VERIPATH
FARMLAND FUNDS

Veripath Q4 2022 Newsletter

We are covering a number of topics in this quarter's letter ranging from some misconceptions surrounding the agriculture sector and an overview of some of the factors that we believe may tip the scales towards stagflation in Canada in the medium term:

1) Dispelling Some Agriculture Misconceptions – Ruminants, Farming Practices and Fertilizer Use
2) Stagflation – The Spectre of Stagnation and Inflation
   - Will the 2020s Rhyme with the 1970s?
   - Declining Household Savings Rates
   - Canada's Reliance on Residential Real Estate to Drive Nominal GDP
   - Energy Prices Duplicating the Oil Shock of the 1970s
   - High Energy Costs, High Debt and Low Savings Rates – Is It Time to Consider Some Stagflation Insurance?

Stephen Johnston
Director – Veripath
sjohnston@veripathpartners.com

Barclay Laughland
Director – Veripath
blaughland@veripathpartners.com

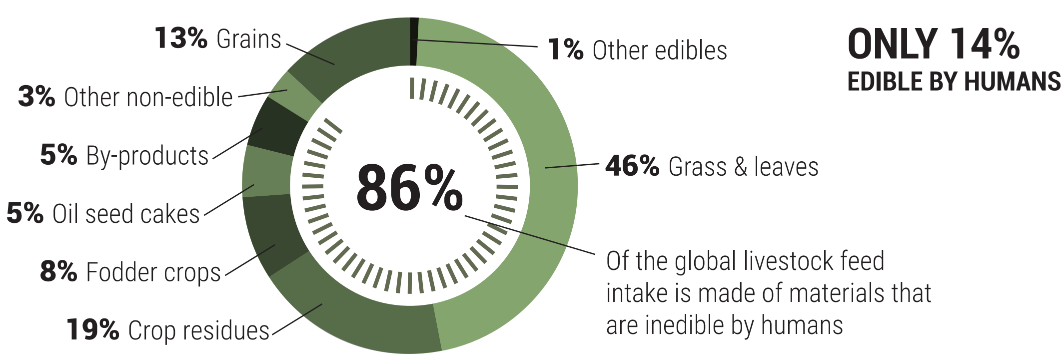
Carmon Blacklock
VP – Veripath
cblacklock@veripathpartners.com

AGRICULTURE MISCONCEPTIONS

We thought it might be useful to start with an attempt to dispel some persistent and widely held misconceptions about the agriculture sector.

Firstly, let's address the idea that livestock are detrimental to the environment. Ruminants, through their evolution over millennia, have developed a symbiotic relationship with plants that allows for the conversion of cellulose into valuable animal protein and fats. Furthermore, a significant portion of global livestock feed is composed of materials indigestible for humans, with grass alone comprising nearly half. These factors highlight the efficiency and sustainability of livestock production within the agriculture industry.

Chart a: Analysis of Global Livestock Feed Intake

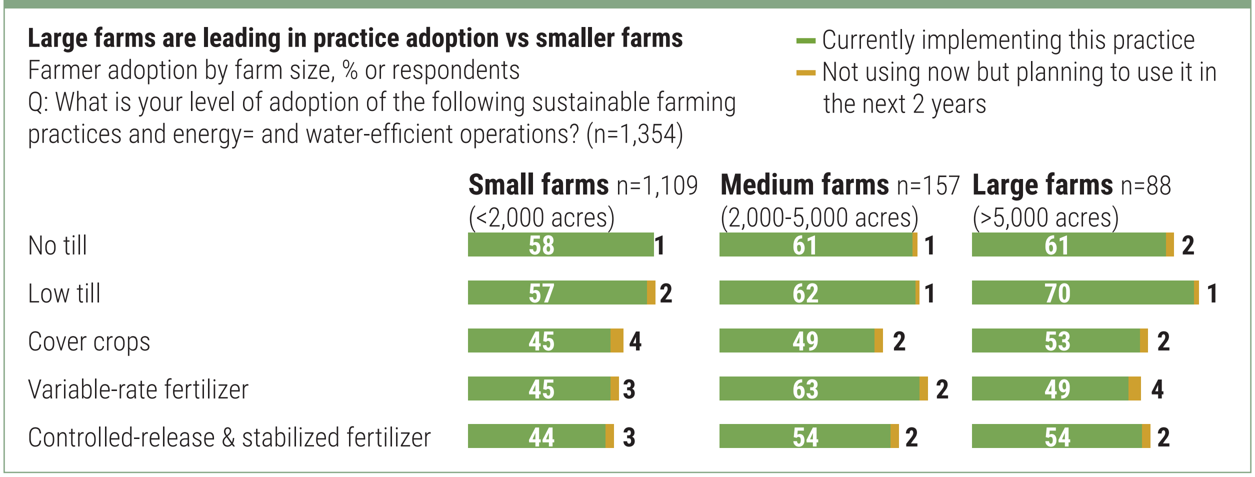


Source: www.sacredcow.info

> *"Even if the government spends itself into bankruptcy and the economy still does not recover, Keynesians can always say that it would have worked if only the government had spent more."* – Thomas Sowell

Secondly, that larger scale farming damages the land. Quite the opposite in fact. Larger farms are generally better for the soil because they are more able to adopt soil management practices that improve soil health. For example, larger farms can implement more advanced soil conservation practices such as contour plowing, crop rotations, and cover crops. These practices help to increase the organic matter content of the soil, improve soil fertility, and reduce erosion. Additionally, larger farms are better able to access the resources necessary for soil management, such as machinery and irrigation systems. This helps to ensure that soil management practices are implemented properly and consistently, which further improves soil health. By way of example, Veripath's ~110,000 acre holding is approaching ~100% low-till/zero-till practices which is far above provincial averages.

Chart b: Farm Practices Adoption Survey



Source: McKinsey US Farmer Insight 2022-2023 (n=1354)

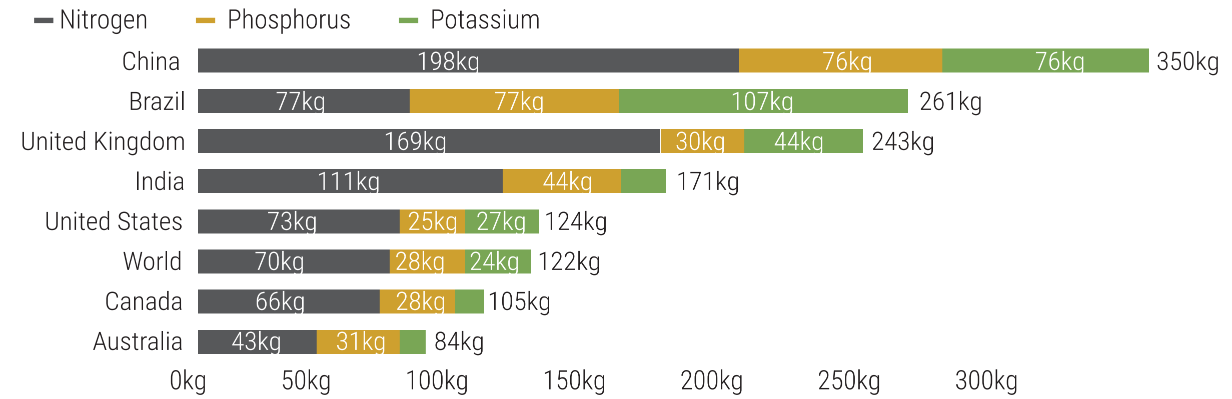
> Nitrogen Use Efficiency ("NUE") is the ratio of nitrogen in harvested products compared to the inputs (fertilizers). A NUE of 60% would mean that the amount of nitrogen in the crops was 60% of the nitrogen that was added to them as inputs. The remaining 40% of nitrogen was not used by the crops.

The McKinsey study confirms the efficiency of larger scale farming and its positive impact on land preservation and sustainability.

Thirdly, government forced reductions in nitrogen fertilizer use are required to curb "*overapplication*" by western farmers and that such reductions will be consequence free for food prices: Canadian farmers are widely recognized as being highly efficient achieving NUEs of approximately 60% versus the global average of around 40%.

Canadian farmers are also low absolute users of fertilizer (see per hectare data below) – a testament to the quality of their farming practices.

Chart c: Fertilizer Use Per Hectare of Cropland, 2019



Source: FAO

Precision farming is part of this success story, and it is becoming increasingly common in Canada. According to a recent survey, most Canadian farmers (77%) say they are using at least one type of precision agriculture technology, while nearly half (47%) say they are using multiple precision agriculture technologies. This is due in large part to the increased availability of precision agriculture technology, as well as the growing recognition of its potential to improve yields and reduce costs.

Finally, it is important to remember that nitrogen fertilizer is not an optional component of the global food production system. *"With average crop yields remaining at the 1900 level* (ie without the use of the Haber process to produce nitrogen fertilizer – addition mine) *the crop harvest in year 2000 would have required nearly 4 times more land and the cultivated area would have claimed nearly half of all ice-free continents, rather than under 15% of total land area that is required today"* – Vaclav Smil. Nearly 50% of the nitrogen currently found in human beings originated from the Haber process and it enabled the global population to increase from 1.6 billion in 1900 to approximately 8 billion today.

Clearly given its critical and arguably irreplaceable role in feeding the global population, nitrogen fertilizer reductions are going to impart upward real pressure on agricultural commodity prices. Moreover, our experience is that there is a compelling ROI for large scale farmers who adopt the technology (precision farming, variable rate application etc) to reduce fertilizer use materially as its one of their biggest operating costs. While smaller farmers have a similar incentive, they lack the scale and may not have access to the capital to fully capture the returns. Will this mean greater profits for larger farms and reduced profits for smaller farms?

Precision farming is a management concept which utilizes modern technology, such as GPS and Geographic Information Systems, to accurately measure, monitor, and manage soil and plant production. It enables farmers to apply the right amount of fertilizer, water, and other inputs at the right time and place, resulting in more efficient and effective use of resources. Precision farming also allows for the optimization of crop yields by taking advantage of site-specific variations in soil, climate, and topography. This helps farmers to reduce production costs and improve yields by providing real-time data on crop growth and development, soil fertility, and other environmental factors.

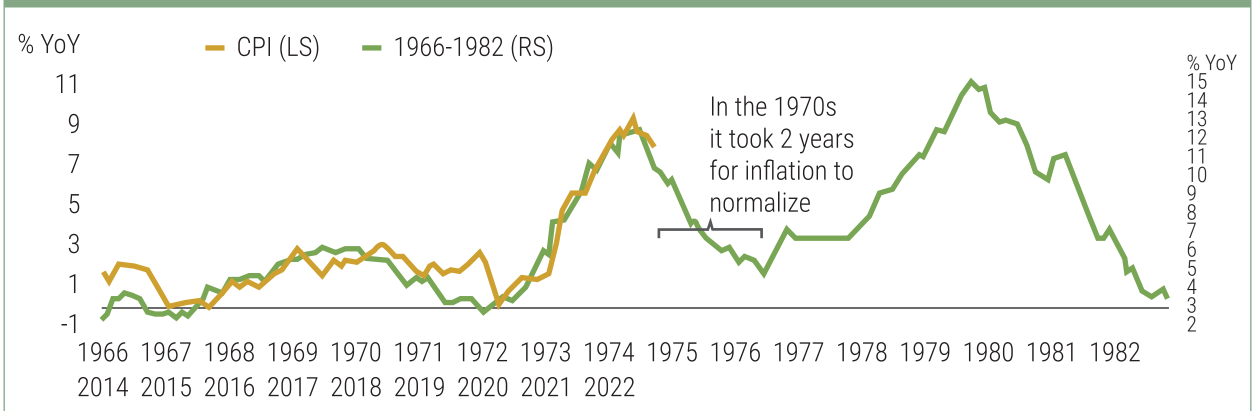
STAGFLATION – WILL THE 2020S RHYME WITH THE 1970S?

It is widely accepted that inflation is a pernicious economic force for the middle class and that stagflation is its even more malign relative. The question arises then if current inflationary/stagflationary trends will be as difficult to extinguish as those of the 1970s. Certainly, a large contingent of financial analysts believe that this will be the case and that current expectations of a rapid return to a world of sub-2% inflation are not justified.

"The Fed typically will hike until Fed Funds exceeds CPI, which intersect in May 2023, should our Fed and CPI forecasts prove correct. Should CPI prove a bit more stubborn than forecast, could we see the Fed continue with a series of 25bps hikes beyond the March meeting? Conversations with our EM client base reveal views that Fed Funds likely needs to reach the 6 – 7% range. Why? For DM countries that see CPI exceed 5%, it takes ~10 years for CPI to fall back to 2%. A higher terminal rate than 5% has been mentioned in recent Fedspeak by Evans and Williams last week." Source – JP Morgan "Thoughts on the Terminal Rate"

If history is any guide, it could take years for inflation to return to 2%. Assuming that is the case, can the developed world tolerate a large increase in real rates and more importantly one that is sustained for years?

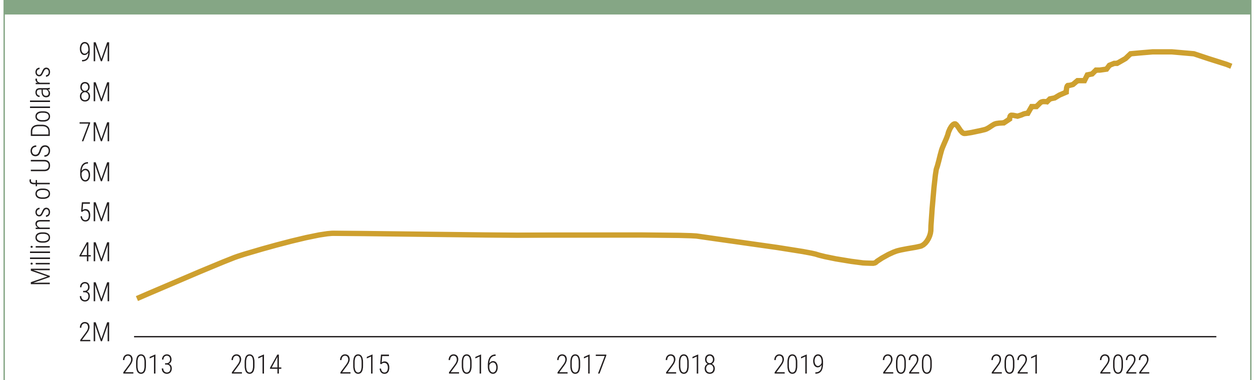
Chart 1a: 1970s CPI versus 2020s



Source: BLS, Bloomberg, Apollo Chief Economist (Oct 21, 2022)

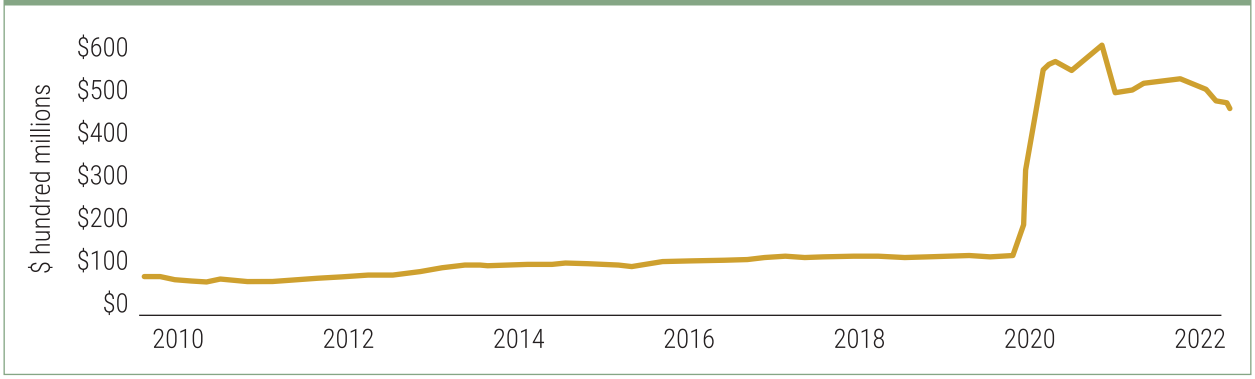
While the current series of G7 rate hikes have been rapid and steep, its important to note that the more difficult part of the inflation fight (shrinking the monetary base) has barely even started. Assuming that there is a genuine desire to reduce inflation rather than simply to give the impression of fighting inflation then central bank balance sheets must shrink materially from their current elevated levels.

Chart 1b: Federal Reserve's Balance Sheet



Source: St Louis Federal Reserve

Chart 1c: Bank of Canada's Balance Sheet

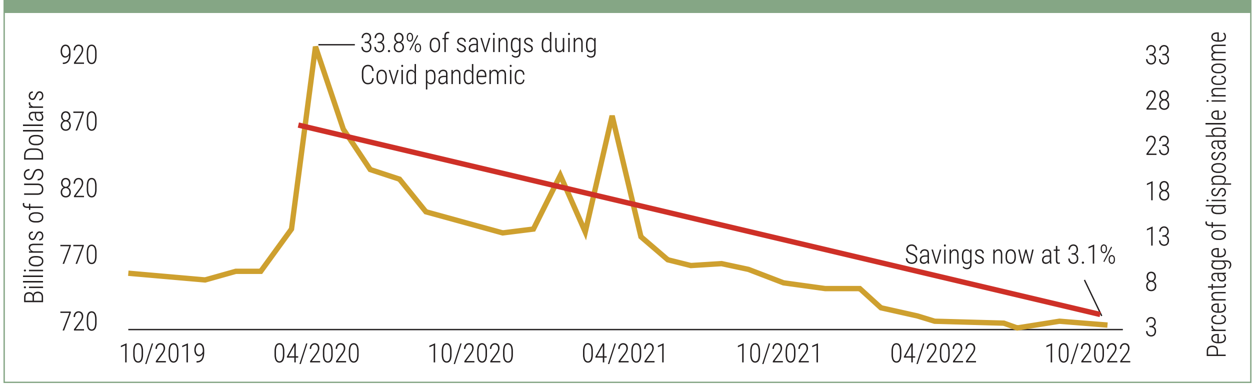


Source: Bank of Canada

HOUSEHOLD SAVINGS AND STAGFLATION

Savings are the source of the capital required for real growth. In the west, savings rates continue their downward trajectory after the artificial COVID stimulus boost. If we do not save, from where will the raw material for real growth come?

Chart 2a: US Personal Savings Rate



Source: Bloomberg, Lombard Odier

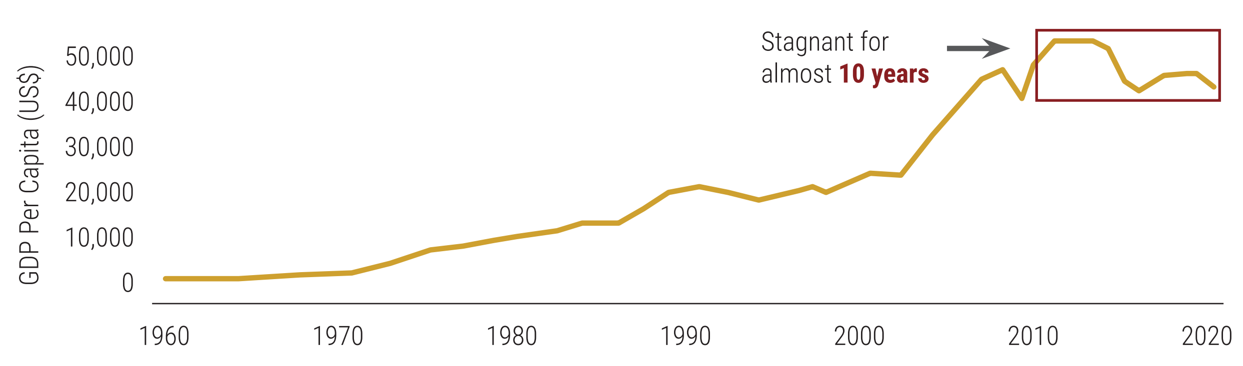
Chart 2b: Canada Personal Savings Rate

Source: Tradingeconomics.com, StatsCan

RESIDENTIAL REAL ESTATE AND STAGFLATION

I would suggest that Canada's residential real estate market may present some serious headwinds to economic growth in terms of GDP/capita which has already been flat for a decade and counting.

Chart 3a: Canadian GDP per Capita Measured in USD$



Source: World Bank

I believe that residential real estate has been a contributor to the unimpressive trend in Canadian GDP/capita as it has been diverting large amounts savings/capital into what is ultimately a consumption good that makes only a marginal contribution to the overall productive capacity of the economy. Residential real estate is a disproportionate part of the Canadian economy as real rates are rising, and affordability is low.

Simply put, Canadians spend far too much on housing, use excessive amounts of leverage to do so, at prices that are far beyond any reasonable interpretation of historic fundamentals. It is important to consider the potential contractionary economic pressures if these trends were to revert to anything close to historical averages.

Chart 3b: Investment in Dwellings as % of total gross fixed capital formation in 2017-2021

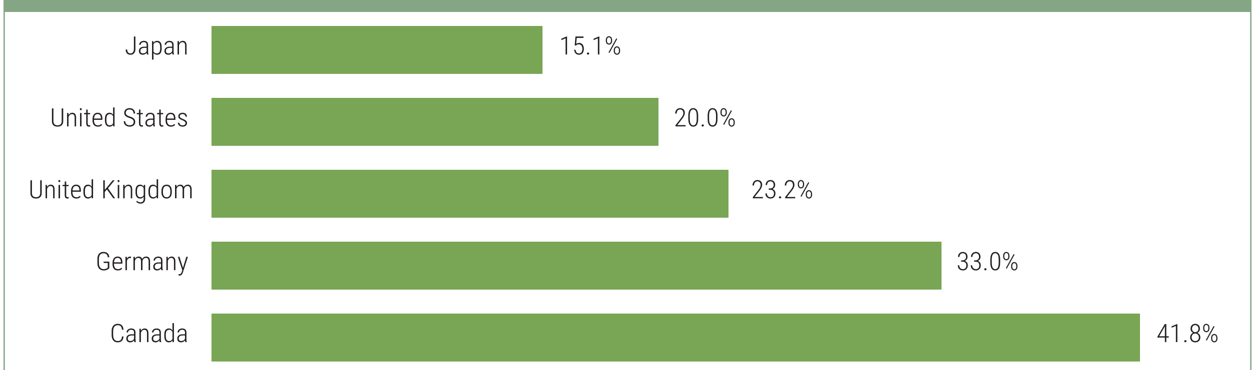


Chart 3c: Canadian House Price versus Disposable Income

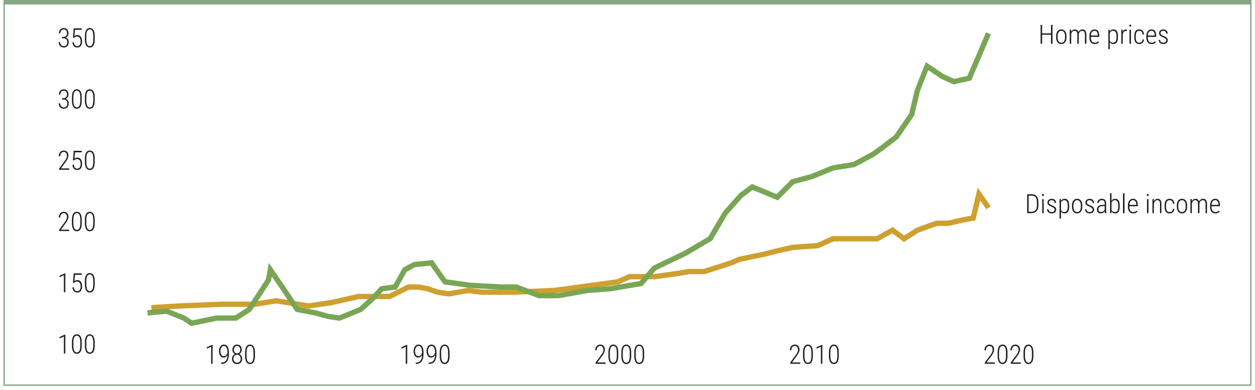
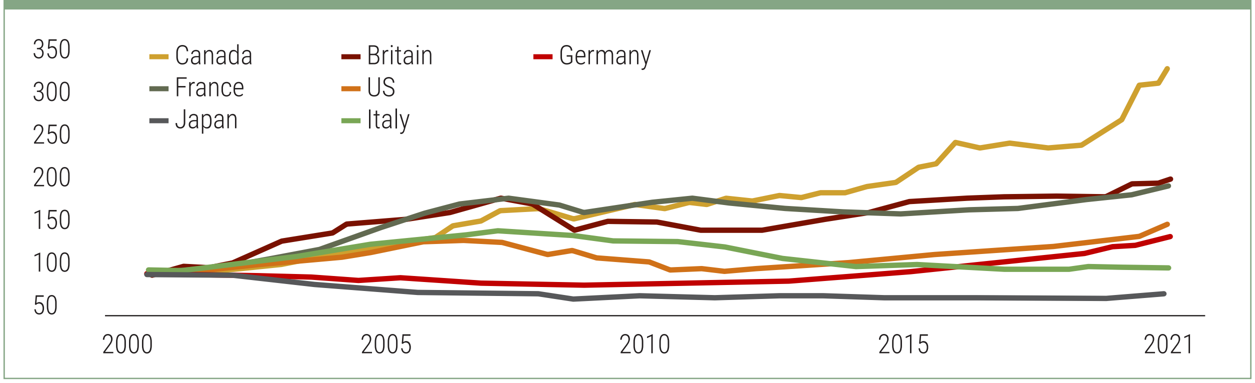
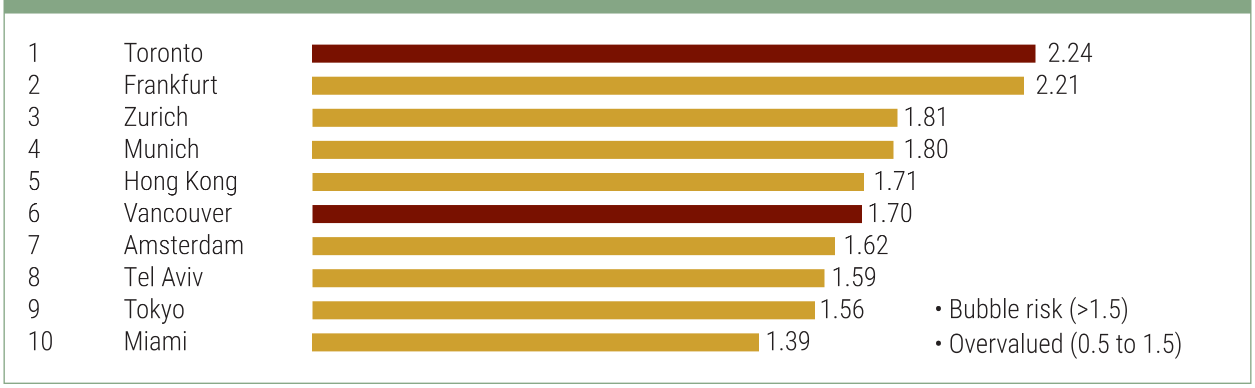


Chart 3d: G7 Countries, Real House Prices (2000 average = 100)



Source: Federal Reserve Bank of Dallas

Charts 3e: UBS Global Real Estate Bubble Index 2022



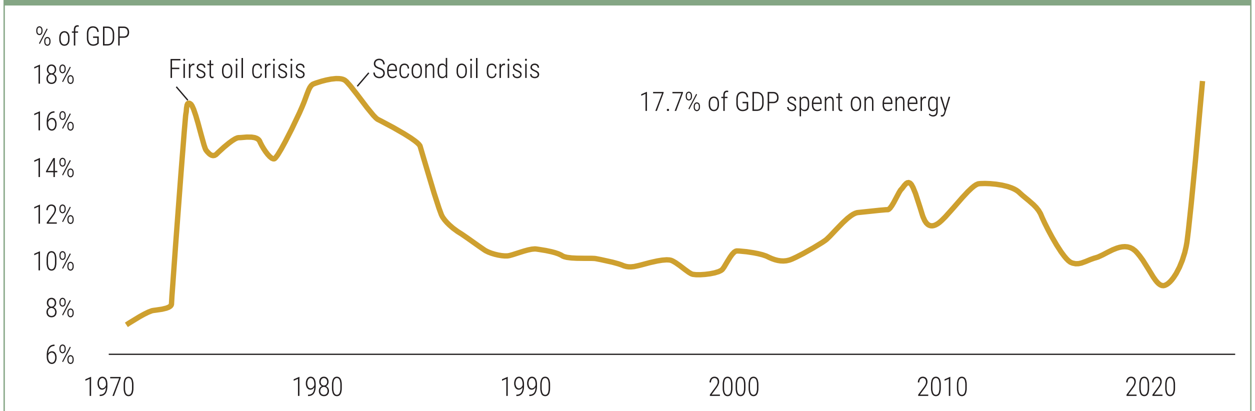
Source UBS

The magnitude of the disconnect between affordability and residential real estate prices is a recent anomaly driven by artificially suppressed interest rates and expansionary fiscal and monetary policy. It would be reasonable to expect some mean reversion, particularly in relation to disposable income.

ENERGY AND STAGFLATION

The recent increase in energy spending as a percentage of GDP is on par with the 1970s stagflationary shock driven by 1) the OPEC embargo and oil re-pricing after the Yom Kippur war and 2) the US default on gold convertibility which ended Bretton Woods. Fast forwarding to today, the greater demand for energy from less developed economies and higher absolute population growth versus the 1970s means that energy prices will likely have a greater impact on economic growth than they did in the 1970s.

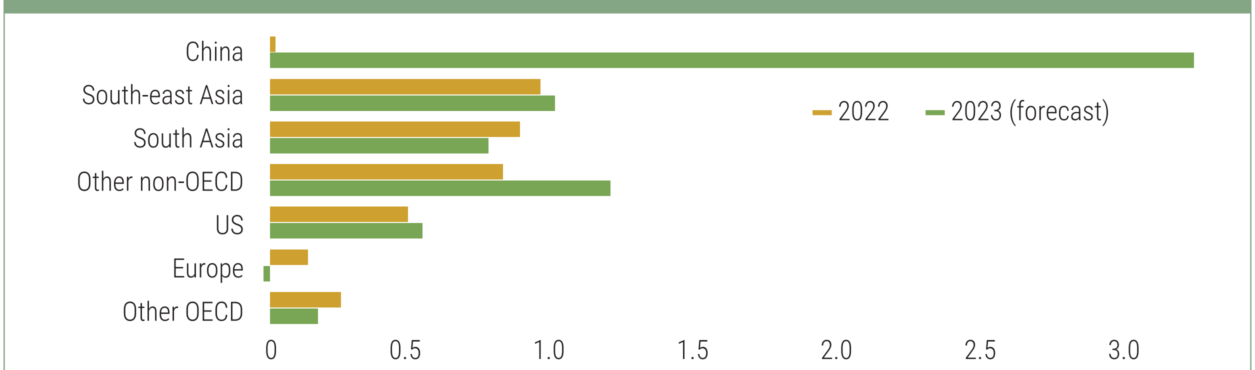
Chart 4a: Estimated Share of GDP Spent on Energy End-use (% GDP)



Source: OECD Economic Outlook 2022

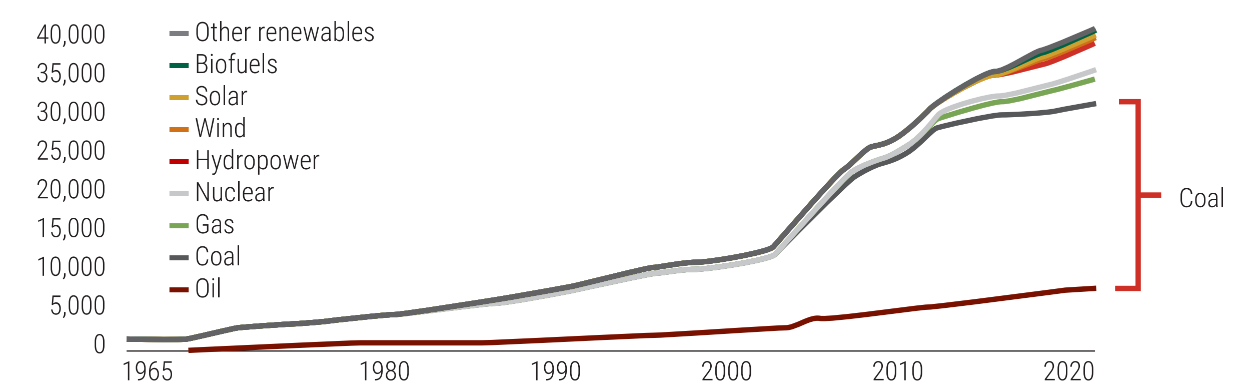
A price shock of this magnitude combined with resilient demand is likely to have serious long-term effects. The seriousness of shock can be seen in the scramble to source cost effective sources of energy, a scramble that is seeing inexpensive coal returning to the G7 energy mix although globally it never left despite claims to the contrary. China expects to double coal fired power plant capacity by the end of 2023 building new coal-fired power plants with a capacity of at least 165 gigawatts – which is equivalent to more than double of Germany's current total electric power demand. That figure is estimated to rise to a total of 270 gigawatts by 2025. China's planned added capacity would be more than the rest of the world combined.

Chart 4b: Energy Markets in 2023 and Beyond will Continue to be about China (Annual Demand Growth by Region, Million BOE/D)



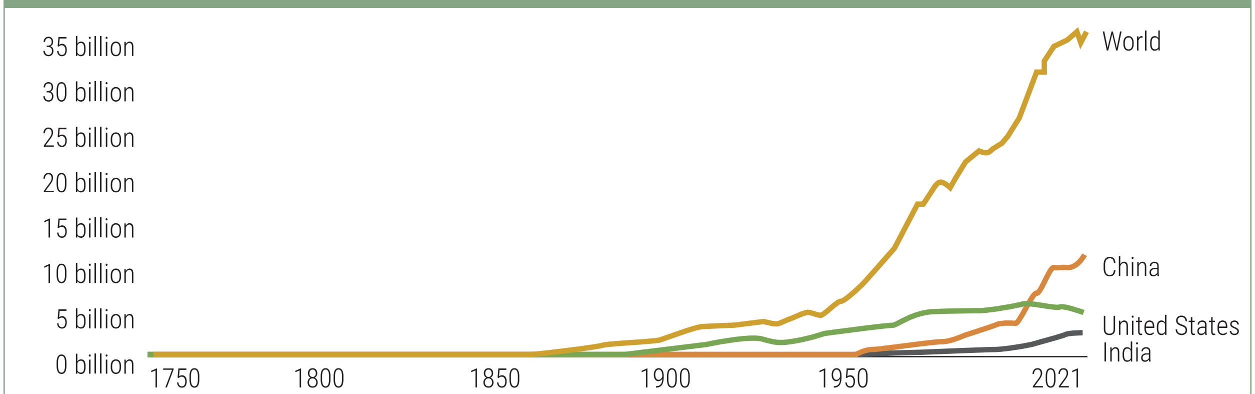
Source: FT, S&P Global Commodity Insights

Chart 4c: China Energy Consumptions by Source – TWh



Source: BP Statistical Review of World Energy

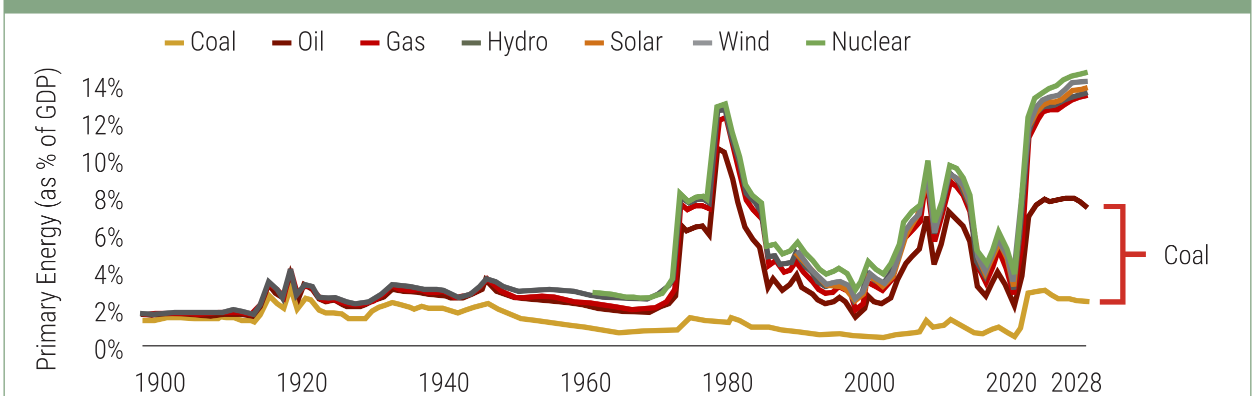
Chart 4d: Annual CO2 Emissions – Carbon Dioxide from Fossil Fuels and Industry



Source: Our World in Data

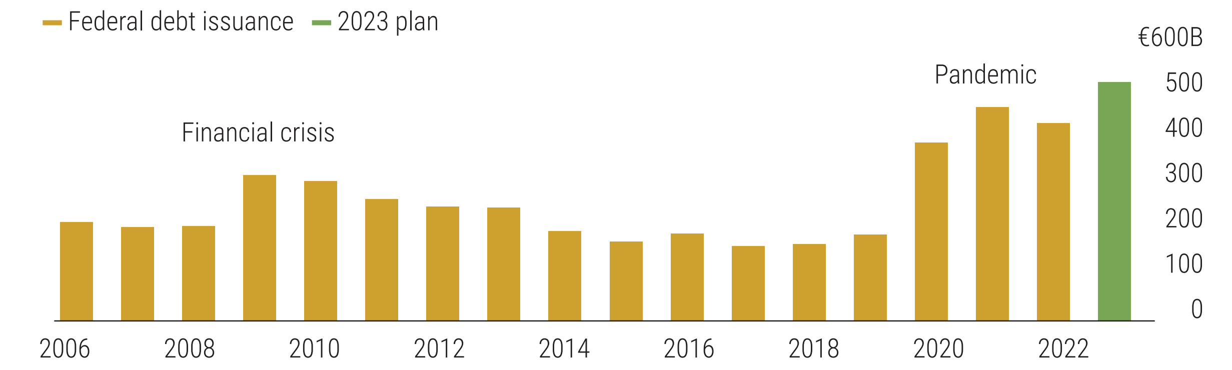
Germany has experienced almost a three-fold increase in energy costs as a percent of GDP.

Chart 4e: Germany has Returned to Coal to Offset the Energy Price Shock



Source: German Government

Chart 4f: Germany is Borrowing to Offset the Inflationary Effects of the Energy Shock



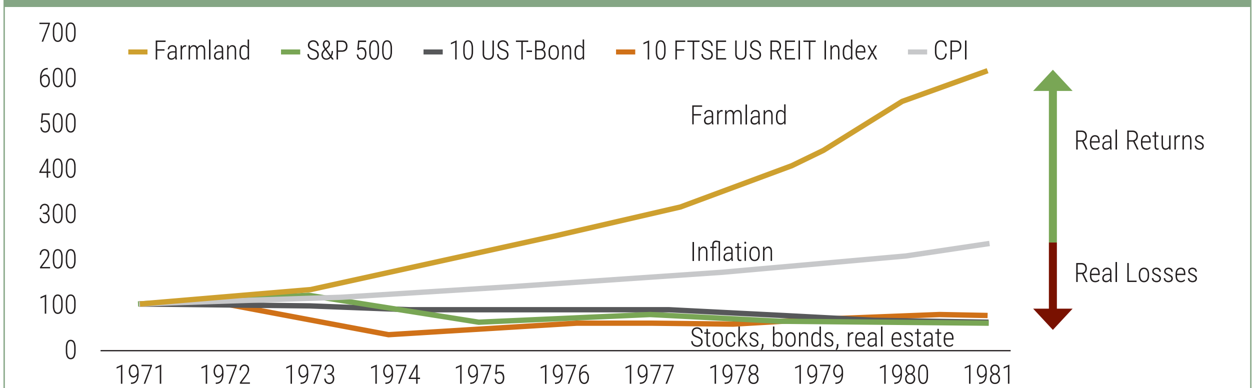
Source: German Finance Agency

In effect, the German government is planning to fight inflation with increases in government spending and deficits, remembering that it was government spending and deficits that created inflation in the first place.

A WORLD OF HIGH ENERGY COSTS, HIGH DEBT AND LOW SAVINGS RATES

The current global economic environment, characterized by high energy costs, high debt, and low savings rates, may lead to a period of stagnation and inflation. To protect against the potential negative effects of this stagflation, it may be advantageous to make defensive allocations to assets that have historically performed well during such periods, such as farmland and commodities, particularly while they appear to be competitively priced.

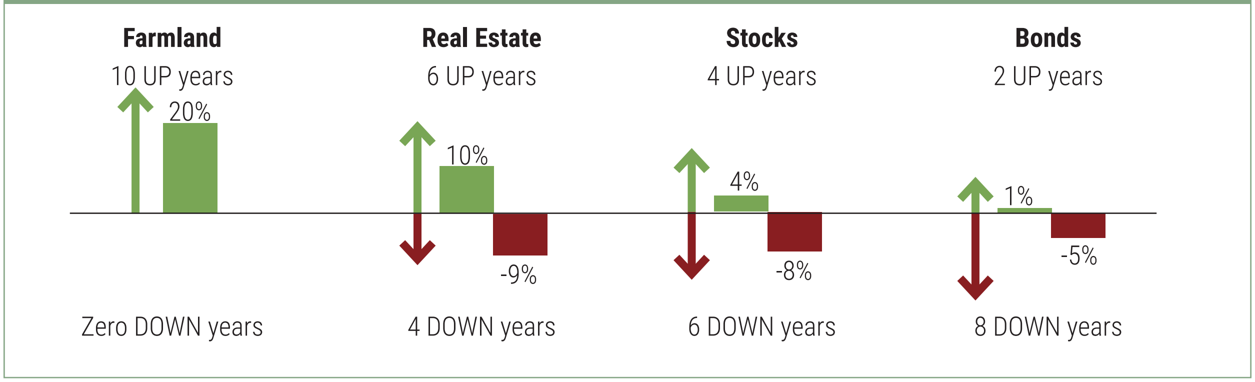
Chart 5a: Canadian Farmland versus CPI, Stock and Bonds in 1970s



Sources: Canadian farmland data-FCC, CPI-Statistics Canada, SP500-10yr Bonds, Macrotrends, FTSE REIT-Nareit, Veripath analytics

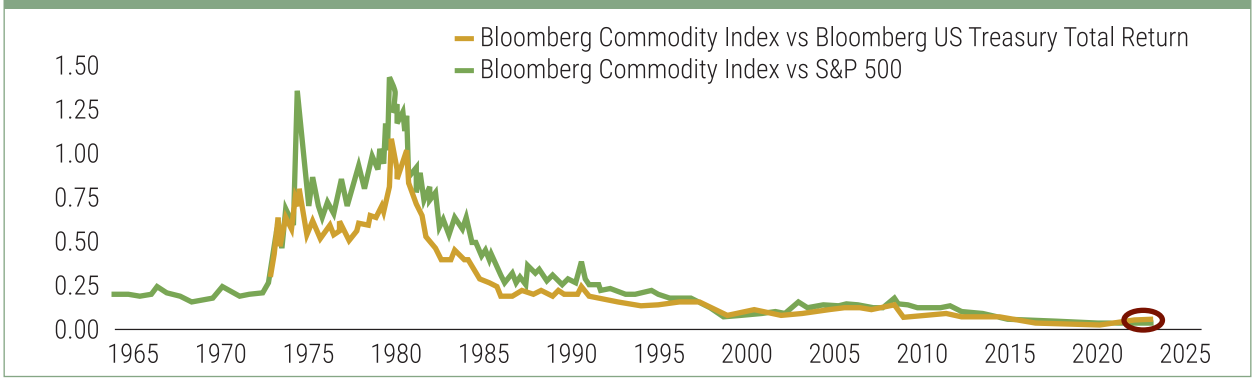
> *"The arithmetic makes it plain that inflation is a far more devastating tax than anything that has been enacted by our legislature. The inflation tax has a fantastic ability to simply consume capital. It makes no difference to a widow with her saving in a 5 percent passbook account whether she pays 100 percent income tax on her interest income during a period of zero inflation or pays no income taxes during years of 5 percent inflation. Either way, she is 'taxed' in a manner that leave her no real income whatsoever. Any money she spends comes right out of capital. She would find outrageous a 120 percent income tax but doesn't seem to notice that 5 percent inflation is the economic equivalent."* – Warren Buffett

Chart 5b: Farmland versus Stock, Bonds and Commercial Real Estate (10 year up/down profile in 1970s)



Source: FCC, CPI-Statistics Canada, SP500-10yr Bonds-Macrotrends, FTSE REIT-Nareit, Veripath analytics

Chart 5c: Commodities versus Stocks and Bonds – Current Ratios



Source: Bloomberg

CONCLUSION

Canadian investors need to seriously consider the potential effects of inflation, or even worse stagflation, on their investment holdings. On one hand, based on 1970s behaviour, the residential real estate market may be negatively impacted by inflation/stagflation – manifested via rising nominal interest rates – and perhaps even more so due to stretched valuations. On the other hand, Canada has a large and competitively priced universe of commodity and commodity-linked assets that can be expected to behave more positively in inflation/stagflation conditions, and which are also trading at conspicuously low valuations in relation to stocks and bonds.

VERIPATH
FARMLAND FUNDS

#300, 4954 Richard Rd SW,
Calgary, AB T3E 6L1
www.veripathpartners.com

About Veripath

Veripath is a Canadian alternative investment firm. Members of Veripath's management team have been investing in farmland since 2007. Veripath is focused on risk first and invests in a way that seeks to reduce operational, weather, geographic and business-related risks while capturing the pure return from land appreciation for its investors. Our goal is to partner with farmers for the long-term using innovative lease arrangements and/or land-unit swaps to give certainty to farming operations.