



# NEWSLETTER Q<sup>3</sup>

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## TD Wealth Private Investment Advice

Tel: 519-253-1028  
TF: 1-800-287-1898  
156 Ouellette Avenue, Suite 300  
Windsor, ON N9A 1A4  
[www.brazierdupuiswealth.com](http://www.brazierdupuiswealth.com)

## What Drives Us

Summer 2023

We've all become somewhat numb to post-covid price increases, but the price of a watermelon recently jolted me. At 13 dollars, it felt like a substantial increase from what I traditionally paid. The Canadian central bank is also concerned about my watermelon budget as they continued their battle on inflation with a quarter-point interest rate hike last month.

Inflation is measured as the rate at which prices are rising, and for the past two decades, Canadians can be forgiven for having given little thought to it. Prices have been relatively stable and in line with the central bank's target of about 2%. The economy works best when inflation is stable. Predictable, even if moderately increasing prices, allows consumers and businesses to plan for their expenses and understand their income needs.

At a 2% target, one can expect prices to double about every 35 years. At the most recent reading in Canada of 4.3%, prices would double about every 18 years and at the highest reading of 8.1% in June of 2022, prices would double in less than a decade. In other words, all things being equal, if the central bank successfully controls inflation, the cost of watermelon is not likely to come down. Instead, it will simply rise at a slower and more predictable rate.

A key concept for investors and savers to understand, your dollar today will have a different purchasing power in later years. This is why we promote having a diversified portfolio of quality assets that should provide returns greater than inflation over a long period of time. In this edition, we've included an interesting article on Artificial Intelligence that helps to explain why so many are excited about this technology. On the back cover, you can learn about some of our team's recent activities.

Stay Well,



Brad Brazier  
Senior Portfolio Manager  
TD Wealth Private Investment Advice



Brad Brazier  
Senior Portfolio Manager



P.J. Dupuis  
Senior Portfolio Manager



Nicole Slatford  
Client Service Associate



Samuel Lau  
Associate Investment Advisor



Boraba Sordachanh  
Administrative Assistant



Brian Porter  
Associate Investment Advisor



### “The greatest shortcoming of the human race is man’s inability to understand the exponential function.” – Allen Bartlett

According to ancient legend, chess was invented by Grand Vizier Sissa Ben Dahir around 6th century AD and given as a gift to King Shirham of India. The king was so delighted with the game that he offered him any reward he requested. With a caveat that it had to sound reasonable. The Grand Vizier had a modest sounding proposal: “Just one grain of rice on the first square of a chessboard. Then put two on the second square, four on the next, then eight, and continue, doubling the number of grains on each successive square, until every square on the chessboard is reached.”

King Shirham was baffled. Intuitively, it didn’t make sense. Why did this wise inventor ask such a modest reward for his wonderful game? Nevertheless, he immediately agreed. He ordered his treasurer to pay the agreed upon sum. During the first half of the chessboard, the tabulation of the reward was rather uninteresting. At first, the inventor was given spoonfuls of rice. Then bowls of rice. And then barrels. By the end of the first half of the chess board, the inventor had accumulated one large field’s worth or rice, or about 4 billion grains. At this point, the king started to take notice. As they moved through the second half of the chessboard, the situation rapidly worsened for the king.

One version of the story has the king going bankrupt as the 63 doublings, eventually totalled 18 quintillion (or million trillion!) grains of rice. At ten grains of rice per square inch, this requires rice fields covering twice the surface area of the Earth, including the oceans. Another version of the story has the inventor losing his head as punishment for this unreasonable request!

The story illustrates an important lesson: people are psychologically bad at dealing with exponential growth. Exponential growth shows an early stage of apparent inertia which it does not catch the eye. But suddenly, and completely unexpected, it arrives like a tsunami, flooding everything and everyone. In the real world, growing at an exponential rate is impossible for too long. There is not enough rice in the world to make such a massive payment based on accelerating growth! But those constraints are not as applicable in the digital world.

These days, computers and many other technologies are exponential, humans are not. This is where we see a lot of problems. Humans cannot predict the effects of exponential growth and cannot deal with the effects of it. We are constantly surprised by its speed. A more recent version of this chess tale is Moore’s Law. Gordon Moore, who recently passed away at age 94, was a pioneer in the semiconductor industry, the co-founder of Intel, and the originator of what came to be known as Moore’s Law. In 1965, he predicted that computing power would double every year. (Later amended to every second year.) “It sure is nice to be at the right place at the right time,” he told an interviewer in 2005. “I was very fortunate to get into the semiconductor industry in its infancy...from a time where we couldn’t make a single silicon transistor to the time where we put 1.7 billion of them on one chip.”

When it comes to technology, the second half of the chessboard is a phrase coined by futurist Ray Kurzweil, in reference to the point where an exponentially growing factor begins to have a significant economic impact on an organization’s

overall business strategy. Today, we're in the midst of another technological revolution based on artificial intelligence. Exponential change has been occurring for many years in AI, but it is only now because of the hype around ChatGPT, which can write human-like text and computer code, that AI has entered the public's perception. The public is awakening to the very real possibility that these developments mark a "second half of the chessboard" moment.

Microsoft co-founder Bill Gates has said OpenAI's GPT is the most revolutionary advance in technology since the microprocessor, the personal computer, the mobile phone and the Internet. He predicts that, due to the record-breaking speed of innovation, we will soon think of the pre-AI period in the same way some of us might remember the blinking green cursor and having to first type C:> to work on a computer.

None of this means that innovation in AI won't stumble from time-to-time or, as Gates puts it, "make factual mistakes and experience hallucinations." Nevertheless, the technology will be transformative for individuals, businesses, and society at large. Currently, AI tools such as ChatGPT are trained to do a limited number of specific tasks. In the future, artificial general intelligence (AGI) will have the potential to learn any task or subject. On a mundane level, this could be like having the best personal assistant ever, or as Microsoft calls it, a co-pilot or personal agent, to write your emails, manage your inbox, and so forth.

Which brings us to investing. How will AI, and potentially AGI, transform businesses—both small and large? It's impossible to predict, but Kurzweil himself noted, "I realize that most

inventions fail not because the R&D department can't get them to work, but because the timing is wrong —not all of the enabling factors are at play where they are needed. Inventing is a lot like surfing: you have to anticipate and catch the wave at just the right moment." AI has had numerous false starts in the hype cycle over the last few decades, but it appears that many AI enabling factors are finally come into play which should feed into a sustaining positive feedback loop.

We are likely to see greater efficiencies and productivity as companies deploy AI in such areas as sales, customer service, manufacturing, finances, and various office functions. Many of the new business applications for AI tools may fall into use cases that are largely invisible to the public. These will not be the kinds of dazzling feats that garner media attention and the public's fascination. They are more likely to be incremental improvements in productivity. Several of the businesses we own in our portfolios already use AI to increase efficiency and optimize productivity.

The deployment of large sums of investment dollars and resources is sure to speed up AI innovations. As humans, one thing we're not so good at is understanding the potential effects of exponential change. With the acceleration and adoption of machine learning, the pace of innovation, and the magnitude of change, what happens after we cross to the other side of the chessboard is anyone's guess. Where will we go from here—and at what speed? In the coming decade, AI may feel much like the last year's Academy Award winning movie—*Everything Everywhere All at Once*. What a time to be alive!

**To view the digital version of this PenderFund article, please visit: <http://bit.ly/433mEeq>**

# BDWM IN THE COMMUNITY

## It has been a very busy quarter for the BDWM Team!

We had the opportunity to meet with two interesting Canadian small-cap companies. Paul Levesque and Philippe Dubuc, the President and Chief Financial Officer of Theratechnologies, joined us for a morning of meetings in Windsor. Theratechnologies is a Canadian-based biopharmaceutical company with commercial drug applications for HIV and an early-stage oncology program.

We then travelled to Burlington to meet Jeff MacDonald and the management team at EcoSynthetix. This Canadian-based renewable chemicals company specializes in bio-based binders that have a wide range of commercial applications. Both teams provided updates on their businesses, insight into the markets they serve, and their general thoughts on the current business environment.

Brad and Pj were also invited to attend TD's executive club conference in Lake Louise during the fiscal quarter. This was an opportunity to learn and collaborate with colleagues and provide valuable feedback on the firm's strategic direction directly to senior management.



Theratechnologies – Brad Brazier, Paul Levesque CEO, Philippe Dubuc CFO, Pj Dupuis, Brian Porter at the Windsor Club



Brad Brazier and Pj Dupuis attending TD's executive club conference in Lake Louise, Alberta



EcoSynthetix – Brian Porter, Jeff MacDonald CEO, Sam Basile, Brad Brazier, Pj Dupuis at the EcoSynthetix Headquarters in Burlington

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