2020 Global Real Estate Report

Transformative trends Canadian pension plans need to navigate now

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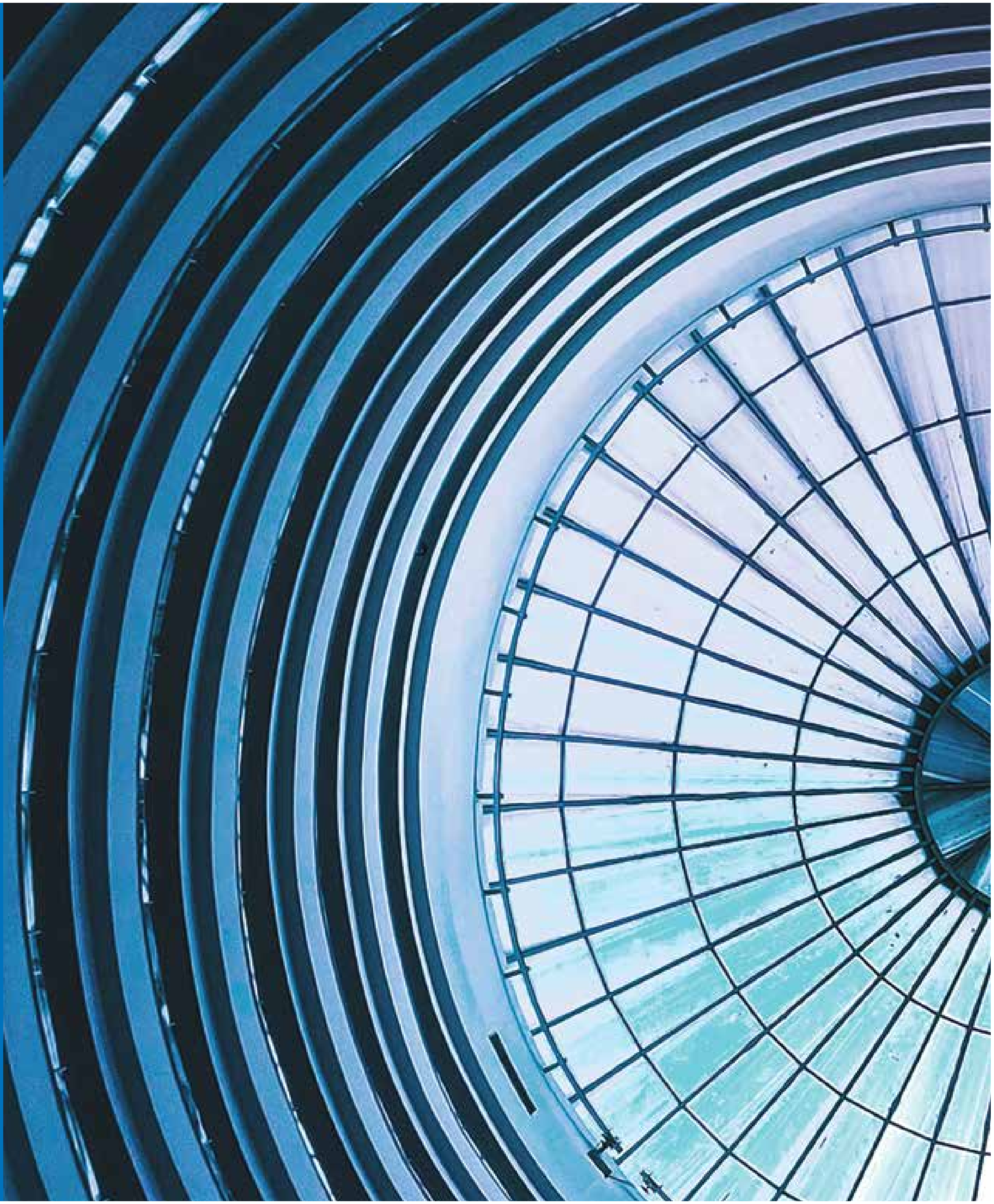
Overview

Transformative trends pension investors need to navigate now

While 2019 was a year marked by change, 2020 is marked by uncertainty. The global pandemic triggered volatile markets, plummeted oil prices and saw unprecedented government interventions in an effort to avoid a worldwide financial depression. Global real estate has naturally been impacted in this economic and geopolitical landscape.

Aside from the impact of the COVID-19 crisis, a shifting geopolitical landscape and the growing impact of technology on businesses is creating potential opportunities for investors that may continue once the pandemic has passed for years to come. For pension investors, understanding what these trends are and how they work will likely be critical for building resilient real estate portfolios that are insulated against the challenges.

The 2020 Global Real Estate Report is designed to help plan sponsors understand and address the top transformative trends affecting their real estate portfolio, including technology such as 5G, blockchain and ecommerce, climate change, the low growth environment, and geopolitics. This report not only explores the risks to plan sponsors, but also the opportunities moving forward.



Section 1

COVID-19 and the future of the office

"Office buildings are very adaptable and can make the changes needed to deal with the logistical challenges of employers."
– Tim Bellman

Pre-pandemic, the average Canadian spent much of their day in transit, commuting to and from work and eating up a good part of the day on the move. Then came the lockdown. Workplaces across the country shut down, the daily commute came to an abrupt halt, and people found themselves working from home on couches and at kitchen tables.

The transition to working from home has had a significant impact on demand for office space. In fact, one of Canada's biggest companies, Shopify, announced that employees will work from home as much as possible on a permanent basis. More are likely to follow suit.

Right now, the big question is whether there will be a permanent dip in the demand for office space. Will more people want to keep working from home and, if so, does that spell the end of the office as we know it?

For Tim Bellman, Head of Global Research at Invesco, the answer is a clear no. "Offices remain one of the best and most flexible ways to accommodate economic activity," he explains. "Office buildings are very adaptable and can make the changes needed to deal with the logistical challenges of employers." That adaptability will be tested in the months ahead as employers find innovative ways to implement social distancing and hygiene measures aimed at preventing the spread of illness.

But demand for space won't necessarily shrink, according to Bellman. Rather, in the future, there will likely be different types of offices than we're used to. Employers expecting to adopt a smaller footprint with more people working from home will still need adequate space for each employee to social distance he explains. "A de-densified office with less people in it may look different than it has in the last 10 years," Bellman notes. "Offices will start to look different. They will be used less for routine functions and more for meetings and creative brainstorming."

Stable demand in urban core

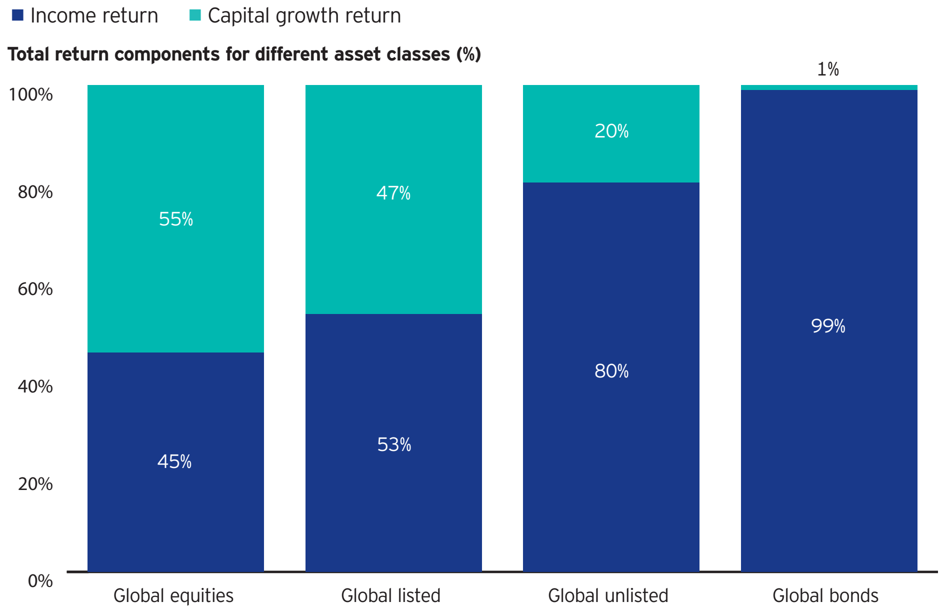
Bellman also disagrees with the idea that office activity will move more into the suburbs as more people leave urban centres. "I don't think the winners are in the suburbs in the long-term," he argues. "Demand for suburban offices has typically been for lower order functions that are more automated. In contrast, there will be continued demand for offices located in cities with good transit that are managed and designed well."

Sectors also matter. Research from the Invesco Real Estate team has indicated that different areas of the economy have been impacted differently by the crisis and its fallout. Logistics, for example, has outperformed other sectors and that is likely to continue in the future as e-commerce continues to grow and as supply chains are recalibrated. Bellman also expects medical offices, data centres, and other specialty sectors to see continued growth while technology and healthcare will create strong demand for laboratory space. Watch for the knock-on effect in residential real estate alongside higher paying jobs in those sectors; that will likely drive demand for multi-family housing, entertainment and increased retail services. These development clusters will likely be built around high-paying jobs in the future rather than specific industries.

"Opportunities are opening up due to the way the economy is using real estate," says Bellman. "However, change within a sector is as important as the change between the sectors." More than ever before, we believe investors must understand the changing dynamics driving global real estate right now.

The income component of total return 2001-18

Real estate derives a significant share of total returns from income



Notes: Shares of total returns are approximate values which exclude residual effects. They are based on 18 years (2001-2018) of annual income returns and capital growth histories. Global equity performance is calculated based on the MSCI World Index. Global Bond performance is calculated based on the Bloomberg Barclays Global Aggregate Index. Global listed real estate is calculated based on the FTSE EPRA/NAREIT Global Development Index. Global unlisted real estate performance is calculated based on the MSCI Global Property Index. Source: Invesco Real Estate based on data from MSCI, Bloomberg Barclays and Macrobond as of May 2019. An investment cannot be made into an index. Past performance is not a guide to future returns.

Potential portfolio implications for pension investors:

- **Lock in debt:** To further protect your global real estate portfolio, Bellman suggests investors consider locking in low-cost debt for an extended period. "So portfolio properties are not vulnerable to further declines," he explains.
- **Focus on stability:** This may be the time to keep invested in stable, income-producing real estate. Take the opportunity to invest where there are shortages because that may provide access to enhanced returns.
- **Remember the income component:** Don't forget real estate's role in the total portfolio: the production of income. That isn't, in our view, likely to stop any time soon (see chart on left side).
- **Don't wait for distress:** If you're waiting for distressed and debt-driven opportunities, keep in mind that we haven't seen much evidence of distress emerging. Potential opportunities are in real estate that you can invest in, improve and ultimately flip. "To do that successfully you need to be nimble with cash," Bellman explains.
- **Don't rule out listed real estate:** Although listed real estate may correct further and faster, it does offer potential opportunities to arbitrage, according to Bellman.

Section 2

The fiduciary duty of climate change

"It's time to think much harder about climate change risk asset-by-asset than has historically been done."
– Tim Bellman

In the summer of 2017, Hurricane Harvey made landfall in Louisiana and Texas as a Category 4 hurricane causing catastrophic flooding. In four days, many areas saw more than 1,000 mm of rain. Harvey is tied with 2005's Hurricane Katrina as the costliest storm on record.

It's well understood that real estate is vulnerable to extreme weather events caused by climate change. And now the cost of that impact is becoming more clear. Looking only at Houston, Texas, according to a recent CoStar analysis, Hurricane Harvey may have put as much as US$55 billion of the city's real estate under water, including 12,000 properties making up 73 million sq. feet of retail space and 60 million sq. feet of office space[1].

As climate change-related weather events continue, real estate in pension portfolios will be increasingly exposed to these significant risks. Tim Bellman, Head of Global Research with Invesco Real Estate, says "it's time to think much harder about climate change risk asset-by-asset than has historically been done." "It has been a due diligence factor – assessing fire and flooding risk, heat risk, exposure to storms, etc. – and as long as [those risks] were mitigated by appropriate insurance and perhaps some site-specific mitigating measures, investors believe they're okay." That's changing. Investors need to know in detail how a portfolio is exposed to all high-risk events that can arise from climate change. Bellman encourages plan sponsors to ask their investment managers how they assess climate risks.

Natalia Moudrak, Director, Climate Resilience, with Intact Centre on Climate Adaptation at the University of Waterloo, says the best practice is to map climate change risks against current portfolio assets – and potential acquisitions – using both historic and forward-looking climate models.

"The goal is to determine value at risk and to understand how climate risk may impact potential return over the whole period [of the investment," she says. "The next step is to assess resilience to these identified risks so that appropriate risk treatment options can be selected. These treatment options may include portfolio diversification or direct investment into asset level resilience measures."

[1] https://www.costar.com/houston

According to Michael Peck, Head of Institutional for Invesco Canada, after asking investment managers how they are assessing risk, it's important to check how they are rated by the international agencies on environmental, social and governance (ESG) - such as GRESB, which is a global real estate sustainability benchmark. "You want to hear from a manager that they not only benchmark, but that they monitor all of the [climate change] variables that are landlord controlled," he says. Invesco applies a property improvement cycle as part of its continuous efforts to identify and manage sustainable real estate with a view toward delivering long-term benefits.

After all, says Moudrak, "being aware of the extent of climate risk on the long-term value of a portfolio is a fiduciary duty for investment managers." "They have an obligation to think about how to reduce climate risk so that the retirement security for future pensioners is not jeopardized," she says.

IRE's property improvement cycle

The effective management of ESG risks is an ongoing process. IRE leverages a range of insights and expertise for each of its sustainable properties, working with data providers, property managers, rating and certification organisations, tenants, occupants and other stakeholders to ensure continuous improvement.

Benchmark
Energy, Water, and Waste (Consumption & Cost):
- Current & accurate data
- Establish baseline

Monitor
- Check for errors, omissions, operational changes, leaks, usage increase, etc

Report
Quarterly Sustainability Performance Indicators:
- Compare to self over time
- Compare to peers
- Provide context for increases

GRESB
- Consumption decreases
- Data coverage

Improve
Identify opportunities:
- Sustainability Policies & Reference Guides
- Checklists
- Work with Property Management Companies (PMCs)

Implement:
- Evaluate proposals
- Incentives
- Assist PMCs

Certify
- Energy Ratings & Certification (annually)
- Green Building Certifications

NOI
- Improve performance
- Reduce cost
- Add value

Source: Invesco

Case study

Prime office building – Boulevard Haussmann, Paris, France

Acquisition price **€138m**

Sustainability Pays

A brief walk from the Arc de Triomphe and the Champs-Elysées in Paris, France is 173 Boulevard Haussmann. With more than 10,000 m^2 of prime office space, this picturesque building presented a unique opportunity for Invesco to create a potential for best-in-class asset, increasing massing[2], optimizing efficiency and introducing a pragmatic approach to sustainability from design principles to operation. It began with a refurbishment program that redesigned the asset internally from the ground up, re-orientating the entrance to capitalize on its corner location and adding rare roof-top access with greenery and views across Paris. What's more, the refurbishment included adding sustainability initiatives, such as a grey-water recycling system[3] that is a first for the Paris office market. The sustainability-focused efforts have driven real results. The work on the building positioned it as a premium product in the market and led to a single tenant securing a 12-year, pre-lease with a rent almost 15% above underwriting – making it the best rent for the market. And, in less than five years the value of the building has increased 89%.

Off-market purchase of a prime corner site with refurbishment potential in Paris' Central Business District (CBD)

Invesco Real Estate Team in Paris gained permission to add three floors including iconic glazed atrium, whilst maintaining the protected facade

Designed to reduce running costs. The first building in Paris Central Business District (CBD) to recycle "grey" water

Achieved a 12 year pre-let with a major Investment Bank

Iconic building designed to provide grade A building in super-prime location

[2] Massing is a term in architecture which refers to the perception of the general shape and form as well as size of a building.

[3] Grey water is all the wastewater generated in office buildings from all streams except for toilets. As grey water contains fewer pathogens than domestic wastewater, it is generally safer to handle and easier to treat and reuse onsite than water which may be contaminated from other sources. The application of grey water reuse in urban water systems provides substantial benefits for both the water supply subsystem by reducing the demand for fresh clean water and for the wastewater subsystems by reducing the amount of wastewater required to be treated. Source: Invesco Real Estate.

Source: Invesco Real Estate. June 30, 2019 (most recent data available). Current valuation is based on external valuations as at the end of the quarter. For illustrative purposes only. It does not constitute recommendation or advice. Performance was not a criteria for selection.

Current value **€261m**

Create a rare differentiated Grade "A" building in Paris CBD – large floor plate, corner site
Increased lettable floor area and quality of the building, increasing overall rents received – adding value
Lower running costs mean occupiers can afford to pay higher rents – adding value
Normal Paris leases 9 years, achieving 12 years increases value
Pre-let has achieved a record rent in Paris CBD

In less than five years, the value of the building has increased

89%

Source: Invesco Real Estate. June 30, 2019 (most recent data available). Current valuation is based on external valuations as at the end of the quarter. For illustrative purposes only. It does not constitute recommendation or advice. Performance was not a criteria for selection.

Section 3

Low growth realities

“The low rate environment extends the window of potential opportunities for some investment strategies that rely on yields and cap rates standing firm.” –Tim Bellman

The global pandemic has dramatically dampened an already sluggish global economy and has left an uncertain path to recovery. The International Monetary Fund projects global growth at – 4.9% in 2020 – 1.9% below their April forecast[4]. One thing is clear: years of peak growth are potentially behind us. Although fiscal stimulus has had a positive effect in recent years, it will likely wane further even in China, which has for years powered global growth.

Real estate has long been a bright spot for Canadian pension funds in a falling interest rate world and, against this backdrop, it looks set to continue as an excellent source of yields and income to match pension liabilities. But real estate investors can’t afford to ignore the pressure of slowing economic growth as a force of change and transformation and a source of opportunity in the years ahead.

Lower for longer

While it was widely anticipated interest rates would at least rise from historic lows, that expectation has shifted markedly due to COVID-19. “The economy is likely to grow more slowly,” says Bellman. “The macro context is low growth, low inflation and low interest rates for a long time. With that, returns in all asset classes will likely be low. Given real estate’s primary characteristic of return is income, we believe it will continue to be an attractive asset.”

“The low rate environment extends the window of opportunity for some investment strategies that rely on yields and cap rates standing firm,” explains Bellman. “And it’s extending the window for execution in core value add, especially when it comes to sustaining risk-adjusted returns for new development.” That’s an opportunity for investors with strategies that rely on new construction.

Rental growth under pressure in some markets

At the same time, low rates and slow growth mean investors must manage their expectations, particularly around income. In a late-cycle economic environment, rental growth and rents can taper off and that puts pressure on real estate managers to control costs. Another force brewing in some urban markets: the push for affordable housing. As policymakers respond to skyrocketing housing costs in high density areas, like Berlin and San Francisco, regulatory forces designed to make it easier for people to find affordable housing could have a knock-on effect on real estate and rents. For investors, this could impact potential returns.

From cyclical to structural

In years past, real estate has provided investors with a layer of stability in times of slowing growth – a cyclical defense strategy in tough markets. Today, however, investors need to step back and look at the bigger picture, especially in the context of economic uncertainty. “Weakening and slowing economic growth can also be attributed to disruptive trends that we would call structural,” says Tim Bellman. “Structural changes wrought by factors like technology and demographics are not only impacting the global economy but the real estate sector as a whole. Real estate is adapting in the midst of this structural transition – and investors need to understand that.”

[4] Source: International Monetary Fund forecast, April 2020 https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020

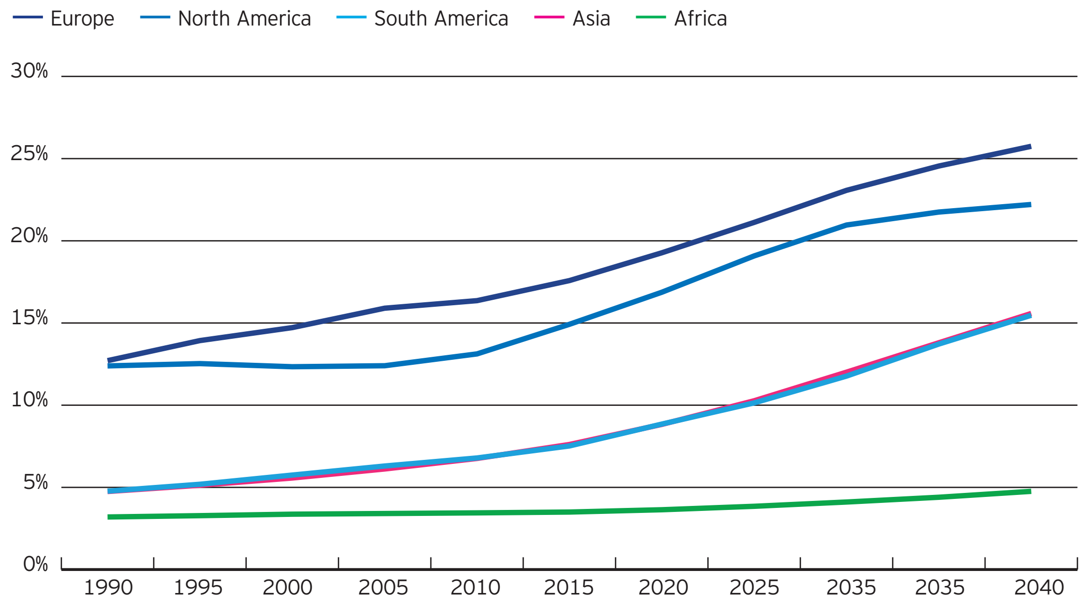
The global population is greying. Now what?

On the whole, the world's population is greying due to a combination of lower birth rates and longer lifespans. In approximately the next 20 years, the number of people 65 years or older will nearly double in size, accounting for 37% of total global population, according to the United Nations Populations Division[5]. In addition to contributing to slower economic growth, this aging trend could have significant impacts on real estate worldwide.

"The lower, slower population growth – particularly in Japan and Germany and increasingly in Korea and China – will inevitably drag down the rates of expansion of the economies of those countries and globally. One trend that could emerge from an aging population is multi-family opportunities in urban areas," says Tim Bellman. "Another is senior housing, which is growing strongly in most parts of the world."

Share of population 65+ years (%)

Shifting trends will impact real estate demand across the globe



Source: Invesco Real Estate using data from United Nations Population Division as of June 2019. Data for 2020 onwards is forecasted. There is no guarantee any referenced forecasts/outlooks will come to pass.

[5] https://population.un.org/wpp/

The impact on demographics to real estate extends beyond types of housing that could be in demand. Consider the increased medical needs of an aging population, which might drive medical office space demand. Yet, slower labour force and economic growth may negatively impact the traditional office space sector. Retail spending patterns could also shift as older generations spend more on leisure and pharmaceuticals, which may impact real estate needs for that sector.

2015
65Y + age group is about **8%** of global population.

2015-35
65Y + will nearly **quadruple** in size accounting for **37%** of global population change in the 20-year period

Source: Invesco Real Estate using data from United Nations Population Division as of June 2019. Data for 2020 onwards is forecasted. There is no guarantee any referenced forecasts/outlooks will come to pass.

Portfolio implications for pension investors:

- **Global diversification is key**
  Given the shift in the economic environment, resiliency is key for portfolios, and that's where diversification comes in, according to Michael Peck, Senior Vice-President and Head of Institutional, Invesco Canada, adding that global exposure can have a significant impact. "Just adding those different economic return drivers and income streams is key to building a resilient portfolio," he says.

- **It's about durable income**
  Consider approaching real estate with a long-term view on what the income stream will likely be. That includes understanding the local regulatory forces at play across regions, especially as governments seek to address significant structural changes and their impact.

Portfolio implications for pension investors:

It's about geography: For plan sponsors considering the impact demographics may have on their global real estate investment strategy, it is crucial to reflect on regional trends and underlying sector factors. What underlying sectors – like residential, office, logistics and retail – are you getting exposure to through different geographies? asks Michael Peck. "When it comes to supply-demand dynamics for real estate, Europe is quite different than Asia, which is also quite different from the U.S." he says, adding that approach to creating multi-family properties can vary from country to country and even city to city. "A good operating partner with a global presence can help plan sponsors navigate these complexities," Peck says.

Section 4

Geopolitics & global real estate: a long-term view is more important than ever

"When it comes to the long-term impact of politics on global real estate, it's important to consider regional developments, not just the macro environment."
- Tim Bellman

A long-term view is more important than ever
The global pandemic has added unprecedented short-term uncertainty to a landscape of political upheaval and geopolitical crises. Markets have roiled creating a wait-and-see environment for most pension investors. For plan sponsors, today's realities likely mean a renewed focus on longer-term outcomes and opportunities, and less emphasis on volatility over the short term.

When it comes to the long-term impact of politics on global real estate, it's important to consider regional developments, not just the macro environment, according to Tim Bellman, Head of Global Research with Invesco. So, while the U.S.-China trade standoff is a major global landmine, some areas in Asia, such as Singapore, Hong Kong and South Korea, are more heavily exposed to trade than others. For investors, the impact of a global trade war would likely hit those countries harder.

"Rising geopolitical dislocations are playing out in different ways depending on what region you're looking at." But there are opportunities inherent for real estate investors – especially in places where local capital flows could get sidelined due to emerging political changes. "That might make a better entry point for investors in cases where the long-term prospects are good," says Bellman.

The opportunity in dislocation
It's important to take a long-term view on places that today seem particularly locked in conflict. For example, the U.K. where Brexit has created deep worries and unknowns about the future, real estate investors likely need to look beyond the headlines.

"If the U.K. currency dips in the face of Brexit, that creates a potential opportunity," Bellman says. "It's a good time to invest in things we think will do well based on structural drivers of change in the economy and under different scenarios." One example of this is private rental real estate and multi-family housing to address a short term systemic shortage of residential housing in the U.K. "Demand for rental property is strong in the U.K.," he adds.

Hong Kong, while undergoing tremendous political upheaval today, is still rising to become a great Chinese city of the future according to Bellman. In that context, the need for logistics and distribution space isn't going away soon. Hence, long-term real estate investors have an excellent opportunity to meet that need today. To see this, however, we believe pension investors must take the long view.

And if you think sticking to domestic real estate will shield you from global risks, then think again. As Michael Peck points out, Canada is just as exposed to global headwinds. Take Calgary for example, where real estate has been negatively impacted by global demand for oil and a drop in prices during the COVID-19 crisis.

Forget short-term volatility
When it comes to assessing the impact of geopolitical risk, Bellman says investors ultimately need to ask, "where is this likely to end up in, say, 10 years." From there they must try to be on the right side of the long-term trend." He adds that real estate isn't an asset type that's meant to be traded daily, weekly or even annually. Rather, it's meant to provide a durable income stream: "Keep in mind that income has historically delivered about 80% of the return on real estate," Bellman says. "It should be something you're comfortable holding over the long term – so don't get caught up in the short-term volatility."

The rise of urbanization
Over the next 20 years it's estimated that the world's urban population will grow by 1.4 billion.[6] The big question right now is: How are cities working to accommodate that growth? This is especially key when residential real estate is now priced out of reach for most in major urban centres like Berlin, San Francisco and Vancouver.

For real estate investors, the great migration of populations into urban centres likely means a renewed focus on development to accommodate the growth and a focus on how factors like technology and transit can help make high-density cities more liveable. Policymakers, too, are pushing for more multi-family residential real estate and rental stock to absorb the growth and keep people living and working centrally.

While the global pandemic might slow the densification of city centres, Bellman anticipates that the attractiveness of the lifestyle in city centres will see a resurgence once the challenges of COVID-19 have passed.

As real estate becomes more urban and, in some ways, more regionally focused, the key is understanding what's happening locally, on the ground says Bellman: as investors, "we are now having to monitor these things much more carefully."

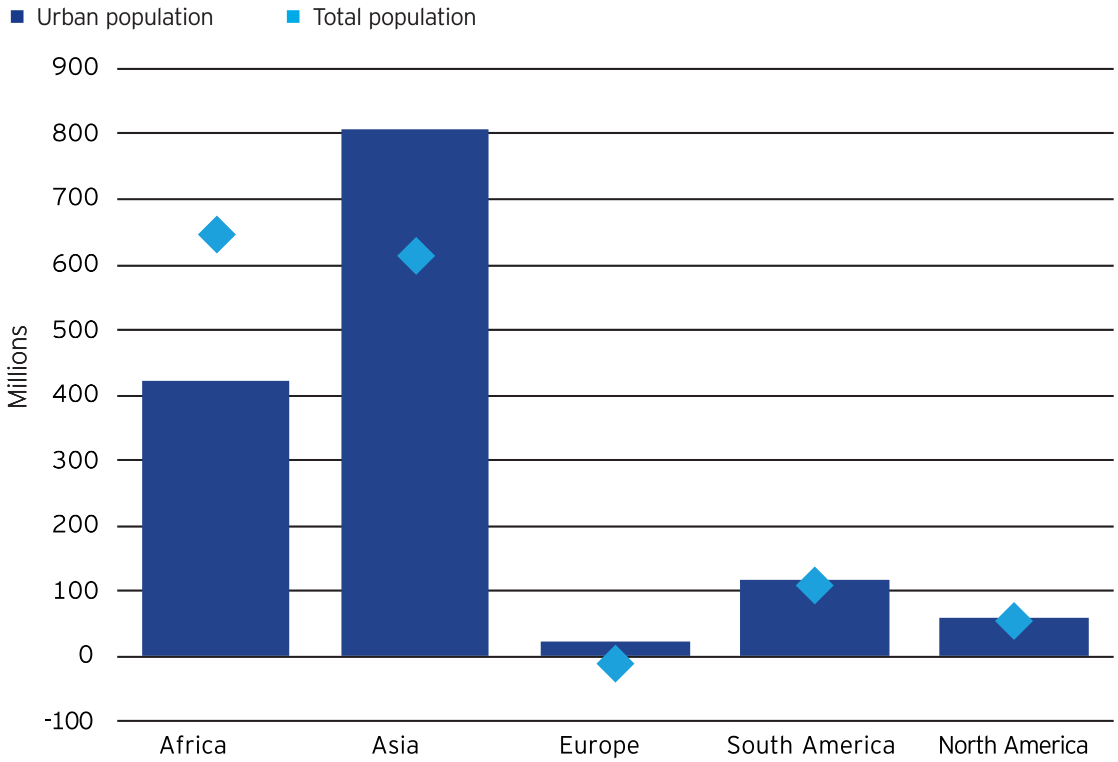
Portfolio implications for pension investors:

- **Focus on flexibility:** Based on the shifting political and economic landscape, there are a lot of unknowns which, says Peck, "is one of the reasons having a global portfolio where the manager has latitude to make decisions is critical." While real estate assets might not historically be volatile in the way equities are, managers should be able to position the portfolio in order to insulate pension investors from market shocks, especially through global diversification.
- Understand the big picture: Instead of focusing on short-term geopolitical issues, work to understand what the structural drivers of real estate will likely be in the long-term – i.e., technology, demographics, demand for housing.

[6] Source: Invesco Real Estate using data from United Nations Population Division as of June 2019. Data for 2020 onwards is forecasted. There is no guarantee any referenced forecasts/outlooks will come to pass.

Urbanization

The urban shift continues, driving real estate and infrastructure demand



Source: Invesco Real Estate using data as of June 2018. Data shown is most recent data available. Data reflects population net growth not absolute growth as a higher proportion of people are projected to live in urban areas.

Over the next 20 years, the world's urban population will **increase by 1.4 billion**

The is the equivalent of:

75
New Yorks

135
Londons

240
Dallas-Fort Worths

86%
of this growth will occur in Asia and Africa

Source: Invesco Real Estate using data as of June 2018. Data shown is most recent data available. Data reflects population net growth not absolute growth as a higher proportion of people are projected to live in urban areas.

There is no guarantee any referenced forecasts/outlooks will come to pass.

Section 5

Five tech trends shaping the future of global real estate

From 5G and ecommerce to automation and blockchain, technology is reshaping how businesses use and inhabit their spaces. Before the global pandemic hit, these trends were already causing shifts in the role certain sectors play in real estate portfolio construction. "These tech trends are truly profound. If COVID-19 has had any impact, it has been to reinforce them," says Tim Bellman, Head of Global Research with Invesco Real Estate. For plan sponsors assessing global real estate investments, we believe it's key that they pay attention to the implications of each trend and how new value might be created through the technology – value pension investors can capitalize on.

1. **5G:**
   5G is the next generation of high-speed mobile internet connectivity that is expected to provide faster data speeds, wider coverage and increased connection stability. It will likely be critical to the widespread adoption of emerging technologies, such as autonomous vehicles, the Internet of Things, artificial intelligence, virtual reality, smart cities and more. "More people are going to benefit from 5G than 4G," says Bellman, adding "There are likely going to be innovations and new businesses that are currently difficult to even imagine."

   One area that will certainly be impacted is real estate. First, traditional office space – particularly in typical suburban areas – will feel the pressure since clusters of buildings with high tech companies as principal occupants may begin to look more favourable, according to Bellman. Plan sponsors must assess this trend submarket-by-submarket to understand the regional nuances of these clusters and the resulting impact on their portfolio or potential acquisition.

2. **Ecommerce:**
   Global retail ecommerce sales reached US$4.2T in 2020, according to Statistia[7]. And, according to Nasdaq, 95% of all purchases are expected to be via ecommerce by 2040. This tech-driven consumer behaviour is already causing dramatic change for retailers – and real estate too. Traditional retail spaces, such as malls and shopping centres, are expected to continue to decline as demand for distribution centres and logistics facilities increase to fill the need created by ecommerce. Moreover, the pandemic has further crystallized the weakness in the traditional retail sector, according to Bellman.

   "With the rise in online shopping demand, we've been able to capitalize on logistics facilities," says Michael Peck, Senior Vice-President and Head of Institutional, Invesco Canada. "For example, in Europe, we have facilities on the Poland-Germany border. The facilities have access to Poland's highly-skilled workforce as well as the German Autobahn for distribution and delivery just a few kilometers away." This kind of investment combines the advantages of location and technology to drive value.

[7] Source: Statistia, Global retail e-commerce sales 2014-2023. Published by J. Clement, Mar 19, 2020 https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/

3. **Automation**

Automation is steadily on the rise. According to PwC, it will contribute up to 14% to global GDP by 2030 – that's about $15 trillion at today's values[8]. The report on the impacts of artificial intelligence, robotics and other smart automation technology states that 10-15% of jobs in three sectors (manufacturing, transportation and storage, and wholesale and retail trade) will have high potential for automation.

So what does this mean for real estate? "Over the next two decades, the impact of automation may now move away from the goods producing sector to the service sector – where this time the implications for real estate demand, particularly office, may be more impactful than before," say De'Juan Collins, Client Portfolio Manager, Invesco Real Estate and Robert Deckey, Managing Director, Invesco Real Estate. "This means being vigilant on office buildings and the functions they house. The most vulnerable may be more traditional back office space, typically found in lower cost, suburban locations. Locations that house functions with high human contact, knowledge work, or unpredictable tasks may be less vulnerable."

4. **Autonomous Vehicles:**

The automobile has likely disrupted the use and intrinsic value of real estate more than any other invention, yet the most disruptive period may still be ahead of us, say Collins and Deckey. "Although timing remains uncertain – the consensus appears 10 to 15 years – the validity, application and progress of the technology is not. And it's not just cars. In fact, we may see driverless trucks on the road before we see passenger cars," says Collins.

In fact, the impact of autonomous vehicles may change the built environment, affecting the design of new buildings and shifting demand to new locations. For example, in industrial real estate, autonomous vehicles allow large distribution centres to move further out from metro areas as the movement of goods becomes more cost-effective. "It is incumbent on all of us to not get too mired in what is right in front of us, but also to consider what may be ahead as we formulate strategy and purchase assets we intend to hold for the long term," says Deckey.

5. **Blockchain:**

A blockchain is an immutable record of time-stamped data that is managed by a cluster of decentralized computers. These unique elements increase it's security and make blockchain technology more than a buzzword. It's poised to reshape portfolio construction, according to Dr. Robert Wardrop, Director & Co-founder of the Cambridge Centre of Alternative Finance (CCAF). Blockchain is making it possible to easily and inexpensively buy a fraction of an asset in a variety of markets with many different underlying characteristics. "When you think about portfolio construction, you will be able to get quite granular in how you weight by neighbourhood or by city. You're going to be able to get precise even within an asset class" he says.

[8] https://www.pwc.com/hu/hu/kiadvanyok/assets/pdf/impact_of_automation_on_jobs.pdf

Portfolio implications for pension investors:

Revisit your sector allocation: Each of these technology trends is driving massive disruption throughout our societies. "Thinking of portfolio construction, plan sponsors must reflect on how transformative each factor is likely to become," says Bellman. "In addition, one should consider whether or not these trends change the nature of how different sectors perform in a portfolio and the role they play." For example, the role the retail sector has historically played in a portfolio – providing predictable, stable returns – is now likely switching with the life sciences and industrial sector, claims Bellman. In addition, employment growth in sectors such as life sciences may drive residential and retail growth alongside a set of new high paying jobs.

With an extensive on-the-ground presence in 16 countries backed by 568 employees in 21 offices*, Invesco Real Estate provides exceptional outcomes for clients by combining local-market insight, specialized expertise and premier tools and resources.

Our dedicated Canadian Institutional team is available to discuss how Invesco's global real estate strategies can help your institutional portfolio achieve its goals.

Learn more about the benefits of adding real estate to your portfolio. Visit **invescorealestate.ca**

We look forward to connecting!

Institutional team for Invesco Canada Ltd.

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