to compete successfully. Leading EM regional companies as well as multinational corporations are naturally attracted by the large scale of EM growth opportunities, but face challenges from locally established names, which may enjoy an edge in terms of domestic distribution networks, brand recognition, and on-the-ground knowledge of their domestic markets—advantages that may create effective barriers to entry.

By way of illustration, sportswear giants Nike and adidas compete with dominant domestic brands such as Anta and Li-Ning in China. Cosmetics brand Whoo, owned by South Korean consumer goods company LG Household & Health Care, has enjoyed considerable success in its home market and has extended its reach to China. The opportunity for China Resources Beer lies in its ability to develop premium brands that compete with major international brands by exploiting the advantage of the company’s knowledge of local consumer tastes and its extensive distribution network.

An understanding of how consumers spend is also critical. Consumer technology has become a powerful catalyst as the exponential growth of e-commerce gives rise to the ability to supply and monetize previously untapped consumer demand. These developments have opened tremendous opportunities for internet service companies, payment processors, and technology platforms, as well as created the potential for consolidation across highly fragmented markets.

**Transformative technology as a catalyst**

Asia has long been the manufacturing base for the world’s high-tech equipment, with smartphones and other electronic devices relying on a complex supply chain that spans China, South Korea, and Taiwan. Notably, ongoing investment in research and development has generated significant intellectual property, which is enabling companies involved to capture an increasing share of overall value.

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**Emerging-market companies are leaders in 5G intellectual property**

Top 10 companies ranked by number of standard-essential patent filings in 5G wireless technology, as of April 2019

<table>
<thead>
<tr>
<th>Company</th>
<th>Filings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huawei (China)</td>
<td>1,554</td>
</tr>
<tr>
<td>Nokia (Finland)</td>
<td>1,427</td>
</tr>
<tr>
<td>Samsung (South Korea)</td>
<td>1,316</td>
</tr>
<tr>
<td>LG Electronics (South Korea)</td>
<td>1,274</td>
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<tr>
<td>ZTE (China)</td>
<td>1,208</td>
</tr>
<tr>
<td>Qualcomm (U.S.)</td>
<td>846</td>
</tr>
<tr>
<td>Ericsson (Sweden)</td>
<td>819</td>
</tr>
<tr>
<td>Intel (U.S.)</td>
<td>551</td>
</tr>
<tr>
<td>CATT* (China)</td>
<td>545</td>
</tr>
<tr>
<td>Sharp (Japan)</td>
<td>468</td>
</tr>
</tbody>
</table>

Source: IPlytics, May 2019. CATT refers to the China Academy of Telecommunications Technology.
A standard bearer for this trend is Taiwan Semiconductor Manufacturing Company (TSMC), a semiconductor foundry that makes chips for companies that lack semiconductor manufacturing facilities of their own. TSMC produces the application processors for Apple’s iPhones, AMD’s server chips, and many other high-end electronic devices. While Intel has long held a technology lead in this space, recent difficulties at Intel have enabled TSMC to take a leading position at the most advanced node of semiconductor manufacturing. South Korea’s Samsung also has capabilities on par with those of Intel and TSMC.

Asia’s rise up the technology curve is also reflected in key patents for next-generation 5G wireless technology, which holds the promise of radically changing how people, businesses, and devices connect. Chinese companies had applied for 34% of the world’s major 5G patents as of March 2019, compared with South Korea’s 25% and 14% apiece for the United States and Finland. Versus 4G standards, China and South Korea have notably improved their positions, while the United States and Japan have fallen behind.

These patent positions give Asian companies a seat at the table to decide 5G standards, putting them in prime position to benefit as 5G begins to be rolled out across a range of applications. Initially, 5G will offer much faster smartphone speeds and a cost-effective alternative to fiber broadband in some rural areas. In the more distant future, 5G may be adopted for machine-to-machine communications such as automotive applications, where cars will connect to other vehicles and allow better traffic control. 5G is also expected to be used in the Internet of Things to connect machines on smart factory floors and transmit data to the cloud for analysis.

EM companies that are becoming globally competitive technology leaders range from large companies with deep financial resources and activities straddling a host of 5G applications to smaller firms that have carved attractive positions in the value chain. On the large corporate side, Samsung has a strong 5G patent position that creates advantages for its smartphone business; its memory division could see increased demand for its products as a result of the vast amounts of data generated by 5G-connected sensors. Another example is MediaTek, a Taiwanese company that was late with 3G/4G smartphone baseband chips but has significantly closed the technology gap with market leader Qualcomm and is in a better position as 5G is implemented. Lesser in size, LandMark Optoelectronics has established a niche position in semiconductor lasers, which will be essential in both 5G backhaul and data center communications.

**Case study: fintech and the emerging-market growth opportunity**

Innovation has powered the financial services sector across the developed world for many years and is now rapidly gaining traction across EM. The ability to process information seamlessly is reducing administrative costs, and specialist services and products that were previously available only to a limited number of customers through narrow distribution channels are becoming commonplace and widely accessible. Financial inclusion of segments of society that previously had little access to banking and other financial services has become a powerful economic and social phenomenon.

Companies leading the adoption of fintech and the provision of new products range from traditional but innovative banks and insurance companies to new sources of competitive disruption such as social media companies, telecom operators, and e-commerce businesses. The related ecosystem has further driven growth and profitability for specialist software and hardware providers, including manufacturers of smartphones, PCs, and servers. Early adopters of fintech include companies as diverse as Apple, provider of the Apple Pay payments platform, and Safaricom, a Kenyan company...
that provides a mobile money transfer service called M-Pesa. Other payment platforms include Alibaba’s Alipay and TenCent’s WeChat, which dominate online payments in China. These new players in the payments industry have managed to break into and disrupt a marketplace previously controlled by slow-moving financial incumbents. Their success can be attributed to the confluence of demographic change, economic reform, and the accessibility of leading technological advances, allied with corporate commitments and strategic vision.

The example of Network International illustrates the potential. The relatively young United Arab Emirates-based company has grown over the last 20 years into the leading enabler of digital commerce across the Middle East and Africa (MEA), which remains the world’s most underpenetrated payments market.\(^4\) Digital payments technology is established both in developed markets and faster-growing economies, providing a blueprint for the untapped MEA region, where Network International is the only pan-regional provider of payment solutions with scale across the entire payments value chain.

Network International’s experience with leading payment solution companies in North America and Europe means that its senior management team has a deep understanding of the application of technology as cash-based societies transition to digital solutions.\(^4\) These capabilities reduce the cost of doing business and provide the opportunity for rapidly developing economies to innovate by offering services previously unavailable to small businesses and individuals.

Most of the 1.5 billion population of MEA still prefers to use cash to settle transactions; across the region, it’s estimated that 85% of all transactions is based on notes and coins, compared with rates of 20% and 30% in the United States and the United Kingdom, respectively.\(^4\)

Cash on delivery remains the primary settlement practice for e-commerce—as it was in China until five years ago—which partially explains the relatively slow adoption of digital payments across many of the economies of MEA. Savings associated with improved market knowledge and logistics costs are evident in many other developing

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**Where cash is still king: the Middle East-Africa (MEA) region is underpenetrated when it comes to payment cards**

**Payment cards per adult, by region, and a sampling of countries**

<table>
<thead>
<tr>
<th>Region</th>
<th>Non-MEA regions and countries</th>
<th>MEA region and countries</th>
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</thead>
<tbody>
<tr>
<td>North America</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>1.9</td>
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<tr>
<td>Latin America</td>
<td>1.9</td>
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<tr>
<td>MEA</td>
<td>0.3</td>
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**By country**

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<tr>
<th>Country</th>
<th>Non-MEA regions and countries</th>
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<tbody>
<tr>
<td>United States</td>
<td>5.5</td>
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<tr>
<td>United Kingdom</td>
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<td>Brazil</td>
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<td>Egypt</td>
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*Source: Edgar, Dunn & Company, September 2018.*
regions, but have yet to materialize significantly in MEA. We believe that the scale of Network International’s reach across MEA, combined with the first-mover advantage that the company enjoys in the region, places it in a leading position as business practices change and digital payments become the norm, as has occurred elsewhere in EM.

With the largest footprint across MEA and a customer base of over 65,000 merchants and 220 financial institutions, Network International has seen transactions and volumes compound at annual rates in excess of 30% and 15%, respectively, over the last 10 years. These trends appear likely to continue as important initiatives take hold, often driven by governments keen to capture tax revenue or distribute subsidies efficiently, or by local financial institutions seeking to lower costs and provide new services.

Partnerships with governments and central banks play an important role. In Egypt, for example, the company launched such a platform in 2017, and it now enables 40 million Egyptians to receive payments and subsidies electronically. The success of this relationship may, in turn, pave the way for commercial opportunities, as has been the case for Network International in the United Arab Emirates and Jordan.

On the commercial front, there’s room for considerable consolidation, as the limited digital payment solutions currently available are largely insourced by local banks. As a result, digital payment solutions in MEA have historically yielded little in the way of savings from economies of scale, with operators having to bear potentially large information technology costs. In contrast, the shift to outsourcing is almost complete in developed markets, with few major financial institutions remaining active in the payment solutions space.

Network International appears to have key elements in place to exploit a nascent growth opportunity. Experienced management and state-of-the-art systems are essential to operate in an underdeveloped growth region with material barriers to entry for potential rivals. The backing of major international private equity firms and local partners provides critical funding resources; at the time of the company’s initial public offering in the spring of 2019, the U.S.-based payments company Mastercard invested $300 million for a nearly 10% equity stake.

Seeking a sustainable retirement income with liability-driven investing

Global Intelligence | Liability-driven investing

Key takeaways

- Demographic shifts mean more people will reach retirement in the next decade or so than ever before.

- Today’s defined contribution plans employ excellent accumulation strategies, but on reaching retirement, participants can find themselves without an adequate plan to convert their lump-sum payment into a sustainable level of income.

- While traditionally available for large defined benefit plans, we believe liability-driven investing (LDI) can be just as effective for individuals.

- By matching a participant’s desired minimum income to a portfolio of fixed-income assets and the remainder to a growth portfolio, LDI can provide a structured and consistent income for participants.
It’s a well-established fact that the developed world is growing older. In the United States, for example, the number of adults age 65 or over grew from 19 for every 100 Americans of working age in 1980 to 25 for every 100 in 2017. In the next 10 years or so, that figure is expected to grow to 35 for every 100.¹

These remarkable figures are a result of the increasing numbers of baby boomers—the term given to the generation born between 1946 and 1964—reaching retirement. Baby boomers represent nearly 20% of the American public, and every day, some 10,000 of them celebrate their 65th birthday.²

The rapid rise in the number of people reaching retirement is taking place at a time when employers are shutting down traditional defined benefit (DB) plans as a result of rising costs and onerous regulations. In their place, many employers have introduced defined contribution (DC) programs, which shift the responsibility for funding retirement from the employer to the individual worker.

The rise of target-date funds in DC plans

The majority of DC plans today use target-date funds as their investment strategy, with more than three-quarters of plan sponsors now offering them as their plan’s primary default investment vehicle.³ By streamlining what was once a complex series of investment decisions into a single yet powerful step, target-date funds have helped more participants set aside a sufficient portion of wealth for their retirement.

While target-date funds provide an effective accumulation strategy with little maintenance required from the participant, managing the decumulation of savings postretirement can be a greater challenge; depending on the type of target-date fund offered by their employer, participants can often find that their fund matures on the day they retire, requiring them to single-handedly calculate how best to manage their savings over the length of their retirement, however long that may be. And while some plans offering target-date solutions can keep a participant invested through retirement,

Dynamic LDI

Payout is expected to increase as growth assets get converted into hedging assets

Hedging assets: provides secure income

Source: Manulife Investment Management, for illustrative purposes only.
they generally lack a specific drawdown plan to protect against longevity risk. According to a report by the U.S. Government Accountability Office, these changes are leaving an increasing number of people struggling to ensure that their accrued savings and benefits last through retirement.4

Traditional options for retirees amount to taking a lump-sum payment or buying an annuity, but both have drawbacks: Annuities can be expensive, while most of us are ill-equipped to invest or manage a large lump sum. Besides, cash flows from traditional asset allocation portfolios can vary depending on performance and aren't designed to reliably match income needs for a client from year to year. For participants looking for a more structured approach to managing their retirement income, we believe liability-driven investing (LDI) represents an effective alternative.

A personal LDI plan

It's a strategy that's traditionally been the preserve of large DB plans, but we believe it can be just as effective for individuals.

LDI typically uses a bond’s principal and coupon payments to match a plan’s liability. For example, a 10-year bond bought at $80 and maturing at $100 can be used to fund a $100 liability due in 10 years. By allocating to both fixed-income assets and growth assets, DB pension plans are able to target cash flow consistency alongside upside potential and inflation hedging.

While the strategy may appear complex at first glance, applying such an approach to an individual’s retirement savings doesn’t need to be complicated. The first step is to determine the participant’s required minimum income level over a specific time horizon. This becomes the liability, which can be matched with a fixed-income portfolio, creating a minimum payout level. Anything above that minimum level can be invested in growth assets. Gains in the growth strategy can be automatically locked in, sold, and the proceeds converted into fixed-income assets, thereby securing a higher minimum level of income. This approach, which we call dynamic LDI, ensures participants aren’t placing their savings in a systematic, long-duration fixed-income strategy at a time when bond yields remain low.

Growth converted to income

A dynamic approach to LDI supports an increasing allocation to fixed income over time

Source: Manulife Investment Management. For illustrative purpose only. Assumptions: Decumulation period of 20 years, initial investment of U.S.$1M gross of fee results and 6% return on growth portfolio. At end portfolio date, all initial principal has been distributed.
Each payment the participant receives is a combination of gains from the equity growth portfolio, interest, and return of capital as fixed-income holdings periodically mature, thereby delivering an ongoing income stream. With each passing year, a greater proportion of the total portfolio is converted into fixed-income assets as gains in the growth assets are locked in. It's also worth noting that as the market value of the entire portfolio experiences gains and losses, the income remains protected as the fixed-income holdings mature.

The strategy can be regarded as an extension to a participant’s DC plan that has reached maturity at retirement age. Once the existing target-date fund matures, participants are free to roll their assets into an LDI approach. Eventually, there’s no reason why plan sponsors couldn’t offer the strategy to employees prior to retirement as a listed option on their DC investment lineup, or perhaps even as the default option.

We believe dynamic LDI can meet the challenges of retirement by targeting a minimum level of consistent income (derived from the participant’s fixed-income assets), while keeping up with inflation (thanks to their growth assets). Individuals should be able to benefit from what’s traditionally been available to institutional investors and, in the process, enjoy security and peace of mind in retirement.

**A more structured approach to retirement planning**

An unprecedented number of people will reach retirement age over the next 10 to 20 years, just as generous corporate DB plans are vanishing. The outcome is likely to be a sizable proportion of the population retiring from DC plans and finding themselves in the uncomfortable position of having to transfer a lump-sum payment into an annual income that can be maintained for the balance of their lives.

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1 The location of Manulife's joint venture asset management business, Manulife TEDA Fund Management Company Limited. 2 Represents the Hancock Natural Resource Group's regional asset management office locations. 3 Operated as an investment department of Manulife-Sinochem Life Insurance Co., Ltd.

As of June 2019.
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