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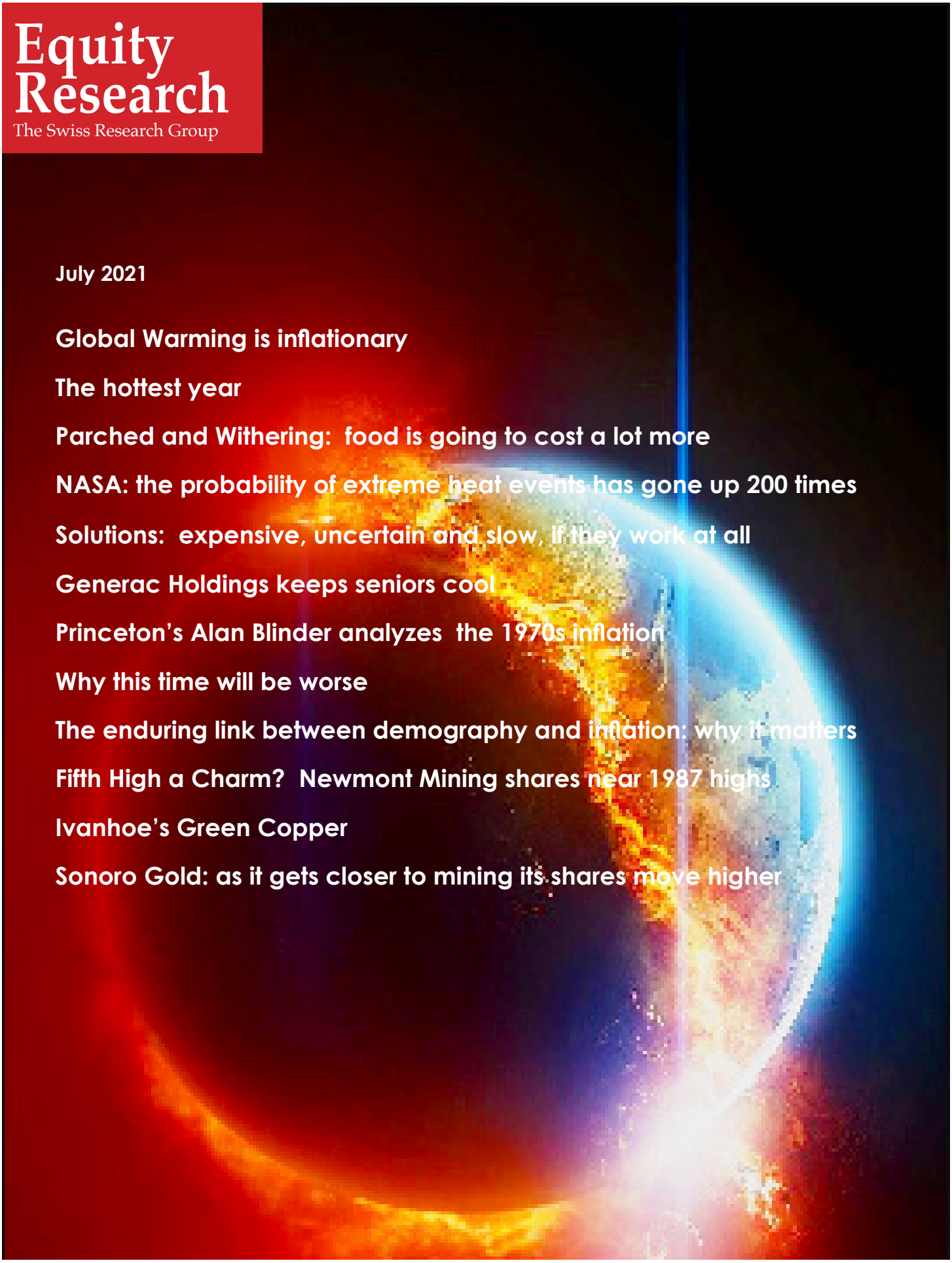

July 2021

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July 4th, 2021 Bulletin
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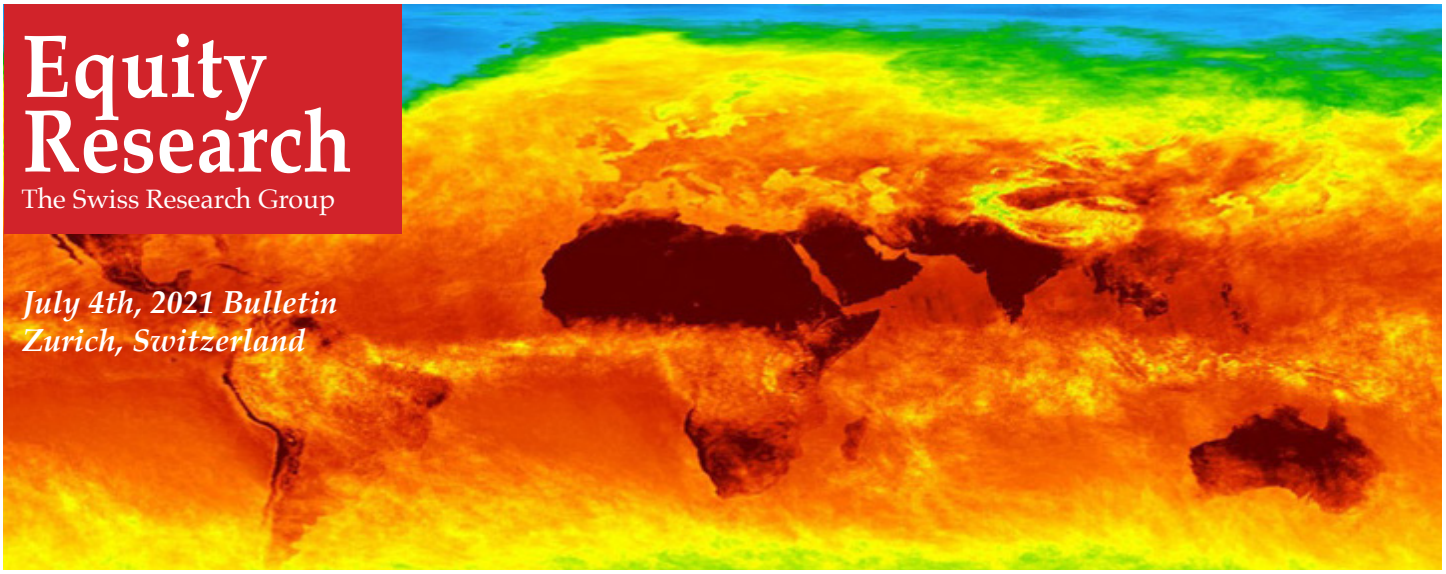
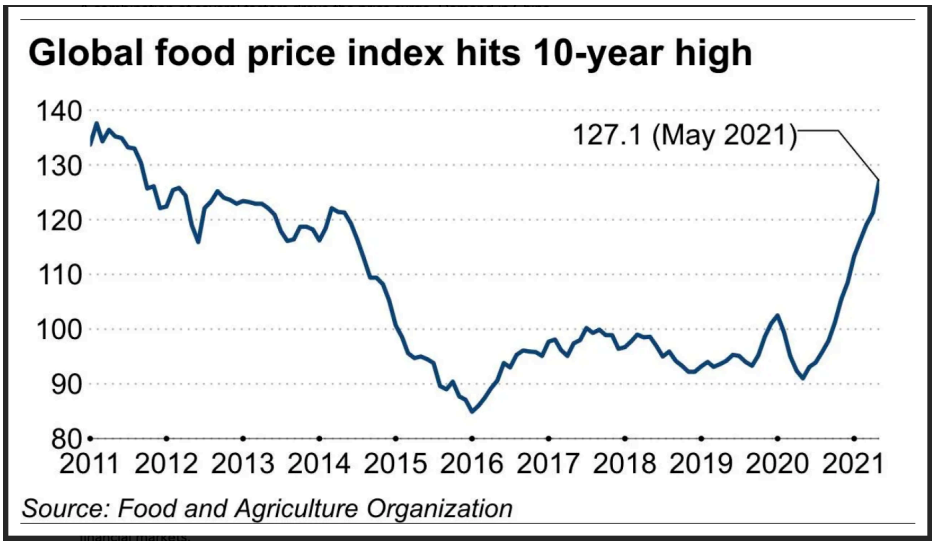


Global Warming is Inflationary

AS if the world's central bankers don't already have enough problems. Record temperatures threaten to worsen already severe drought conditions in some of the world's most important areas of agriculture and, as they do, shortage induced food price increases will continue to propel inflation significantly higher. In Brazil, the worst drought in a century threatens the country's farming industry which accounts for 30% of the country's GDP. José Francisco Goncalves, Ecology Professor at the University of Brasília, advised in a FT report that the drought is devastating the farming industry and that it would "fuel inflation and commodity prices on a global scale". Brazil produces around a third of the world's coffee and the USDA estimates this year's production will be almost a third from 2020. Grow Intelligence, which forecasts agricultural demand and production globally, predicts sharply lower corn production because of "unrecoverable" damage which it says will put pressure on the US to achieve "above trend corn yields". The US Department of Agriculture in turn has cut its estimate for America's 2020/21 corn stocks by 12% in reaction to increased (Brazil drought related) demand. Meanwhile, an ongoing drought across the US Western Corn Belt and Northern Plains is creating a significant level of uncertainty regarding whether or not the needed above-trend corn yields can be attained.



In Northern Europe last week, Moscow recorded its highest June temperature in history when the temperature reached 34.8 Celsius (94.6 Fahrenheit). Temperatures across the region are more than 20 degrees above average with the most extreme temperatures in Scandinavia and parts

of western Russia. Temperatures in the Arctic Circle village of Nizhnaya Pesha hit a Mediterranean-like 30˚ Celsius (86.5˚ Fahrenheit), its highest ever during the month of June.

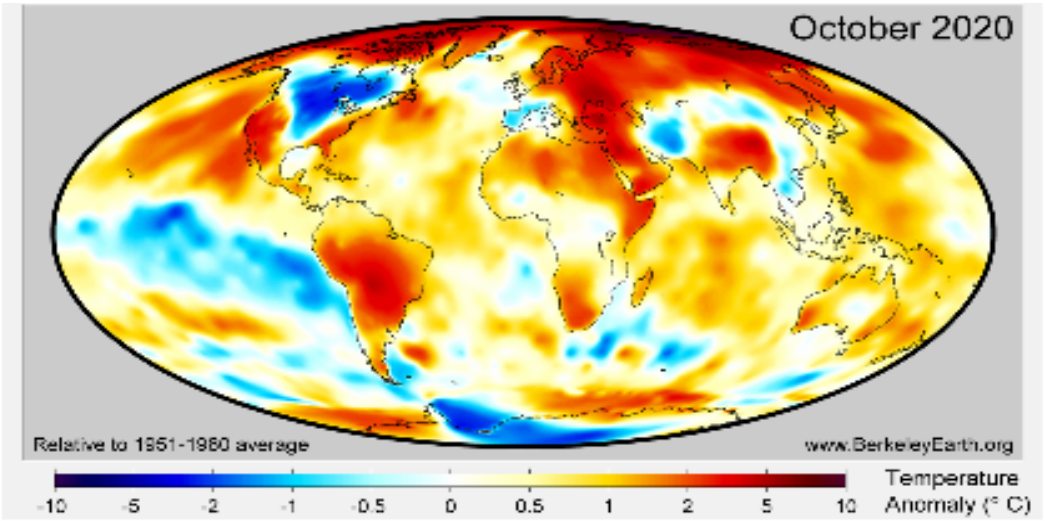
The Hottest Year

Last year was the hottest on record for both Europe and the emerging agriculture super-power Ukraine, which in 2019-20 shipped 57 million tons of grain representing roughly 16% of global grain exports. A consequence of the 2020 heat wave, and accompanying scarcity of rain, was lower crop yields and a total of 570,000 hectares of wheat and 200,000 hectares of corn that were written off completely. This year, the 2021 spring growing season and harvest have finished just short of the latest crop-crushing temperatures. The conditions for the summer crop however, given the deepening drought conditions, are unlikely to end so favorably.

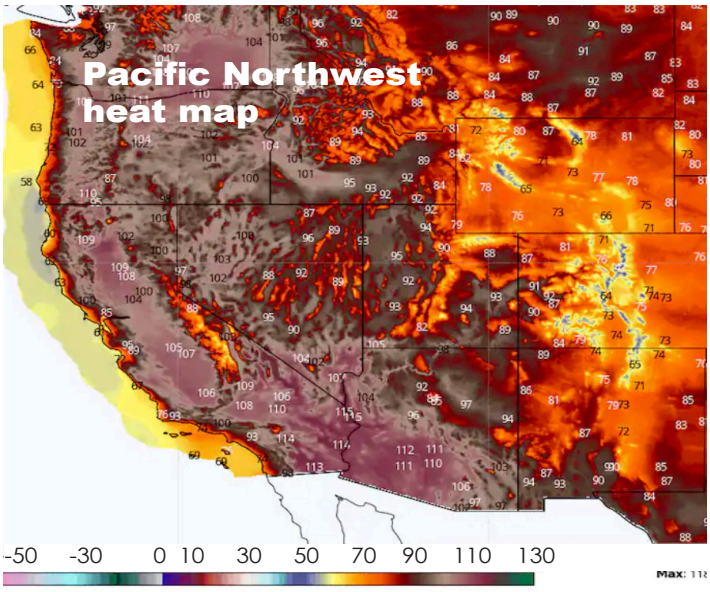
In Switzerland, we have the Foehn – warm winter wind from Italy, and in Russia, they have the 'Sukhovey' which is notable for the much higher temperatures and low humidity it brings from the southern desert regions of Kazakhstan. A Sukhovey is now forecast to strike western Kazakhstan, and large parts of southern Russia, with models forecasting reduced wheat yields that can only add further upward pressure to global food costs.

Further north, Yakutia, Sakha Republic & East Siberia, is known for its -68˚ low, which is one of the coldest temperatures ever recorded on the planet. It now counts as a part of the world where temperatures have already exceeded the 2˚ Celsius threshold countries agreed to avoid following the 2015 Paris Global Warming Summit. In Yakutia, the breech is more than 6˚ Celsius above normal and to say the consequences are alarming is an understatement. During the past decade, the area of cultivated land has already plunged by more than 50% as flooding rivers and thawing permafrost makes roads impassable and transforms farmland into swamp. With ground temperatures recently recorded as high as 47˚ Celsius (118˚Fahrenheit), as measured by the EU Copernicus satellite system, additional massive permafrost thaws are not hard to imagine.

Hotter than Ever: World Temperatures



In 2020, a similar heat wave across large swathes of Siberia, resulted in 300 wildfires which caused carbon emissions comparable to the amount of CO2 produced by Spain in a year. It is not just a local catastrophe. Russia contains as much as a sixth of the world's forests and Yakutia alone is around 13 times the size of the United Kingdom.



Last year's fires incinerated roughly 8.4 million hectares (20 million acres), about 5 times the area burnt in California during the same period. At that scale, it's not something we can ignore. Clearly, what happens in Yakutia and Siberia will be felt globally.

Many of these fires never stopped burning but continued to smolder in the region's carbon-rich peat through the winter. They are now just starting to re-ignite the surrounding forests as the snow cover melts, resulting in an even earlier start to the fire season. It is a vicious circle. Global warming produces the hot temperatures which dry the area's forests, resulting in more fires. The heat from these fires accelerates the permafrost melt just as the smoke adds to global warming. The peat bogs cover roughly one million square kilometers, represent around 60% of the world's total and are estimated to contain 70 billion tonnes of methane, a greenhouse gas 20 times more potent than CO2. The thawing permafrost releases this methane and CO2 and combined with the CO2 produced by the fires, they all but assure the next year's heat wave, burning forests and so the cycle repeats.

It never rains in California,
But girl, don't they warn ya?
It pours, man, it pours.
Albert Hammond, 1971

If only the Albert Hammond song was still true. Currently, America's Pacific Northwest is enduring the most severe heat wave in its recorded history with temperatures ranging from 44˚ Celsius (111˚ Fahrenheit) in Pheonix Az to 49.6˚ Celsius (118˚ Fahrenheit) as far north as Lytton, BC, Canada where a fire subsequently destroyed the town and the neighboring Mt. Currie Indian Reservation.

Before the inferno, Houses on the edge of town, Lytton BC

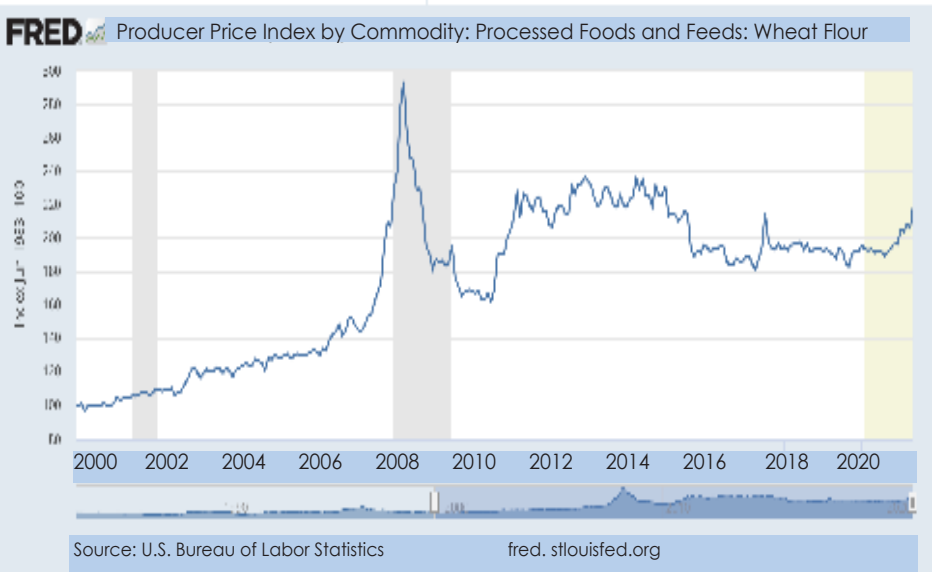
Coming on the heals of last year's record fire season both in Canada and the US, the outlook is hardly encouraging. Currently, 54% of of America's west is experiencing an extreme drought according to the U.S. Drought Monitor, with a further 27% enduring even more dire 'exceptional' drought conditions. Lake Mead, the nation's largest water reservoir, is on track to reach its lowest level ever, with most major reservoirs in the state at 56 percent of their average levels compared to 76 percent June 2015, the region's most recent major drought year. As a consequence, the California Department of Water Resources' eight major hydroelectric facilities are forecast to operate at approximately 30% of their 10-year average generation capacity. Further north, the Water level at Lake Oroville has plummeted 65% putting at risk the 750-megawatt Edward Hyatt plant's ability to produce hydro-electric power for the first time in its 60-year history.

Parched and withering

Another consequence of these reservoir's low water levels is that roughly a quarter of the state's irrigated farmland, or two million acres, has already had its water supply cut by 95 percent, while another million acres has lost 80 percent of its water. The remaining farmers are experiencing cuts of 25 percent or more while they wait and hope they can avoid more severe water supply reductions. As long as there are people, the demand for food will always be there, the availability of water and the agricultural production which depends on it, is not so certain. The burning questions are then about water supply and what food that is produced will cost.

Lo que separa la civilización de la anarquía son solo siete comidas

The above Spanish proverb roughly translated advises that 'civilization and anarchy are only seven meals apart'. The point being is that as global warming makes producing food more difficult, its cost is going to get a lot more unaffordable for millions of people. As demonstrated by the Arab spring, civil unrest and food shortages go hand in hand. Will the Federal



Reserve (or any other central bank) risk tipping the economy into recession and worsening unemployment in response to global-warming related food inflation? It seems improbable. The same for their tolerance for energy cost inflation, if it can be attributed to global warming, and the need to eliminate gas and coal-fired power plants. Global warming is inflationary and destabilizing. Its increasing impact on the cost of electricity and food we have detailed, but it is unlikely to stop there. Consider, for example, as Equity Research has in previous issues, the massive amounts of copper, cobalt, steel and other metals that will be necessary if we are going to decarbonize the global economy. And then compare these amounts to the current and likely future supply.

Expensive, Uncertain and Slow, If They Work At All

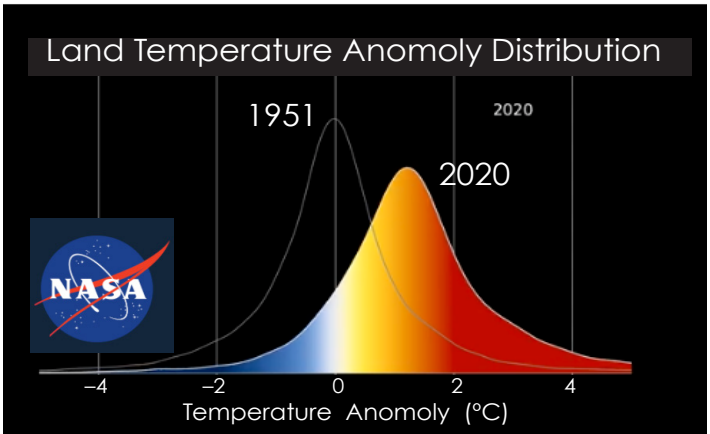
While the effects of a global pandemic were immediately far-reaching, too often lethal, obvious to the general population and thankfully the solutions in the form of multiple vaccines, were discovered relatively quickly, global warming is more insidious, its deadly ramifications are seen over decades, instead of weeks, just as the ways to reverse its course and mitigate its consequences are expensive, uncertain and slow, if they work at all. And all indications are that global warming and the extreme weather it brings is about to get a lot worse.

Research by NASA and the National Oceanic and Atmospheric Administration (NOAA) using satellite data shows that the rate at which the earth was retaining energy from the Sun has doubled since 2005 from 0.5 watts per square meter to 1 watt per square meter. Because oceans absorb 90 percent of the heat, the researchers compared the satellite data with temperature readings from a global network ocean sensors which showed the same pattern.

The negative feedback loop of continued CO2 emissions accelerating the Earth's net increase in energy is clear. Quantifying it, in terms of what we should expect in the near future, is less obvious, at least until one reads the advice of James Hansen, who, as director of the National Aeronautics and Space Administration's Goddard Institute for Space Studies, originally warned US Congress about the existence and dangers of global warming way back in 1988.

The Probability of Extreme Heat Events Has Gone Up 200 times.

Hansen is now warning that based on existing temperature data taken between 2009 and 2019, extremely hot summers, that is more than 3 standard deviations above the 1950 -1980 mean, such as occurred in Europe last year,



This visualization shows that as land temperatures have increased since 1950, hotter days have become more common and colder days have become less common.

NOAA knows better

have gone from occurring 0.1% of the time to 22.1% of the time, a 200-times increase. In comparison, the occurrence of cold summers has been reduced by 90%, while unusually hot summers (+0.5 to +3 sigma) have become relatively common, occurring 63.8% of the time. According to his calculations, ecosystem shattering 5 sigma weather events, which used to occur every several million years or so, have become more probable that 3 sigma events were prior to 2009. Hurricane Alley, a stretch of warm water from West Africa to America, suddenly looks likely to bring a lot more, deadly Katrina-like storms to the Caribbean and America's Gulf Coast.

Politics Trumps Economics

Dearer food prices, and an explosion of the number of people squeezed by food price inflation and the cost of just about everything else, is not the only consequence of global warming. Higher temperatures translate to higher energy needs as those, for example, that can still afford rocketing energy prices, turn their air conditioners on full blast. At the same time, the observation that 'politics trumps economics' rings more true than ever as legislators try to appease increasingly frustrated voters by crafting impractical legislation which sounds good but leaves consumers even worse off. California leads the way in terms of baffling and often contradictory 'environmentally friendly' energy legislation.

The state government intends to decarbonize its energy supply by 2045 and has already shut more than 9 gigawatts of gas power as part of its plan. But, its local planning commissions are virtually unanimous in their rejection of solar and wind projects which would replace the lost power. Plans to close California's only nuclear power generator at Diablo Canyon will take a further 11% of the state's available power offline, thus increasing the probability of future shortages. The most visible impact of its decarbonization efforts so far is 2020's inflation-accelerating 16% electricity rate hike and the heat wave related rolling blackouts which occurred when the demand for electricity exceeded supply.

One to Watch

More than a few, if they can afford it, are backing up their power supplies. A prime beneficiary of this trend is **Generac Holdings** (NYSE: GNRC) whose products are sold in 150 countries. The company makes residential, commercial and industrial generators together with energy systems homeowners use to capture and store electricity from solar panels or other power sources. It also supplies distributed energy optimization and control software that helps support the operational stability of power grids. At the same time, its product line's interconnectivity enables monitoring and grid management capabilities, which as energy sources become more diverse, should become another high growth business.

Heat waves are often lethal for older people, if they lack the ability to stay cool, which usually means having access to air-conditioning, however, an air conditioner is useless without power. As part of its customer service the company has a hurricane preparation center. Not surprisingly, 65% of Generac's customers are 60 years and older and its biggest revenues come from residential sales.

Generac is in a sweet spot where aging populations and rising temperatures combine to create exceptional demand for its products. According to the IEA there is a direct correlation between income growth and the use of air-conditioners in the world's hottest regions. This makes the rapidly growing Asian middle class prime consumers. As they continue to grow economically and global warming expands the world's hottest regions further north, an increasing number of home owners will purchase airconditioners and back up electrical sources to ensure they have power when they need it.

An example of this need for backup power is Guangdong, a major manufacturing center in China, with an annual gross domestic product equivalent to South Korea. High temperatures have caused a surge in AC use while a drought has reduced the available electrical power, causing brownouts and forcing manufacturers to work 3 day weeks in order to reduce energy consumption.

China has 400 million people that are defined as middle income compared to America's total population of 324 million, and their numbers are increasing every year. According to the EIA, China's energy consumption for cooling buildings has grown from 6.6 TWh in 1990 to 450 TWh in 2016 – a 68-fold increase. Considering that the use of airconditioning per person in China is still less than 20% of that in the United States, it will be a growing market for many years to come.

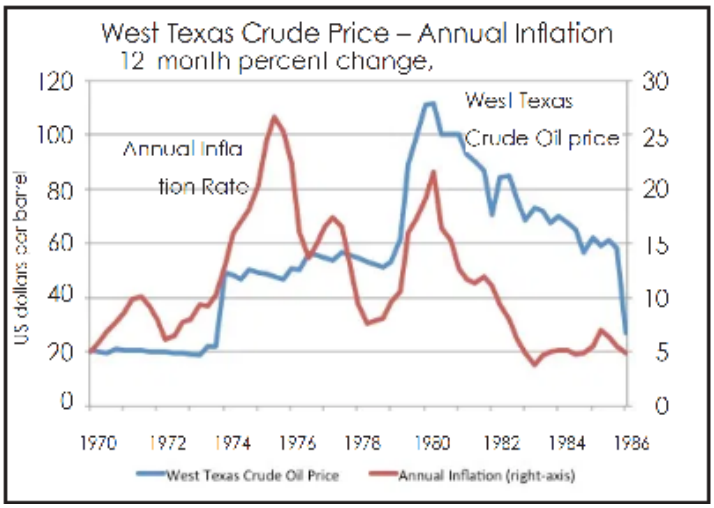
Generac's residential sales totalled US $1.8 billion as of its 2021 year end, up from US $1.5 billion the year previous. Commercial sales were US $820 million and US $684 million respectively during the same periods. Beginning 2017, the company increased its gross margin from 34.8% to 39.3% in its latest year. EBITDA was US $711.9 million last year compared to US $583 million the year previous, while its EBITDA margin rose from 23.5% to 25.3%. It has $845 million in debt with an on the high-side debt to equity ratio of 53.2%, but it is more than covered by its operating cash flow (74.3%) and interest coverage (20.5X). A negative is its high valuation (54 PE and 4.3 PEG.) But it is the market leader in its sector - hence the premium. Generac is definitely a stock to keep an eye on in case of a general market set back, that may take its shares to US $300, an area of major support where we would be buyers.

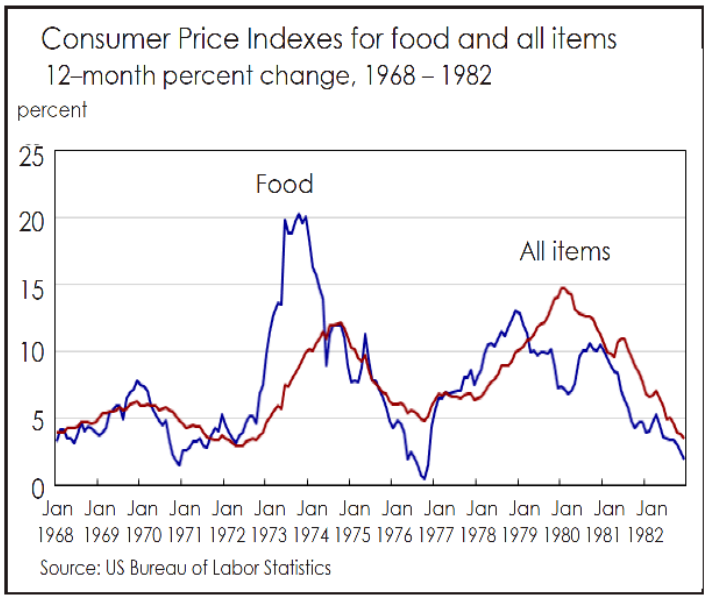
Generac's home back up power system

Understanding the Roots of the 1970s Inflation

In a paper titled 'The Anatomy of Double Digit Inflation in the 1970s', Alan Blinder, a Professor of Economics at *Princeton University* and formerly a member of President Clinton's original Council of Economic Advisers, and Vice Chairman of the Board of Governors of the Federal Reserve System details the sources of double digit inflation which occurred during the periods 1973-75 and 1978 -80.

The key take-away is that the principal drivers were not runaway spending or expansions of money supply by the government as many assume. Instead, according to Blinder, they were driven principally by food and energy shocks. In the paper, he shows how the 1973 -75 inflation spike was due to rising food and energy prices and the end of the Nixon wage-price controls program. Blinder points out that the equally dramatic deceleration of inflation between 1975 and 1976 "can be traced to the simple fact that the three factors just named were not repeated". Aggregate demand, he notes, was not irrelevant, "only that its effects were minor compared to the supply shocks".





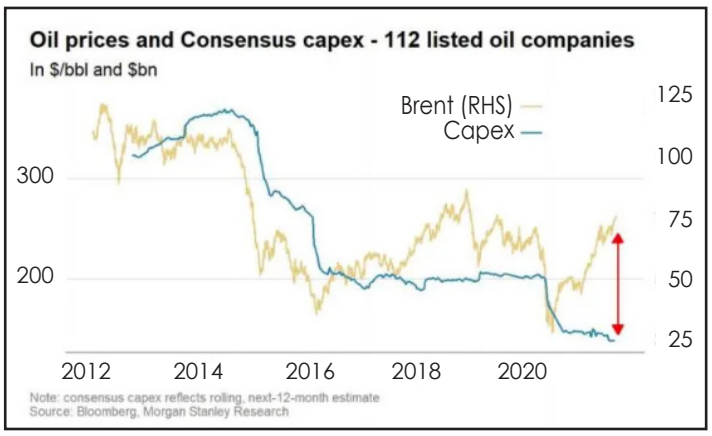
Blinder later details how between 1977 and early 1980 CPI inflation rose about eight percent, while the "underlying rate, may have risen as little as three percentage points". "The initial impetus for accelerating inflation in 1978 came mainly from the food sector" which was negatively impacted by severe winter weather and then later, to a lessor extent, by increased mortgage costs.

The spike to double digit inflation in 1979 mainly reflected soaring energy prices and additional increases in mortgage rates. By 1980, energy costs made no contribution to inflation, but instead elevated mortgage rates created an illusion that runaway inflation would continue. The reality is that, just as occurred during the 1975-76 interlude, food and energy price rises had stalled and a steep decline in the inflation rate was sure to (and did) follow. This may be another reason why Jerome Powell, the current US Federal Reserve Chairman, is convinced that the latest inflationary pulse will be transitory, similar to what occurred in the 70s.

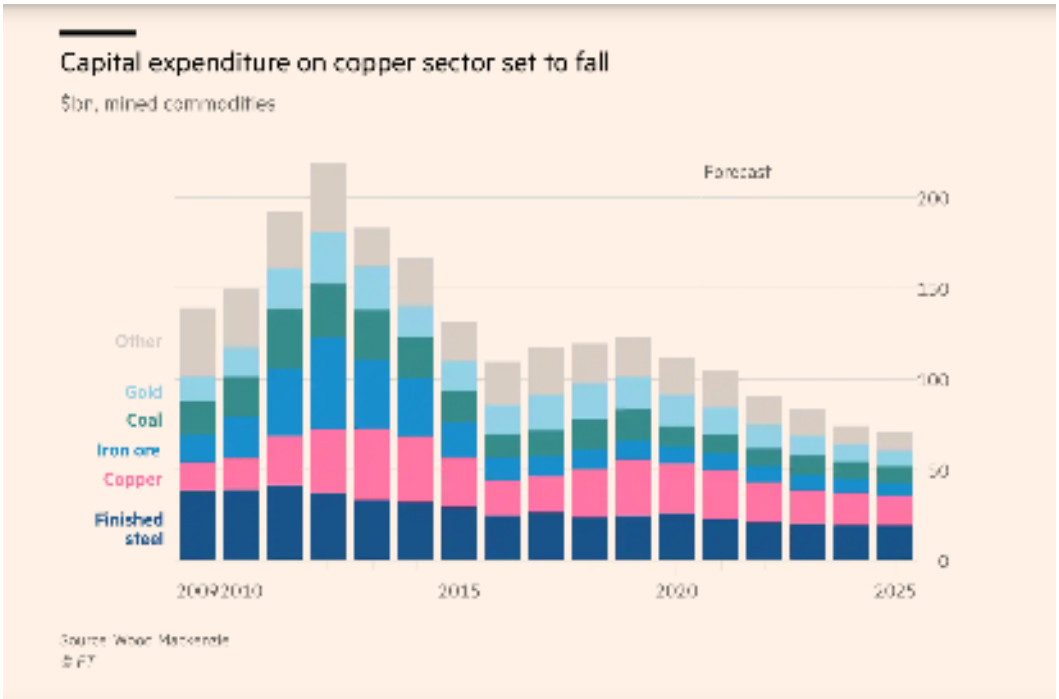
This Time it's Different

A key difference, however, between the 1970s transitory inflation and the current accelerating inflation is that during the 1970s bad weather was a short-term phenomenon. Global warming had yet to have any real impact, especially on agriculture. And during the 1970s and the next several decades, there was plenty of excess capacity in terms of labor and the production of basic materials and energy. The oil crises were political events with dire short term economic implications. In terms of available metals, Escondida, the world's largest copper mine, was only discovered in 1981, while Peru was just opening its vast mineral potential to western miners. During the late 1990s, the massive Central African copper-cobalt belt then became available for development, and so on.

At the same time, the explosive growth in exports from both Japan and Korea between



1980 and 1990, just as the Soviet Union briefly became the world's second largest oil exporter, provided a deflationary headwind which helped keep inflation in check. This was followed by the collapse of Soviet Union, which added 93 million people of working age from Central and Eastern Europe to the western labor pool. By the time its deflationary impact was absorbed, China then joined the World Trade Organization and its low cost exports have been key in keeping a lid on prices, until now.



As detailed in the last issue, China's 400 million strong middle class is now competing for the same resources with western consumers, while exploration for oil is shunned, US shale is in terminal decline and the supply of most metals is extremely tight and likely to remain so for at least the next decade.

The Enduring Link Between Demography and Inflation

There is yet another long-term trend which also promises to reverse the last 40 years of low inflation. A *Bank of International Settlement's* and *International Monetary Fund,* Working Paper by economists Mikael Juseluis and Elod Takats titled, "*The Enduring Link Between Demography and Inflation*" details analysis of data beginning 1870 to 2016 covering 22 OECD countries.

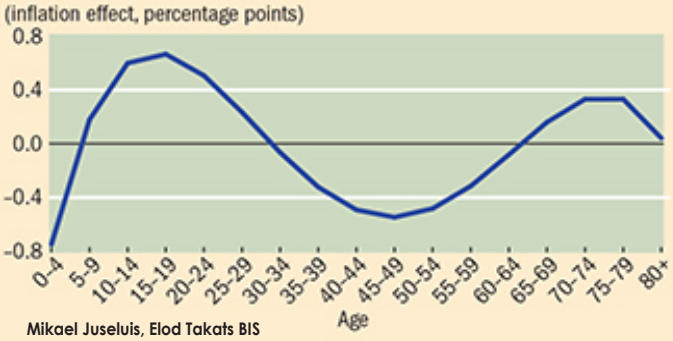
Their research identifies country specific demographic cycles which they isolate from other factors such as money growth and then identify the effects of age structure on inflation. The main conclusion is that the deflationary effect that age structure has had on inflation over the past four decades is now about to reverse and become inflationary.
"*Using public population projections together with our estimates suggests that inflationary pressures will increase substantially in the coming decades due to population ageing.*"

Chart 1

Inflation dependence

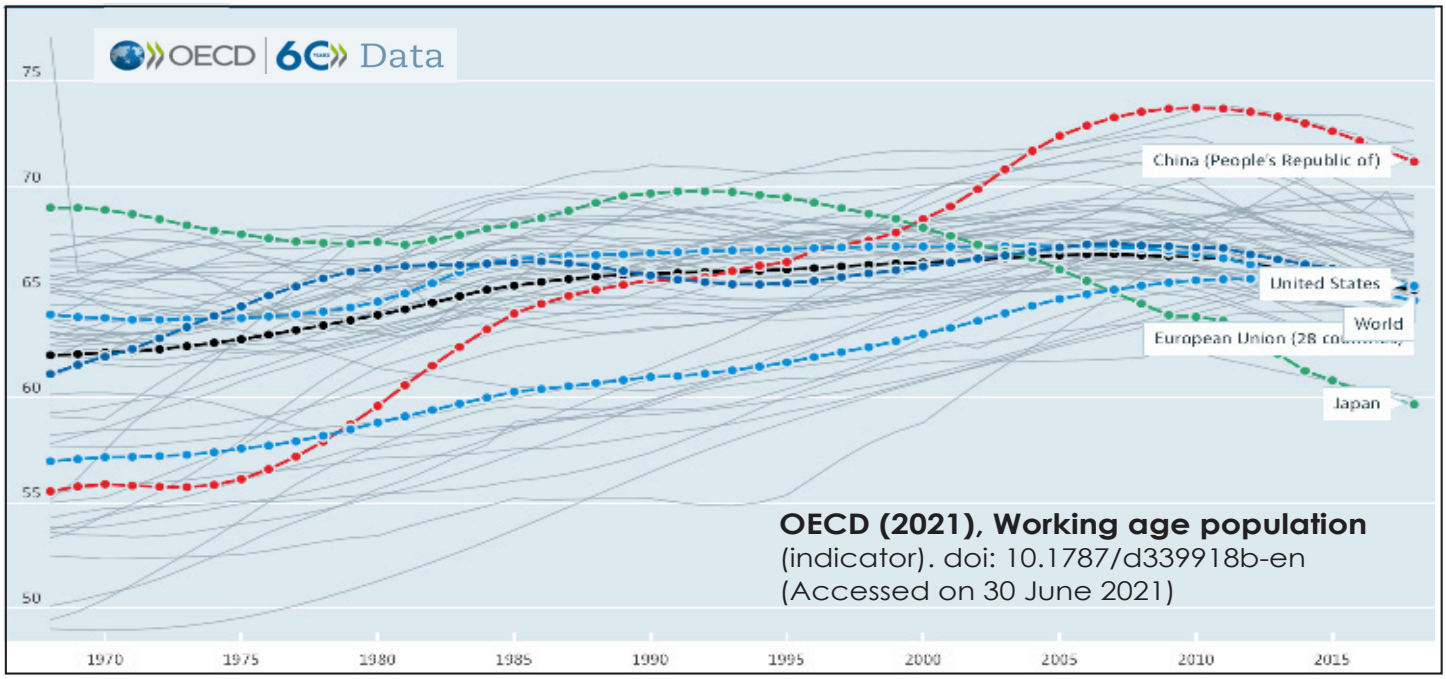
The young (ages 5 to 29) and the old (ages 65 to 79) raise inflation, while those ages 30 to 64 have the opposite effect over many time periods and countries.

(inflation effect, percentage points)



Mikael Juseluis, Elod Takats BIS
Source: Authors' calculations.
Note: The results are based on data from 22 advanced economies, 1955–2014.

The economists note that the real effect is to increase the number of non-productive 'dependents' as people leave the labor markets. They also found that the very old, that is those 80 years and beyond, which Japan at nearly10% of its population is well known for, do exert a deflationary influence on the



OECD (2021), Working age population (indicator). doi: 10.1787/d339918b-en (Accessed on 30 June 2021)

economy. In comparison, China's number of working age citizens peaked around 2010 while its octogenarians count for only 1.8% of the populace. And they are not expected to reach Japan-like numbers until 2060. China has been exporting deflation to the West for nearly 20 years - now it looks set to do the opposite.

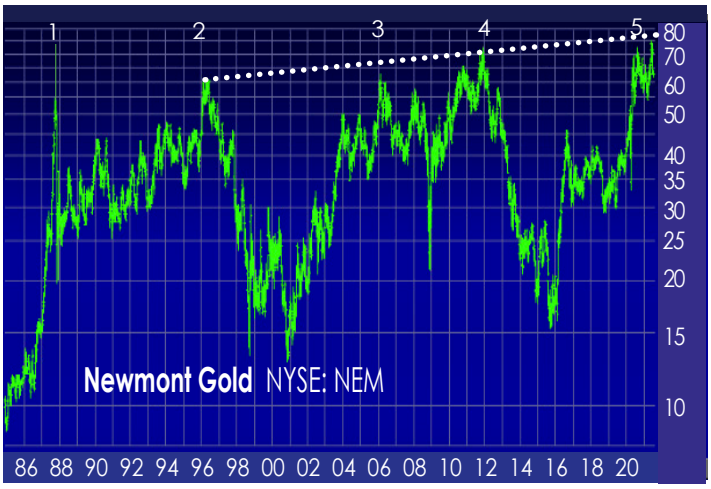
Fifth High a Charm?

Looking at the chart of **Newmont Gold** (NYSE:NEM) the world's largest gold miner by production, the most striking aspect is that the last four times its share price approached, or reached, its $80 high (see chart right), they immediately went into a tailspin losing at least two thirds of their value. During Newmont's first run to an $80 share price, it was prey, but later in every instance it was a predator. None ended well.

To understand why this time is different, it is important to figure out what propelled its shares higher and what subsequently precipitated their collapse.

Newmont first traded at $80 in 1987 as the company fended off a hostile takeover bid by Ivanhoe Partners, an entity run by the late T. Boone Pickens. At the time the buyout may have made sense - gold's price had nearly doubled from US $280 to US $501. The Pickens bid was at the tail end of a mergers and acquisitions mania where many mutual funds and institutional traders were buying the shares of companies about to be acquired while selling short the shares of companies acquiring them.

At the same time, to protect profits, a hedge referred to as portfolio insurance was devised. Basically, it was an agreement to sell a certain number of S&P 500 futures according to a mathematical formula, if the market fell by a certain



amount. It may have worked if only a few institutions were doing it, but when it became widespread, it helped fuel a near collapse of global stock markets.

The infamous 1987 crash began when on October 12, 1987, a Congressional Tax Bill was proposed which would have essentially made a majority of pending takeovers undoable. Most of the deals were highly leveraged with junk bond-rated debt adding to the market's leverage and fragility. In reaction, the share prices of the majority of announced deals, as well as rumored deals, gapped down the very next day.

What followed was a wave of panic selling by retail investors, risk arbitrage traders (that traded the spread between takeover targets and the acquisitors) and funds selling because of redemptions. It was an extreme example of snowballing unintended consequences this time on the part of the US congress. The selling then drove the S&P 500 down to levels which triggered the portfolio insurance players to sell the S&P short in massive amounts. This selling in turn triggered more selling by funds and retail investors which then triggered additional portfolio insurance sales in a self-reinforcing downward spiral.

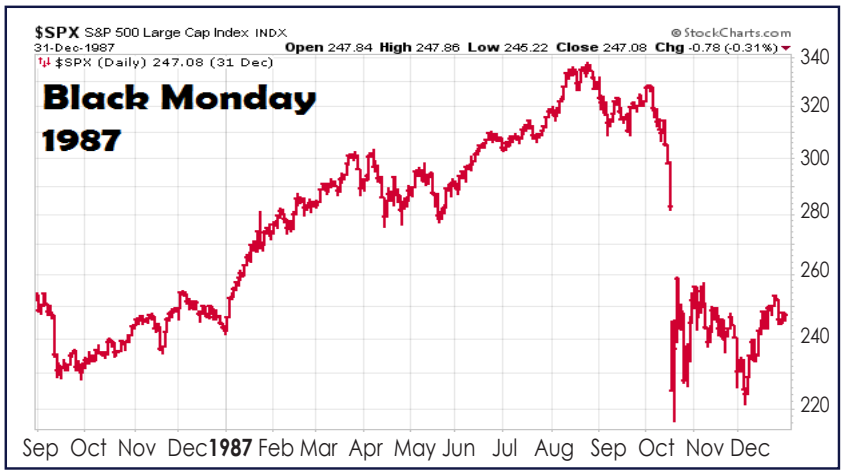
During the collapse, the T. Boone–Ivanhoe bid imploded, gold plunged to US $360 and in reaction Newmont's shares fell back down to the US $20 they traded at the year before. Newmont's share price rise was very much a part of the M&A bubble and they collapsed when it burst.

Newmont's next major share price high was in 1996 at US $60. Gold had only rallied from US $325 to US $415. But, similar to 1987, its share price rise was borne on a rising tide of mergers acquisitions. Headline deals included Barrick's acquisition of Lac Minerals, the Battle Mountain–Hemlo merger, Inco's acquisition of Diamondfields Resources and Newmont's Santa Fe Mining takeover which made it America's largest gold miner. Being the largest, however, did not prevent its operating margins from imploding as gold's price fell. Two years later, Newmont reported a net loss of US $393.4 million, as it wrote off US $424.7 million in assets. By 1999, both gold and Newmont's shares bottomed at a respective US $252 and US $12.

When Newmont shares reached their short-lived highs in 2006 (US $61) and 2011 (US $70.50), it was in the midst of yet another M&A boom. Ike Batista's EBX took over Ventana Gold right near the markets' peak at a record US $400 per ounce Au. Other headline deals included Newcrest's acquisition of Lihir Gold (US $8.7 billion), Kinross Gold's acquisition of Redback Mining (US $6.8 billion) and Newmont's purchase of Fronteer Gold (US $2 billion). The value of the M&A surge peaked at US $25.7 billion with an average price paid per ounce in reserves that was triple a decade earlier. In the inevitable bust that followed, McKinesy & Co estimates the mining industry recorded impairments totaling US $129 billion. Newmont was

not spared. After announcing US $600 billion worth of non-core asset sales and a US $1.17 billion loss, its shares traded at a low of US $15 early August 2015.

With such a sorry record, one can't help but think that with Newmont's US $10 billion 2019 acquisition of Gold Corp., history is about to repeat. Prior to the acquisition, as Newmont was making its offer for GoldCorp, Barrick launched a hostile bid to takeover Newmont. The justification for the bid was the cost savings possible, if the two companies' Nevada mines were managed by a single entity. Eventually the two companies settled on creating a joint venture for the operation of their Nevada based mines which in combination produce over 4 million ounces of gold annually.



Barrick's 61.4% interest in the JV gives it operational control whereby combining operations they hope to save US $5 billion in operating costs over the next 20 years. Newmont subsequently acquired Goldcorp in a deal expected to generate cost savings of up to US $365 million annually, while the company planned to divest roughly US $1.0 billion to US $1.5 billion in assets, which its sale of a 50% interest in their Kaloorlie, Australia Super pit for US $800 million, partly accomplishes.

Unlike past cycles, Newmont has very little debt though it continues to deleverage, as it shares what has evidently become an industry-wide emphasis on profitability, healthy balance sheets and generating growth organically. Newmont generated free cash flow of US $442 million in Q1, 2021. It also eliminated US $550 million of debt outstanding and, at the close of its second quarter, the company reported US $5.5 billion of consolidated cash. Its net debt to EBITDA ratio is a solid 0.2 times. The company plans to calibrate its spending plans so that projects are developed while free cash flow is maintained and part of the cash flow is dedicated to paying dividends.

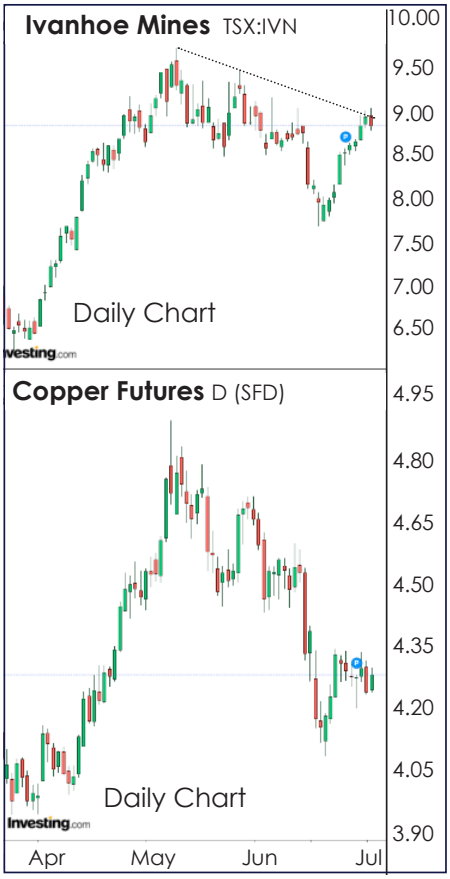
For conservative investors NEM shares offers a low risk exposure to the gold bull market with a dividend yield that should end the year at over 3%. There is added leverage on the gold price as for every US $100 rise in gold's price its cash flow is increased by roughly US $400 million. The company has a great inventory of projects to develop which should easily provide continued reserve replacement and growth with some upside surprises along the way. We will be watching for its decisions on Ahafo North and Yanacocha Sulfides projects in Peru.

So will Newmont shares finally break out above $80 to new all time highs? We think yes – unlike its previous attempts when it was saddled with big debts, uneconomic acquisitions and high multiples, this time the opposite is true. The company has a great cash position, low debt, healthy operating margins and a reasonable PE of 13 times forward earnings and a plus 3% dividend yield likely for 2021.

Gold's Future is Bright in this Era of Shortages

All this just as gold looks set to resume its long term bull market. Gold's uptrend is underpinned by the slow erosion of the US dollar's hegemony, deteriorating US fiscal and trade deficits and the retreat of globalization, together with commodity shortages including the implosion of US shale production. Combined with global warming and aging populations, which ensure cost push inflation and supply bottle necks for everything from metals to microchips, food and labor, gold is only in the early innings of a multidecade bull market. Newmont is perfectly positioned for this bull market and to go mainstream, as investors, many which have never invested in gold before, look for low-risk highly liquid exposure to this increasingly precious metal.

Last month *Equity Research* detailed how much of the reserve additions and replacement of production at most of the world's giant porphyry copper deposits were attained simply by lowering cut-off grades so that what was formerly waste rock was reclassified as ore and an even lower grade was mined. In this way the appearance of adequate global supply has been maintained. We noted that even the giant Kamoa Kakula in the Democratic Republic of the Congo, and tentatively Oyu Tolgai once online, would only offset current rates of reserve depletion rather than adding to the global supply. CRU, a consultancy, says the industry needs to spend US $100 billion to close the annual 4.7 million-ton supply deficit it forecasts for 2030. Copper has become the new green metal and is as important to petroleum to powering world economy, especially if we are to reduce carbon intensity in part by eliminating ICE powered transport with renewable energy. Global commodities trader Trafigura warns that as much as 10 million tonnes of additional annual copper production will be required to balance the market by 2030. This amount is the equivalent to the production of 10 Escondidas, the world's largest copper mine.

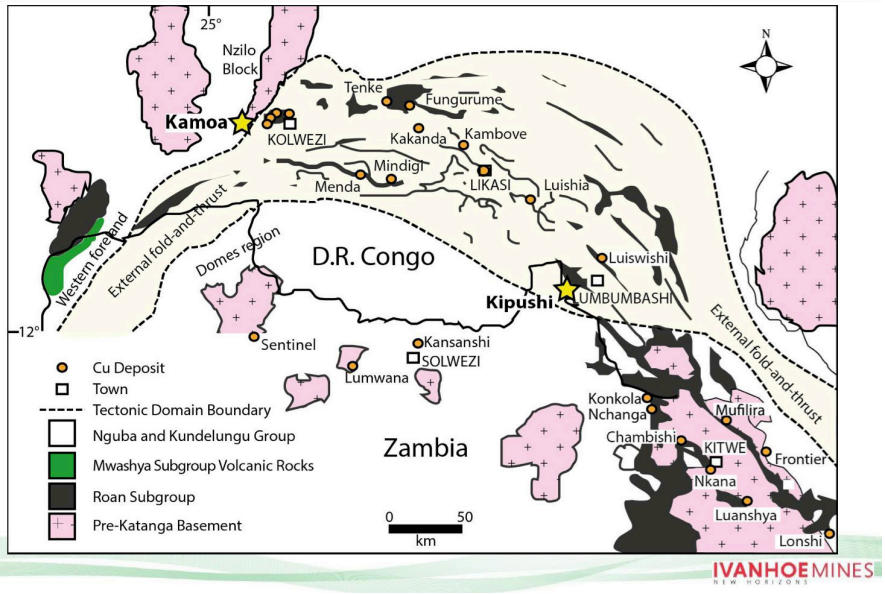


Ivanhoe's Green Copper

This month we are adding **Ivanhoe Mines** (TSX:IVN) to our portfolio. It has three principal assets: Platreef (64% ownership), a developing PGM, nickel and copper mine in the Northern limb of South Africa's Bushveld Complex, the Kipushi (68% ownership) the highest grade zinc deposit in the world which is located in the Democratic Republic of the Congo (DRC) and the Kamoa-Kakula (ownership 39.6% and Zijin Mining 39.6%), the world's largest high-grade copper discovery.

Similar to Newmont becoming the investment public's go to gold miner, Ivanhoe is on its way to earning the same credentials in the copper sector. Our expectation is based on Ivanhoe's strategy of making Kamoa Kakula one of the greenest producers of copper in the world, while at the same time its $0.52 per pound first quartile mine site cash cost makes it one of the world's lowest cost producers and, once all five (3.8m tonnes each) phases of development are completed, it will be the world's second largest copper miner next to Escondida in Chile.

For reference, Escondida's carbon footprint is more than 10 times the Kamoa Kakula, while its average copper grade is 0.52% compared to the Kamoa Kakula's 5.48%. Escondida produces approximately 1.2



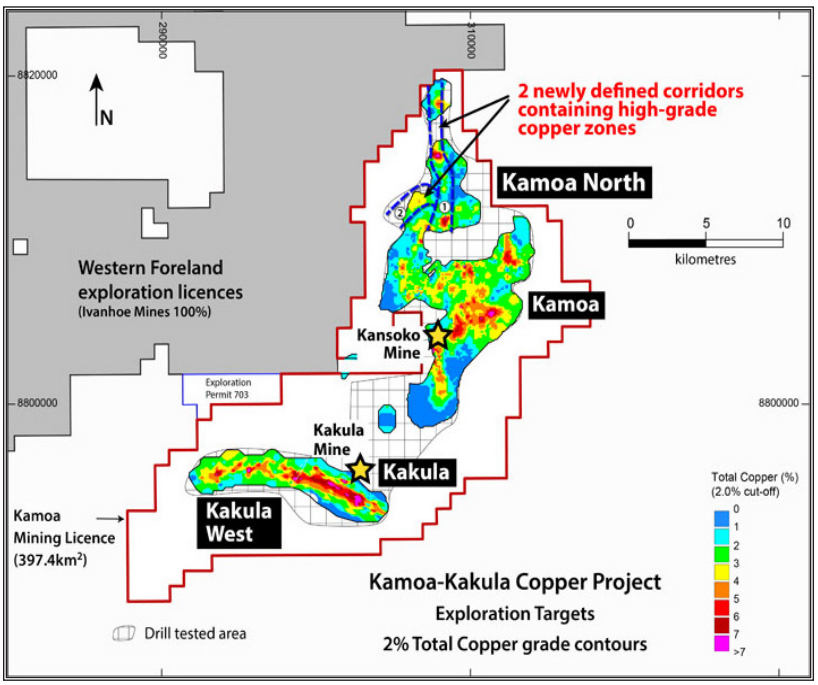
million tonnes of copper annually while Ivanhoe, after all phases are completed in 2028, it will produce 841,000 tonnes of copper. Of this amount approximately 300,000 tonnes is net to Ivanhoe for most of the mine's 47-year life.

Ivanhoe estimates its copper production will have the smallest CO2 emissions in the world at 0.19t CO2 e/t Cu compared to a Hatch consulting estimated industry benchmark range from 0.19t CO2 to 2.8t CO2 e/t Cu. The mine's electrical power comes from a local hydroelectric dam and water used for processing is recycled. The copper ore is milled and tailings are mixed with cement and used to backfill already mined areas. This way waste rock stays underground, thus minimizing the surface footprint and environmental impact.

Mining commenced last May 25 at Kamoa Kakula, the first of the deposits to be developed, and it is forecast to generate 3.8 million tonnes of ore a year at an average head grade in excess of 6% copper over the first five years of operation. Ore averaging 6.5% copper, which is the average head grade next year, is valued using US $9500 tonne copper at US $478 per tonne, miles ahead of the next highest value of copper ore mined at a major deposit – BHP-Glencore's Antamina in Peru which has a value of US $86 per tonne.

The first copper concentrates were delivered to the nearby Lualaba copper smelter near Kolwezi on June 1. The company expects to produce between 80,000 and 95,000 tonnes of copper this year and 278,000 tonnes in 2022, which at US $9500/ tonne would generate cash flow of $0.38 per share. Gold Mountains (HK) International Mining Co, a subsidiary of partner Zijin Mining, and Citic Metal, a subsidiary of China state-owned conglomerate, have agreed to each buy 50% of the output from the first phase of production. Both companies will each provide pre-payments of US $150 million at 8% in an arrangement which expires May 31, 2023 and any payments made will be offset by payments due to Kamoa Kakula Copper from copper deliveries.

By 2025, production should increase to 623,000 tonnes with an AISC of US $0.96 per pound, generating an EBITDA of US $1.31 billion, free cash flow of US $885 million with a free cash flow per share of US $1.00 and earnings per share of US $0.46. The fifth phase is to be completed in 2028. The ore grade by then drops from this year's 6.5% to 4.5% for an AISIC estimated at US $1.42 per pound. EBITDA is almost US $2 billion generating a free cash flow of US $1.8 billion, a cash flow per share of US $1.55 and earnings per share of US $0.74. Ivanhoe plans to build its own smelter to handle the increased concentrate production as the project expands and the Kamoa Kakula cash flow is expected to finance the project's development, exploration at the company's adjoining 2,550 square km Western Foreland license and advancing its Kipushi and Platreef mine developments.



The consequnce is that significant increases in the projects already solid economics are expected when the DFS is completed.

In the meantime, considerable work has already been done to rehabilitate the mine. The main resource is the Big Zinc Zone, which is 1,240 meters underground. New primary rock crushers and load out facilities have been installed underground and the existing head frame has been refurbished, while the personnel winder has been upgraded to industry safety standards. The next phase will be the construction of an on-surface processing plant and other supporting facilities.

A recently updated mineral resource for the Kipushi gave the former mine a measured and indicated resource of 11.9 million tonnes grading at 35.3% zinc, in addition to a copper resource of 2.3 million tonnes averaging 4.03%. A definitive feasibility study is being prepared, and it is to update an earlier preliminary feasibility study which demonstrated that Kipushi can be brought into production at annual throughput of 800,000 tpa run of mine. The capital cost indicated in the earlier study is US $337 million, with the mine producing 381,000 tpa of zinc concentrate over an 11-year initial mine life at a total cash cost of approximately US $0.48/lb zinc. Based on a zinc price of US $1.10/lb, the project would have an after-tax net present value at an 8% discount rate of US $683 million. Recent metallurgical work has established that by adding milling and flotation to the flowsheet, an overall recovery of 89.6% can be achieved at a concentrate grade of 58.9% zinc, a significant improvement over an earlier process design which achieved a concentrate grade of 53.0% zinc.

At its Platreef project Ivanhoe has commissioned two studies each focused on different paths of development. The first is a preliminary economic assessment for a staged development which would begin by producing 109,000 ounces per year and ramp up to 613,000 ounces annually. The second is a feasibility level study for an operation which would be designed to immediately produce 508,000 oz per year. The phased development option has an initial CAPEX of US $400 million, while the larger proposal requires US $1.4 billion. The smaller proposal produces 7 million pounds of nickel and copper ramping up to 43 million pounds, whereas the larger prooduces 36 million pounds annually from the onset.

Key is that like its copper operation, it would be one of the lowest cost platinum group metal producers in the world based on its life of mine average costs of US $442 per ounce of palladium, platinum, rhodium and gold, net of by-products and including sustaining capital. Using current prices, the IRR for the staged proposal is 29% while it is 28% for the larger option. Ivanhoe's current focus is preparing

its number 1 shaft for hoisting (operations) and completing detailed engineering for a 770 Ktpa concentrator, while completing the infrastructure design.

We look at both Platreef and Kipushi as world class and, along with the exploration at its Western Foreland license, likely to add considerable value in the coming years. But, the real story is the Kakua-Kamoa, owing to its production of nearly carbon neutral green copper and the massive cash flow it is about to begin spinning off and how it will increase as the five phases are developed and copper's price continues to rise.

Sonoro Gold: As Building its Mine Gets Closer, Its Shares Move Higher

Ivanhoe's share price sprint, from less than US $2 in 2020 to almost US $10 a year later, is a classic example of what going into production can do for a company's share price. We detailed a few months ago how the shares of K92 Mining performed similarly as it began producting gold. **Sonoro Gold Corp** (TSX.V: SGO) is in the same sweet spot as Ivanhoe was before it began its share price run. In the next few weeks, It is expected to disclose the economics of its planned mining operation and though its planned mine is considerably smaller, the levitating effect of becoming a cash flowing metals producer on its share price should be no different, especially given that the project's internal rate of return is apt to be a multiple of the Kamoa Kakula's and the payback on the Cerro Caliche's capital costs is likely to be measured in months rather than years.

Another more local example of what we may expect in terms of share price performance is **Minera Alamos** (TSX.V MAI). It has three projects: its flagship, Santana, which has just gone into production and two exploration projects: the Cerro d'Oro, which has to date outlined a 630,000 oz/Au resource averaging 0.41 g/t Au, and the La Fortuna, which has a 300,000 ounce resource averaging around 3.5 g/t Au. Minera Alamos has 462 million shares outstanding fully diluted, so nearly three times Sonoro's fully diluted number of shares. Mineras Alamos fully diluted market capitalization at $0.70 is CAD $323 million, compared to Sonoro's current fully diluted CAD $50 million.

The original catalyst for Minera Alamos' $0.10 to $0.78 share price rise was its receipt of a permit which allowed it to begin building its now in operation Santana mine in Sonora State, Mexico. The company did not issue a Preliminary Economic Assessment for the project which may

have enabled it to secure project debt. The lack of any compliant report as of writing also means the company cannot disclose the Santana resource size, mine life or even the operation's production rate. We can only surmise that it is a credible operation, that is likely to be making money based on its management's proven ability to develop successful mining operations. And lacking at least a PEA, or a prefeasibility study, Minera Alamos financed the mine with highly dilutive equity financings and by selling a 3% NSR to Osisko Royalties, hence its massive number of shares issued.

Sonoro is not going that route but instead plans to minimize share dilution by financing the mine's construction with project debt, hence its decision to deliver what we expect is essentially a pre-feasibility level PEA, which is to be used to secure the mine's financing. Like Minera Alamos, Sonoro has considerable upside in terms of growing its number of gold ounces at the Cerro Caliche and it has a second similar project which is on hold until the Cerro Caliche mine development is fully underway. Minera Alamos share price performance adds to our optimism that Sonoro's shares will behave in a similar manner. If Minera Alamos's shares can rocket 700% with almost half a billion shares outstanding, it will be interesting to see how Sonoro shares perform once it gets closer to mining, given it has only a third the number of shares.

From a trading perspective, Sonoro's shares have broken out of a nearly year-long downtrend and a move higher looks imminent. It is very bullish that they are moving up while most gold juniors are headed in the other direction. This performance makes it standout and is what market technicians consider a "very bullish indication of technical strength". At the same time the Relative Strength Index has broken out to the upside, just as its moving averages have turned up meaning the move likely has a ways to go.

Using our previous modelling inputs published in the last issue (80,000 oz/Au net annual production and AISC cost of US $1200) and adjusting the gold price lower to reflect gold's correction to US $1700, it is easy to understand why Sonoro's shares are moving higher.

The targeted cash flow, once Sonoro is in production, starts at CAD $0.29 per share and should rise from there as management expects to continually grow the project's resource as it continues to drill the remaining 80% of the Cerro Caliche's shallow oxide gold mineralization, and as it does this, expand the rate of gold production. Using a 4-times cash flow multiple, Sonoro's 'starting' cash flow generates an initial share price target of CAD $1.16 – nearly four times its current CAD $0.31. We expect gold to resume its bull market in the coming months which would translate to increased margins and cash flow for Sonoro, which in turn would result in a substantial upward revision of our current $1.16 share price target.

Equity Research

Equity Research
Eugen Huber Strasse 53, 8048 Zurich
Tel:41 44 225 7000
martin@ifg.ch
About the editor:
An Economist by training (Kaderschule, Zurich) Martin Hochshorner is a Zurich, Switzerland based business man and former banker and financial advisor with an extensive background in mine finance and venture capital.