The Market in Review

Paul Siluch, Lisa Hill, Peter Mazzoni, and Sharon Mitchell
Financial Advisors
Raymond James Ltd. – Victoria BC

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This week's articles and insights

1. *Change of Season*
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"Autumn is a season followed immediately by looking forward to Spring."

- ***Douglas Larson***

Your Index Report

	Current	Last Week	Year-to-Date
Dow Jones Ind. Avg.	26,440	- 1.15%	+ 6.96%
S&P 500	2,914	- 0.53%	+ 8.99% (+12.97% in $CDN)
TSX	16,205	- 0.12%	- 0.03%

Change of Season

We are now officially in autumn, having crossed the autumnal equinox. This is one of two times during the year when daytime and nighttime are of equal duration all over the planet.

It is also the point of maximum daylight loss. Victoria, BC loses 3 ½ minutes per day of sunlight, making each shorter day even more noticeable.

Canada celebrates its Thanksgiving holiday next week - six weeks earlier than its cousin in the US. While the US version was technically first, Canadian historians like to argue that our First Nations celebrated their own harvest thanksgiving centuries before. Either way, it is a time of plenty in the agricultural world.

In the financial world, this month has been rather confusing. September is typically one of the worst months for markets in the calendar year, and yet it has been virtually flat in both Canada and the US. This despite more tariffs being imposed on China by the US, a vitriolic Supreme Court hearing, and heightened animosity directed at the Canadian prime minister by the US president.

And an interest rate hike in the US – we can't forget that. This brings US T-Bills to the 2% range. Normally, higher rates are negative for stocks, but markets simply shrugged this off.

Overall, today's news would have us believe the end of the world is upon us, and yet the markets are saying *steady as she goes*. Strong earnings, accelerating growth, and rising employment are what matter. At least, for now.

What does worry us? The NAFTA negotiations have the Canadian dollar on a precipice. The most dangerous part of tightrope walking is right near the end, when you are tired and take chances. It feels like we are either very close to a new deal with the US and Mexico, or very far away from one. It is impossible to tell.

Also, ten years of the lowest interest rates in 3,000 years has led to too much borrowing. By governments, by corporations, and by homebuyers. Many of our favourite bond managers are buying shorter-term and higher-quality bonds now, because they see rising risks in many of the loans being originated.

But, we continue to look for opportunities. We are examining a brewer, a memory storage company, and several utilities for our portfolios. And Canada may benefit from US tariffs in unlikely areas. It appears we are about to approve B.C.'s first liquid natural gas (LNG) facility, which would be attractive to China because it is now imposing tariffs on US LNG imports whereas Canada's will be tariff-free.

Also, Canadian lobsters are now gaining market share in Europe for the same reason – Europe has imposed tariffs on US lobster exports, making them 20% more expensive than ours.

The market, as always, adjusts.

The World in 2040

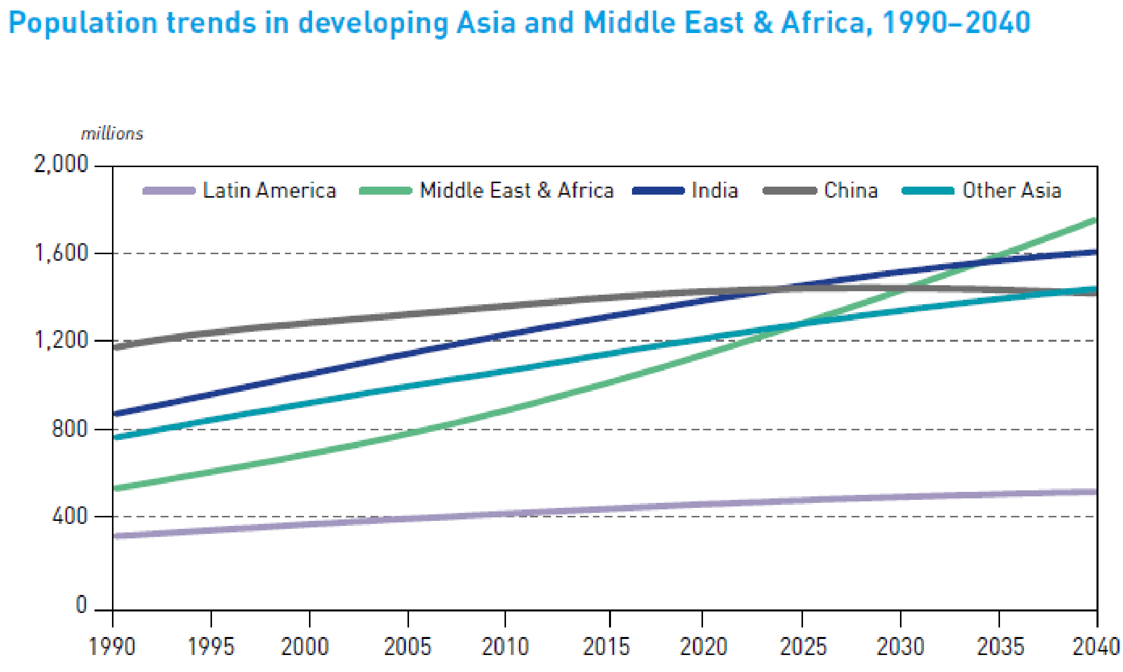
The largest cartel in the world is OPEC – the Organization of Petroleum Exporting Countries. OPEC has 15 member nations plus another 10 working with it under a “Declaration of Cooperation” to stabilize energy markets worldwide.

Every year, OPEC puts out its **World Oil Outlook** with a time horizon stretching out to the year 2040. It is interesting reading, although a bit heavy at just over 390 pages. One would expect the report to be very biased toward oil, since that is the organization’s primary focus. However, it attempts to encompass all the risks to oil, as well, because petroleum is this group’s bread and butter. Any predictions have to be realistic.

A considerable amount of time, money, and thinking went into envisioning the next 22 years, so here are quotations of their key points, plus a few thoughts of our own.

Population

- “Looking at historical and projected trends, spanning from 1990 to 2040, India’s population will surpass that of China in 2024 and is expected to have the second-largest share by 2040, after the Middle East & Africa.



Source: UN Population Division's 2017 Revision of World Population Prospects. OPEC estimates.

- The same occurrence can be observed in the share of working-age population. In absolute terms, the Middle East & Africa (excluding OPEC) will see the largest population growth in the long-term…which is expected to add 718 million people in the period between 2016 and 2040, compared to the 471 million added from 1992– 2016. The Middle East & Africa region is currently witnessing a rapid rate of population growth, with this trend expected to continue until the end of the projection period. This development leads to the Middle East & Africa occupying the largest share of population by region in 2040."

(Canada just reached a total population of 37.1 million on July 1, up 518,588 from a year earlier. This 1.4% increase in a single year is the fastest since 1957 and the highest of the Group of Seven nations. It is due primarily to immigration – work visas, legal and illegal refugees. Will 40 million Canadians matter in a world of billions? By 2040, Africa and the Middle east will be the most populous part of the world with a net 1.5 billion new people.

Still, rising population generally leads to a faster economic growth rate – something Canada needs.)

Economic Size

- “The size of the global economy in 2040 is estimated to be more than double that of 2017. There will be major regional shifts in the economic picture over the forecast period. In 2017, OECD America accounted for 20% of global GDP, followed by OECD Europe and China both at 18%. During the forecast period, China’s weight in the global economy is projected to increase by around six percentage points to reach 24%, while the weight of OECD America is estimated to drop to 15% and that of OECD Europe to 12%.”

(The US’s share of world GDP drops from 20% to 15% by 2040 while China’s grows from 18% to 24%. The West shrinks and Asia rises...)

Energy Demand

- “All forms of energy will be required in the future. It is not about choosing one form of energy over another.
- Oil is presumed to remain the fuel with the largest share in the energy mix over the forecast period. Combined, oil and gas are still expected to make up more than 50% of the global energy mix by 2040. Oil demand at the global level is expected to continue growing at healthy rates over the medium-term to reach a level of 104.5 million barrels a day (mb/d) by 2023 - 7.3 mb/d higher than 2017 levels and represents an average annual increase of 1.2 mb/d.”

(Despite our aversion to oil, OPEC estimates it will still be our primary fuel source in 2040. It foresees demand rising by 7.3 million barrels per day in just five years – an amount equal to almost two Canada’s worth of new oil production. It is an optimistic assumption that the world will find that much new oil.)

Winners and Losers

- “50% of new energy demand will come from India and China.
- The fuel with the largest estimated demand growth is natural gas, increasing to 25% of the global energy mix from 21.7% today.
- ‘Other renewables’ are projected to have the highest average growth rate of around 7.4% per year to 2040.
- Coal is projected to be the most affected fuel as a reduction of about 65% in demand for coal is estimated to be necessary to achieve targets on renewables and energy efficiency, along with an almost 15% decline in oil demand and a 13% reduction from gas in 2040, compared to the

Reference Case projections. It should be noted that the corresponding global CO2 emission reductions are not sufficient to put the world on a pathway consistent with a 2°C temperature target.
- Global shale oil is set to grow to 15.6 mb/d by the late 2020s, thus making up nearly 25% of non-OPEC supply at its peak, or 15% of global supply. Canada, already a significant producer of tight oil, is anticipated to contribute nearly 1 mb/d."

(Most of the new oil will likely come from the North American shale beds. The US is expected to rise from about 9-10 mb/day today to 13 mb/day, Canada adds 1 mb/day, with the rest coming from Russia, Argentina, Bahrain and China. North America has been blessed with the best shales and infrastructure to produce them. Our production from these fields peaks in the late 2020's, however.)

Usage

- "Road transportation represented 45% of global energy demand in 2017. This is followed by aviation, which is estimated to be the fastest growing sector.
- "Other renewables" such as solar and wind are expected to grow at 7% per year through 2040, although this is from a small base, so oil will still be paramount.
- By 2040, electric vehicles are expected to be 13% of the total fleet of global vehicles on the road. These include battery electric and plug-in hybrid electric vehicles.
- Natural gas passenger cars are not expected to witness the same growth as electric vehicles. An even slower expansion is projected for fuel cell vehicles, which are forecast to remain a niche market over the forecast period."

Source: Organization of the Petroleum Exporting Countries. 2018 OPEC World Oil Outlook. September 2018. Available from: http://www.opec.org.

Our takeaways?

One, like it or hate it, oil and natural gas are likely to be the primary fuels of the world for another 20 years.

Two, who knew Africa would one day rival China and India in terms of total population?

Grocery Chauffeur

While OPEC was busy writing this massive report about the future of oil, Alphabet (**NASDAQ GOOG**) - the company formerly known as Google – was busy plotting its own version of the future.

It may involve oil, or it may not. Google doesn't care.

Alphabet has a self-driving automobile division called Waymo. Investment firm Morgan Stanley recently advised clients that Waymo could be worth up to US $175 billion on its own. Not bad for a company few have ever heard of.

Waymo is an artificial intelligence program behind self-driving cars. These could be electric cars, such as those made by Tesla (**NASDAQ TSLA**) or GM's Volt (**NYSE GM**). Waymo has a partnership with Fiat Chrysler to roll out more than 62,000 Chrysler Pacifica minivans for its taxi service (source: cnbc.com). They could also be hybrids or even gasoline-powered. The thing such vehicles have in common? No driver.

The first company to be disrupted might be one of the big disrupters already: Uber. Waymo is planning on introducing a driverless taxi service in Phoenix at the end of this year, and rides would be much cheaper than even an Uber ride.

The second company to be disrupted is Tesla. That company has its own self-driving software, but it is not as good as Waymo's. Reports submitted to the California Department of Motor Vehicles by self-driving vehicle manufacturers during 2017 indicate that these types of cars often require "disengagements", when a human driver takes over from the automated system. In recent tests for disengagements, Waymo scored just 1 disengagement in 5,600 miles. This was five times better than 2nd place GM, and ten times better than the next competitor. Both Tesla and Uber have had autonomous car fatalities with their software.

Waymo is after the same driverless trucking market that Tesla is after. This is an enormous $3 trillion global market.

Finally, Waymo is also likely to challenge Amazon (**NASDAQ AMZN**) soon. Amazon Fresh is the new grocery store that requires no checkout. Cameras watch what you put in your cart and then just charge your credit card as you leave the store.

Waymo is partnering with Wal-Mart (**NYSE WMT**) to go one better. Dubbed the "grocery chauffeur", you will be able to order your groceries on-line through Wal-Mart, and then a driverless Waymo vehicle will pick them up and deliver them to your door. No need to even go to the store.

We own Alphabet (Google) shares in our Dividend Value portfolio. We are encouraged by the potential upside that Waymo offers.

Thank you for your referrals this month! They are always handled with great care and discretion.

Brain Gain

Memory is a very powerful thing. In fact, some researchers say our memories are what define us – what make us who we are.

Some people will lose memories due to traumatic injuries or even concussions, but the biggest memory risk in society today is Alzheimer’s disease.

Currently, 10% of people over 65 have Alzheimer’s dementia in the US (Alzheimer’s Association). Unfortunately, this ratio increases with age, such that 17% of people between 75 and 84 are likely to get it, and 32% over the age of 85. And these demographics are the fastest-growing parts of the population.

Alzheimer’s is a bit like cancer when it comes to research. It is hard to pinpoint the cause and its treatment is complex. There are a number of drugs in the works to slow it, but nothing yet to stop it once it starts. Like cancer, treatments will be widely varied – we will have to hit it from a number of directions.

An interesting new avenue is electric brain stimulation. When epilepsy patients were wired up to determine the cause and region of their seizures, the researchers also discovered those parts of the brain most involved in short-term memory. They stimulated these areas (the formal scientific procedure is known as “let’s zap this and see what happens”) and found a dramatic improvement in short-term memory.

DARPA, the US defense research arm – and the agency that invented the internet – is working in this area for both memory and depression control. So far, the results are pretty remarkable. Anxiety disappears under stimulation, and short-term memory improves by as much as 35%. I count at least three universities and agencies working on this new technique, and there are likely many more. The next step will be an implantable chip so you don't have to be wired up like a fuse box all day.

Future treatments for memory impairment and Alzheimer's will likely include a combination of drugs, nano-scale devices, and electronics such as this. Hopefully, they arrive soon.

Here is a link to a piece that describes this in more detail.

https://leapsmag.com/the-mind-blowing-promise-of-neural-implants/

http://www.dividendvaluepartners.com

We thank you for your business and your referrals and we hope you find our site user friendly and informative. We would welcome your comments.

How to contact us:

paul.siluch@raymondjames.ca
lisa.hill@raymondjames.ca
peter.mazzoni@raymondjames.ca

(250) 405-2417

Prices shown are as of close September 27th, 2018.

Alphabet Inc. - Raymond James & Associates makes a market in shares of GOOG.
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