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Editorial

Investors have a love/hate relationship with cash in their portfolios. When markets fall, it's a relief to see a bulwark hold its value. When markets run up, it looks like a poor opportunity cost. During inflationary times, the real returns turn sharply negative and cash quickly loses purchasing power.

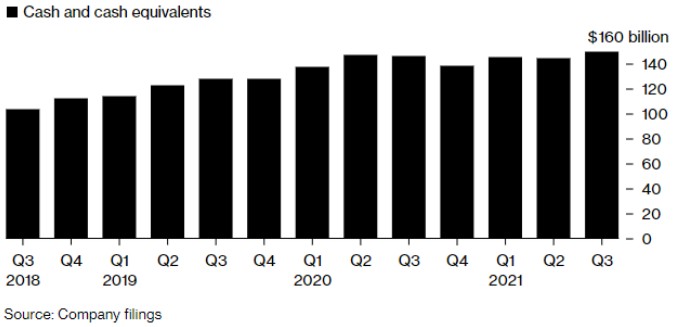
For professional fund managers, the cash allocation is especially challenging. Fund mandates usually allow decent cash holdings to give the manager the ability to protect portfolios, but 10% in cash earning zero when the market rises 20% in a year is a 2% performance drag. It is a big loss of potential 'alpha' that can remove a performance fee and cause investors to withdraw. There is no adjustment to the reported benchmark for the cash.

You're in good company if you held cash and missed some of the strong stockmarket rally in 2021. **Warren Buffett's Berkshire Hathaway** was sitting on US$144 billion in cash (actually, short-term Treasury bills) at the end of the year, or a whopping 30% of his portfolio.

It's not that Buffett wants to hold cash (other than to meet potential insurance liabilities), but in a heated market, he has been unable to find companies at prices he likes. He wrote recently:

"From time to time, such possibilities are both numerous and blatantly attractive. Today, though, we find little that excites us."

Berkshire Hathaway cash holdings in US$
(source: Bloomberg)



Source: Company filings

He finally broke a multi-year major acquisition drought this week when Berkshire Hathaway announced it would acquire the insurance company **Alleghany** for US$11.6 billion, funded from within his business.

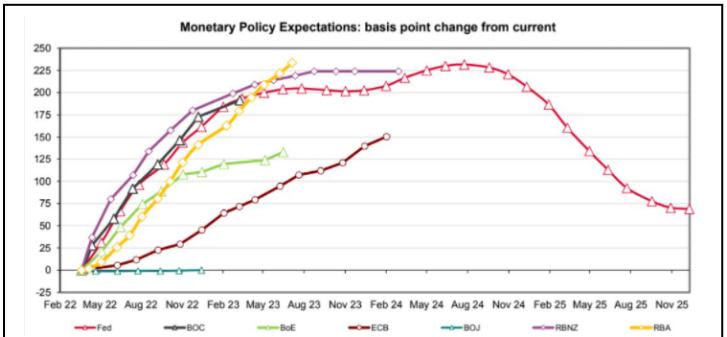
Australian fund manager presentations reveal varying attitudes to cash at the moment. For example, among **Morningstar** medallist funds, **Magellan, Investors Mutual** and **Pendal** manage equity funds holding around 10% cash currently, others such as **Alphinity, T Rowe Price** and **DNR** hold about 4%, while many usually closer to 2%.

Cash for an individual plays a broader role than protecting capital and giving peace of mind. It may be money to live on, reducing the need to sell in a downturn. Many financial advisers set up portfolios with a minimum of cash regardless of the market outlook, such as two years of expected expenses. From 1 July 2022, at least 4%

a year must be drawn from a superannuation pension. Cash also allows investors to quickly implement opportunities without selling something else.

At the start of 2022, there were signs of stronger retail allocations to cash, with Exchange-Traded Funds such as **iShares** Enhanced Cash ETF (ASX:ISEC) and **BetaShares** Australian High Interest Cash (ASX:AAA) among the most popular for inflows in January. The same happened at the start of Covid-19. But cash ETFs fell in February 2022 so the move was not sustained.

Despite rising inflation, more people might be comfortable holding cash in the next few years. The market is pricing in an increase in cash rates to over 2.25% in 2023, and while negative in real terms, it might be enough to satisfy more conservative investors. Surprisingly, markets are pricing in a bigger rise in cash rates in Australia than in comparable countries, including the high-inflation US.



Source: Westpac

According to **Bank of America**'s latest Global Fund Manager Survey (FMS), cash as a percentage of investment portfolios has returned to the April 2020 Covid-19 levels. Before that scare, cash allocations have not been so high since 2001, as shown below.

For individuals, the Ukraine war and threat of inflation instinctively encourage caution in allocating to riskier assets, but it's best to focus on goals and a long-term horizon. Surprisingly, as we've written before, sharemarkets usually recover quickly from wars and crises. For retail investors holding more cash than they prefer, it's comforting to know that many professionals are doing the same.

Graham Hand

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In this week's edition ...

Some major fund managers offer different vehicles for investors to access the same fund, giving opportunities to switch or invest at a lower entry cost. Check market prices and execution costs but when every extra percent compounds handsomely over time, it's worth finding the savings.

The war in Ukraine continues with no end in sight. This week, we deliver two articles on the fallout.

Much of the economic commentary on the invasion of Ukraine has been focused on the impact on oil and global energy prices. Geopolitical analyst **Peter Zeihan** takes a step back and writes that the Russian oil industry was in crisis before the invasion due to a lack of local expertise, global warming and geographical challenges. And

then, Morningstar analysts have put together a compendium of research delivering their views on the war's impact across sectors and companies under coverage.

Local energy needs in NSW are front of mind after the announcement of the Eraring Power Station closure. While the NSW government touts improvements in air quality, **Tony Dillon** writes that there are serious concerns about the plan to replace Eraring's output with a 700 megawatt battery.

Private equity has steadily gained larger allocations in institutional portfolios and access is improving for retail investors. **Russel Pillemer,** the co-founder of Pengana, makes the case for the asset class.

What is the impact of a rising interest rate environment on the global listed real estate sector? **Justin Blaess,** portfolio manager at Quay Global Investors explores.

Finally, in a keynote address to a blockchain industry conference on Monday, Senator **Jane Hume** evoked the Victorian gold rush and the internet in the 90s in a glowing endorsement of the opportunities and benefits of the "new virtual frontier". We publish an abridged version of her speech.

This week's sponsor white paper comes from Neuberger Berman, *The inflation inflection and the new paradigm*, which explores how best to structure your portfolio in an uncertain inflationary environment.

Four ways to invest in the same fund and save money

Graham Hand

Fund managers often give investors different ways to access the same (or substantially similar) fund, with distinct entry costs. In some cases, investors can switch from one to the other for an arbitrage gain.

While fund managers would hate the analogy, it's akin to the way some producers of popular consumer products like baked beans, toilet paper or sugar manufacture for their own label, and repackage the same product for the 'home brands' of major supermarkets. Why buy the expensive version when the only difference is the label on the tin?

Is it worth the effort?

It doesn't sound like much, but when investing, 1% is a lot. If a fund manager could guarantee to outperform an index by 1% per annum over time, the world would beat a path to their door. The global momentum to passive investing (in the US, passive is now over half of inflows into domestic equities, although less so in Australia) is due to the inability of most active fund managers to beat their benchmarks after fees, and 1% would be more than enough for great success.

And 1% compounded over time delivers surprising results – although sorry to disappoint that there is no firm evidence that Albert Einstein ever called compound interest 'the eighth wonder of the world' or 'the most powerful force in the universe'. Yes, Google it and there are thousands of articles quoting the phrases, but nobody can attribute the source.

No matter, $100,000 compounded at 6% annually for 20 years gives $320,714 while 5% results in $265,330, or $55,384 less. That's all interest, no additional deposits.

What if an investor could make 10% instantly up front, with exactly the same fund manager in the same fund? In the above example, changing $100,000 to $110,000 at the start would give $352,785 at 6%, or an extra $32,071 for only $10,000 more.

With some fund managers, investors are missing this opportunity every day.

Closed-ended versus open-ended funds

Shares in closed-end funds such as Listed Investment Companies (LICs) or Listed Investment Trusts (LITs) can be bought or sold on an exchange but the total number of shares on issue does not change. There is no inflow or outflow for the fund manager. This contrasts with Exchange-Traded Funds (ETF) where units are created or repaid in response to demand.

Consequently, the price of a LIC or LIT is set by the market with some reference to the Net Tangible Asset (NTA) value but often at significant discounts or premiums, whereas ETFs trade around NTA.

Let's explore the opportunity when a closed-end fund trades at either a premium or a discount and the same fund manager also offers an open-ended fund with the same or similar investments.

1. Fund trading at a discount

Let's use a real-world example of Magellan. Remember, this strategy makes no judgement about whether an investment with Magellan is appropriate. This is about investing in the cheaper vehicle.

Magellan has worked hard to give investors multiple entry points into its funds, including developing the Active ETF structure in Australia which many others have copied.

But Magellan still offers a closed-end fund on the exchange, ASX:MGF. It is a unit class of the Magellan Global Fund, the first fund offered by the manager in 2007, and as at the end of February 2022, MGF held balances of $2.9 billion.

According to the Bell Potter LIC Report of 11 March 2022, MGF has traded as follows:

Features of Magellan's ASX:MGF

Current share price	$1.44
Indicative pre-tax NTA	$1.73
Indicative discount (intra month)	-17.2%
Average discount 3 mths	-12.9%
Average discount 6 mths	-11.9%
Average discount 12 mths	-10.9%
Discount range 5 years - low	-13.2%
Discount range 5 years - high	-2.5%

Meanwhile, the Magellan Global Fund is available as an open class, or an Active ETF, which trades on the ASX as MGOC. Same assets, same management fee, same performance fee, priced at NTA plus or minus the trading spread (usually 1 cent).

Why hold MGOC at NTA when MGF is available at a discount which might be as high as 17%, and is regularly 10% or more? There are small costs of switching – brokerage and the spread – but it's worth checking for opportunity.

At the time of writing (22 March 2022), the latest reported pre-tax NTA of MGF is $1.8057 and MGF last traded at $1.495, a discount of -17.2%.

What if an investor has accessed this fund off-exchange, either through a platform or directly with Magellan? All the unlisted funds are open-ended, and entry and exit prices are at the value of the assets adjusted for a buy/sell spread, so the opportunity is the same as with MGOC. The live iNAV of Magellan funds can be checked here.

Some other examples:

- Platinum Asset Management offers two LICs, a global fund (ASX:PMC) and an Asian fund (ASX:PAI) both trading at a discount to NTA of about 8%. Their portfolios are similar to the unlisted Platinum International Fund and Platinum Asia Fund with slight differences in the investment guidelines.
- QV Equities (ASX:QVE) is managed by Anton Tagliaferro's Investors Mutual. QVE is trading at about $1 versus a pre-tax NTA of $1.10 for a 10% discount.
- Perpetual Equity Investment (ASX:PIC) currently trades around its NTA but its discount has been as high as 13%. In this case, there is no directly comparable Perpetual unlisted fund because PIC allows up to 35% in global shares. However, for a Perpetual investor looking for some global exposure at a time when PIC is at a discount, it's worth comparing portfolios.
- EC Pohl manages about $2.8 billion mainly in unlisted funds, but it also offers three LICs: Flagship Investments (ASX:FSI, market cap $61 million), ECP Emerging Growth (ASX:ECP, market cap $23 million) and Global Masters (ASX:GFL, market cap $27 million). Although the latest traded price of both ECP and

GFL are at large discounts to NTA, the LICs are small and liquidity is poor, and switching decent volumes may move the price.

2. Fund trading at a premium

Using the same rationale, a LIC or LIT trading at a premium to NTA represents a selling opportunity, provided the manager offers an equivalent unlisted fund at NTA.

Take the example of Plato Income Maximiser (ASX:PL8). Plato is part of the Pinnacle group and has successfully encouraged investors to focus on the income generated and less on the NTA. According to the Bell Potter report, the grossed-up yield on the fund is 6.5%, and this attracts yield-hungry investors willing to pay a premium. It's the playbook Geoff Wilson has used successfully for many years, and his funds such as WAM Active (ASX:WAA) and WAM research (ASX:WAX) also trade at a premium. However, Wilson is a LIC-only fund manager and there are no unlisted or open-ended funds to arbitrage into.

Features of Plato Income Maximiser, ASX:PL8

Share price	$1.19
Indicative pre-tax NTA	$1.10
Indicative premium	+8.5%
3 months	+8.3%
6 months	+11.2%
12 months	+11.3%
Discount range 5 years – low	-6.8%
Premium range 5 years – high	+16.3%

Source: Bell Potter, 12/3/22

Plato offers a large unlisted open-ended fund where, by definition, entry and exit are at NTA with a small spread.

What if you can't be bothered with the paperwork of an unlisted investment or do not invest through a platform. Is it all too much trouble? No.

Plato offers the unlisted Australian Shares Income A fund with the same portfolio as PL8. In fact, PL8 owns units in this unlisted fund. The unlisted fund is offered under the ASX's mFund service as PLI01. Execution is done through any broker in the same way as a share, although the price is set at the close of business, it is not a live price during the day.

This is also an opportunity for a new investor who likes Plato's style and its fund but cannot stomach a 10% premium of the listed PL8. Invest in the unlisted version at NTA and get 10% more for your money. Note that there are some differences. PL8 pays monthly distributions that are fully franked at a consistent level (0.5 cents per month) while the fund pays quarterly distributions that are lumpy as it is a trust not a LIC. Some investors are happy to pay a premium for this regular income stream.

At the time of writing, the latest reported pre-tax NTA of PL8 is $1.09 and it last traded at $1.21, a premium of 10%.

3. Similar funds offered with lower fees

Cboe (formerly Chi-X) offers a range of listed funds which are often cheaper than the unlisted or ASX-domiciled version. The full list of funds is available here including leading names such as Australian Ethical, Elstree, Coolabah, Schroders, Janus Henderson and Kapstream. Check relative fees before investing.

Continuing the Magellan example, there is a cheaper range of funds offered via Cboe and tradeable in the same way as any share on an exchange. For example, rather than investing in either MGF or MGOC, the MFG Core International Fund (CAX:MCSG) is a Magellan global fund but its assets are somewhat different to MGF or MGOC. The advantage is that the management fee on MCSG is only 0.5% versus 1.35% on MGF, providing a permanent 0.85% advantage.

4. Enter the fund via an option or note

We have previously described the opportunity to invest in the equity market via an option or convertible note. Take the Perpetual LIC mentioned above (ASX:PIC). The related options (ASX:PICOA) give the right to buy PIC at $1.35 exercisable on or before 2 September 2022. At the time of writing, the latest pre-tax NTA is $1.37 and the option trades at $0.005. That is, half a cent. An investor can buy (subject to liquidity) one million options for $5,000 or 100,000 options for $500, plus brokerage. Read the other terms of the option but it gives the right but not the obligation to buy in six months. The investor still needs to outlay the $1.35 on exercise but the most they can lose before the exercise date is half a cent (at time of writing, prices will change).

Again, this article makes no judgement about Perpetual Investments, it is explaining alternatives, not recommending managers.

Other things to watch for

Here are a few things to consider before making a switch or investing fresh capital:

1. While a LIC or LIT bought at a discount may look like great value, it could move into deeper discount.
2. Selling an investment may trigger taxable capital gains.
3. In times of market stress, liquidity can dry up for some closed-end funds, whereas open-ended funds can usually (not always) sell the underlying assets.
4. If an unlisted version of a fund is held on a platform for ease of administration, selling and switching to a listed fund may create some extra work.
5. Although brokerage cost is highly competitive including some 'free' offers, the cost of transacting should be checked.
6. An unlisted fund does not offer real-time pricing on an exchange in the same way as an ETF, LIC or LIT. The price is usually end-of-day, so watch the timing difference on the buy and sell.

But when the arbitrage is 10%, that's a lot of margin to cover costs.

Investors cannot control what the stockmarket will do, nor how a particular manager will perform relative to the market benchmark. But investors can control their own costs, which is why many have jumped to cheap index funds. But buying into an active manager at a 10%+ discount may work out cheaper than an index fund even if the manager only matches index performance.

If it's good enough for your baked beans ...

Home-brand baked beans are often the same product as the premium brand, with a different label. Checking whether your fund has a different entry price for the same fund could save you more than enough to buy whatever brand of baked beans you desire.

Graham Hand is Editor-at-Large for Firstlinks. This article is general information and does not consider the circumstances of any investor. Prices are correct at time of writing and the opportunities may vary over time. ***Disclosure****: Magellan, Pinnacle, Perpetual and Cboe are sponsors of Firstlinks. Graham owns some of the funds mentioned in this article including the option PICOA.*

The end of Russian oil

Peter Zeihan

Think the Europeans will need to get by without Russian crude? You are 100% correct. But you are not thinking anywhere *near* big enough.

Most of Russia's oil fields are both old and extraordinarily remote from Russia's customers. Fields in the North Caucasus are either tapped out or were never refurbished in the aftermath of the Chechen Wars, those of Russia's Tatarstan and Bashkortostan provinces are well past their peak, and even western Siberian fields have been showing diminishing returns since the 2000s. With few exceptions, Russia's oil discoveries of the last decade or three are deeper, smaller, more technically challenging, and even farther from population centers

than the older fields they would be expected to replace. Russian output isn't in danger of collapsing, but maintaining output will require more infrastructure, far higher up-front costs, and ongoing technical love and care to prevent steady output declines from becoming something far worse.

While the Russians are no slouches when it comes to oil field knowledge, they *were* out of circulation from roughly 1940 through 2000. Oil technology came a long way in those sixty years. Foreign firms—most notably supermajors BP and Shell, and services firms Halliburton and Schlumberger—have collectively done work that is probably responsible for half of Russia's contemporary output.

The Western supermajors have left. All of them. Just as the Ukraine War began, Exxon and BP and Shell have walked away from projects they've sunk tens of billions of dollars into, knowing full well they won't get a cent of compensation. Halliburton and Schlumberger's operations today are a shadow of what they were before Russia's previous invasion of Ukraine in 2014. Between future sanctions or the inability of the Russians to pay them with hard currency, those operations now risk winding down to zero. The result is as inevitable as it is damning: at least a 50% reduction in the ability of Russia to produce crude. (No. Chinese oilmen cannot hope to keep things flowing. The Chinese are worse in this space than the Russians.) The outstanding question is *how soon*?

Sooner than you think. It's an issue of infrastructure and climate.

First, infrastructure. All of Russia's oil flows first travel by pipe - in some cases for literally thousands of miles - before they reach either a customer or a discharge port. Pipes can't ... dodge. Anything that impedes a single inch of a pipe shuts the whole thing down. In the post-Cold War globalized Order when we all got along, this was something we could sing-song-skip right by. But with the Russians dropping cluster bombs on civilian targets - as they started doing on Feb 28 - not so much. Whether the Russians destroy the pipes with their indiscriminate use of ordinance (like they damaged a radiation containment vessel at Chernobyl!!!) or Ukrainian partisans target anything that brings the Russians income, much of this system is doomed.

Second, climate. Siberia, despite getting cold enough to literally freeze your nose off in *October*, doesn't get cold *enough*. Most Russian oil production is in the permafrost, and for most of the *summer* the permafrost is inaccessible because its top layer melts into a messy, horizon-spanning swamp. What the Russians do is wait for the land to freeze, and then build dike-roads and drill for crude in the long dark of the Siberian *winter*. Should something happen to consumption of Russian crude oil or any of the millions of feet of pipe that take that crude from wellhead to port or consumer, flows would back up through the literally thousands of miles of pipes right up to the drill site. There is no place to store the stuff. Russia would just need to shut everything down. Turning it back on would require manually checking everything, all the way from well to border.

The last time this happened was the Soviet collapse in 1989. It took millions of manhours of help from the likes of BP and Halliburton – and thirty-two years – for Russia to get back to its Cold War production levels. And now, with war on in Ukraine, insurance companies are cancelling policies for tankers carrying anything Russian on Seas Black and Baltic while the French seize Russian vessels, and the Russian Central Bank under the strictest financial sanctions ever, it is all falling apart. Again.

Even in the sunshine and unicorn scenario that Putin duct tapes himself to a lawn chair and throws himself into a pool, and a random band of kindly kindergarten teachers take over the Russian government, we should not expect the energy supply situation in Russia to *begin* to stabilize before 2028, and for us to return to what we think of as the status quo before 2045.

In the meantime, the debate of the moment is expanded energy sanctions. Once everyone concludes that Russian crude is going away regardless, there's something to be said about pre-emptively sanctioning Russian energy before reality forces the same end result. Moral high road and all that. Bottom line: *Uuuuugh*! The disappearance of some four to five *million* Russian barrels of daily crude production will all by itself kick energy prices up to at least $170 a barrel. A global energy-induced depression is in the wind.

But probably not an American one. In the bad ol' days before World War II there wasn't a "global" oil price. Each major country or empire controlled its own production and maintained its own - sequestered - market. Courtesy of the American shale revolution and preexisting legislation, the U.S. president has the authority to end American oil exports on a whim and return us to that world. An American export ban would flood U.S. refiners with relatively cheap shale oil. Those refiners will certainly bitch - their facilities have a taste for crude grades different from what comes out of Texas and North Dakota - but having a functional price ceiling within the United States of roughly $70 a barrel will achieve precisely what Joe Biden is after: cheaper gasoline prices.

The rest of the world? They'll have to grapple with losing Russian *and* American crude *at the same time*. If the "global" price stays below $200, I'd be shocked.

The first rule of geopolitics is place matters. To populations. To transport. To finance. To agriculture. To energy. To everything. The second rule is things can *always* get worse. The world is about to (re)learn both lessons, good and hard.

Peter Zeihan, founder of Zeihan on Geopolitics, is a geopolitical strategist, speaker and author. This article is general information and does not consider the circumstances of any investor. This article is an adapted excerpt from Peter's upcoming book The End of the World is Just the Beginning.

Private equity's role in a well-constructed portfolio

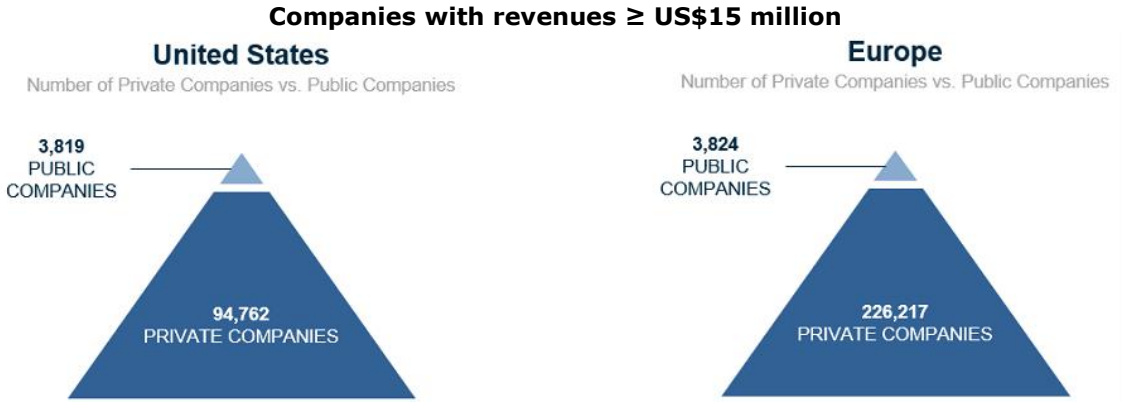
Russel Pillemer

The $200 billion Future Fund is not alone in its enthusiasm for private market investments. One of the most significant financial trends since the turn of the century has been the explosive growth in private markets.

Private Equity is the cornerstone of the Future Fund's illiquid portfolio, accounting for 16.8% of total portfolio allocations, second in size only to their global listed equities portfolio (including both developed and emerging markets).

Meanwhile, Calpers, Americas largest public pension fund, has announced an intention to increase exposure to private equity and private debt from 8% to 18% as we see the acceleration of a well-established trend: Morgan Stanley says US companies (the largest market for private investments) have raised more money in private markets than in public markets each year since 2009.

The magnitude of the ongoing opportunity is still emerging, as private markets are significantly larger than public markets, according to the S&P Capital IQ database.



Understanding Private Equity

Private equity refers to capital invested in companies that are not listed on public exchanges. Such investments can be made at any stage during the corporate life cycle.

The characteristics, risk, and potential return of private equity investments typically vary according to the stage at which the investment is made, with most investments being made once companies are more mature and validated:

Angel Investing is initial private funding support often backing little more than an idea and an entrepreneur.

Venture Capital is where managers actively work with early-stage or start-up investments to develop the business to raise further capital to fund commercialisation.

Growth Capital generally follows the venture capital stages as companies with viable business models and proven demand prepare for success on a larger scale. An increasing portion of growth capital funds customer acquisition.

Buyouts are the largest private equity segment. Transactions involve buying all, or a controlling stake, of a mature company with intention to improve its business and financial health, later reselling it for a profit to an interested party or conducting an IPO. Such transactions are often called leveraged buyouts as predictable future cashflows are 'leveraged' such that the acquisition can largely be debt financed, thereby bolstering investor returns.

Distressed funding is niche and generally involves acquiring the debt, equity or assets of a distressed business with the intention to restructure, recapitalise, and return to profitability.

Most private equity funds have an investment term of 10-12 years with only a small portion of the committed capital generally required upfront. The investments are typically made during the first five years with the realisations occurring later in the life of the fund.

What's in it for investors?

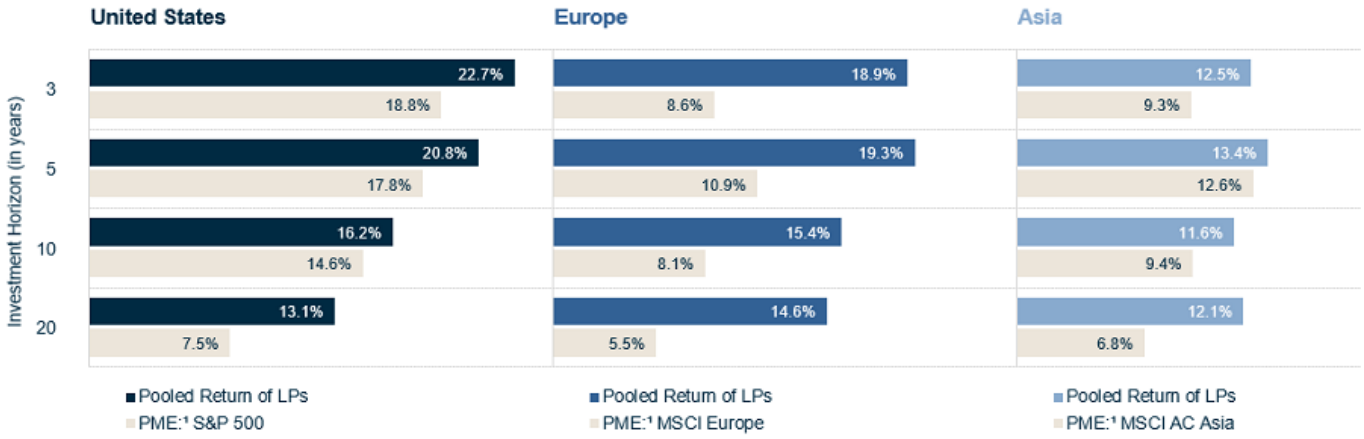
Since the GFC, more companies have chosen to stay private rather than list on public exchanges as the regulatory burden for listed companies has become increasingly onerous and the funding options for unlisted businesses have improved.

Investors are attracted to private equity for:

1. Proven ability to deliver strong risk-adjusted returns
2. Resilience displayed during market turmoil

Private equity's lower correlation with listed equities has become more relevant as investors seek to diversify away from heightened valuations in global equities, and anaemic cash returns.

The charts below illustrate how private equity has outperformed listed equity across time horizons and geographic regions. There is also greater variation in performance among managers when compared with listed equity funds, meaning investors who commit to top-tier private equity managers can expect to capture much greater levels of outperformance than the averaged-out returns displayed below.



[1] The Public Market Equivalent ("PME") concept allows investors to compare the performance of private equity and other private markets investments (Private Equity) to other types of investments, such as public market indices (Public Equity). The methodology assumes buying and selling a given index according to the timing and size of the cash flows between the investor and the private investment. Performing this comparison requires the construction of a hypothetical investment fund that mimics private equity cash flows. This hypothetical fund purchases and sells shares of the index at the same time the private equity vehicle calls and distributes cash.

Sources: MSCI, S&P and BURGISS

Overcoming the challenges of Private Equity investing

The benefits of investing in private equity have traditionally accrued to institutional, wholesale, and ultra-high net worth investors who are better placed to manage the traditional complexities associated with investments in the asset class.

This changed in 2019, when Pengana Capital Group listed the Pengana Private Equity Trust (ASX:PE1), a listed private equity vehicle specifically designed to enable everyday retail investors to overcome the many barriers in accessing private equity.

The LIC structure is most appropriate for listed private equity because it allows an investment manager to unitise illiquid underlying investments into shares and list on the market. This structure solves several challenges of private equity investing, including:

High barriers to entry: Private equity fundraisings are extremely exclusive with significant excess demand for top managers; PE1 partnered with US-based GCM Grosvenor to leverage existing access via a well-established private equity manager with long-standing relationships, which provides exposure to these difficult-to-access private equity opportunities.

Capital constraints and high minimum investment requirements: Typical private equity funds may require a minimum of $5-10 million for a single investment. PE1 provides access to a truly diversified portfolio of private equity investments across underlying investment managers, economic conditions, vintages, geographies, sectors, and strategies (PE1 has exposure to nearly 400 underlying companies).

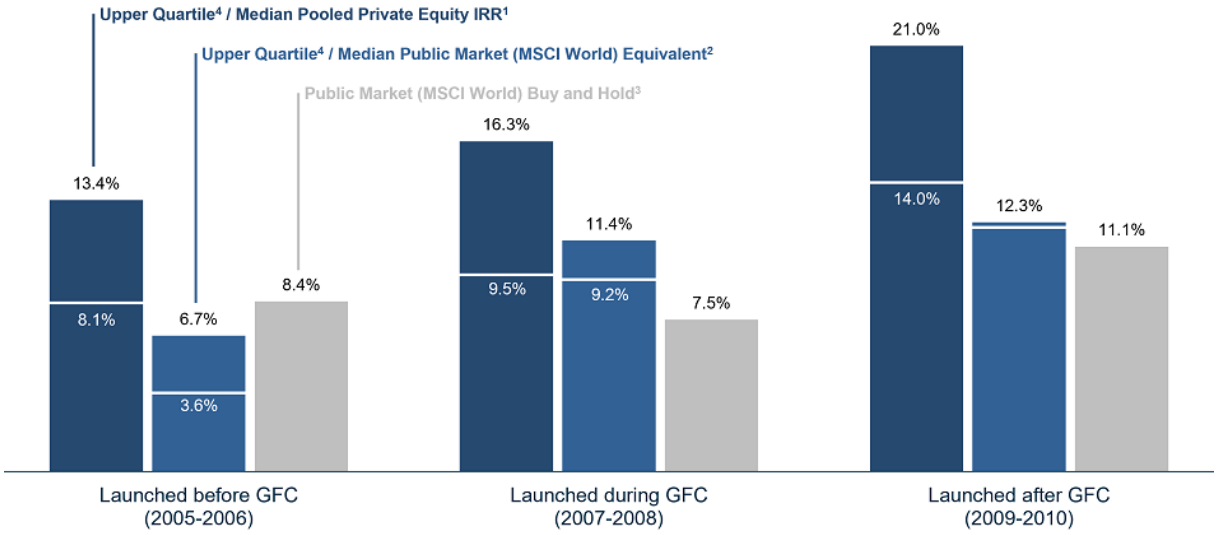
Highly illiquid: Existing private equity vehicles lack liquidity with an average 10-year capital lock up. But the LIC structure means PE1 investors have daily liquidity on the ASX.

Complex cash-flow management: Traditional private equity funds require capital to be contributed on a drawdown basis and exhibit lumpy returns as investments are realised and funds wound up. Yet the listed investment trust structure allows for internally managed cashflows, with drawdowns and distributions managed by the portfolio manager. Distributions are further reinvested to gain new private equity exposures.

No regular distributions: Regular distributions are a challenge for traditional unlisted private equity, yet PE1 can target a 4% p.a. distribution paid semi-annually.

Why private equity is becoming more relevant

In its Global Private Equity Report 2021, Bain and Company shows that one of private equity's enduring strengths is its ability to thrive during periods of economic disruption with downturns historically providing excellent investment opportunities. This is particularly evident when assessing the returns (IRRs in the 17 – 21% range) of funds established in 2002 and 2009 following the last economic downturns.



Source: BURGISS, MSCI.

All current evidence indicates inflation is likely to remain elevated, with potential for huge spikes following Putin's invasion of Ukraine. Global interest rates could march steadily higher. This will put pressure on businesses with excessive leverage and valuations.

In the private markets, these characteristics are typically associated with the very large funds and mega transactions where the deal terms reflect the intense competition to deploy vast amounts of capital. Middle market transactions are typically completed with lower levels of leverage, and at lower valuations, which should provide a measure of additional protection in a rising rate environment.

The recent inflation shock presents a unique opportunity for private equity managers to offer solutions to high quality businesses that require continued financing and structuring them to include strong downside protection for investors while preserving meaningful upside.

Russel Pillemer is co-founder and Chief Executive Officer of Pengana Capital Group, which operates the Pengana Private Equity Trust (ASX: PE1). This article is general information and does not consider the circumstances of any investor.

Opening the virtual frontier: Senator Hume's address to Blockchain Week

Senator the Hon. Jane Hume

Editor's Note: First they ignored cryptocurrency, then they warned against it. Now, it looks like Australian politicians are preparing for the third act: adoration. In a keynote address to an industry conference on Monday, Jane Hume, Federal Minister for Superannuation, Financial Services and the Digital Economy, evoked the Victorian gold rush and the internet in the 90s in a glowing endorsement of the opportunities and benefits on the "new virtual frontier". Introducing plans for a new set of regulations to govern cryptocurrency exchanges she declared to the audience of crypto luminaries and banking heavyweights that "the Morrison government is backing you". Here is an abridged version of the Senator's speech. Subheadings have been added by Firstlinks.

…I said in my maiden speech to the Australian Senate in 2016: "In 20?years, when I look my children in the eye, I want to assure them that my generation, and I personally, have done all that we can to create a productive and prosperous Australia in which they have every opportunity to thrive and to fly."

We want to encourage innovation in crypto assets – innovation creates jobs and growth. There are so many innovative use cases for crypto assets, many of which are not far at all away from becoming mainstream.

These include international payments, lending and borrowing, NFTs and asset tokenisation.

I know about these things because I have been there from the start. I was the original co-convenor of the parliamentary friendship group for blockchain. I will never forget the first event we organised back in 2017. The room was jam packed. It was a sign of the innovation that was to come.

[Indian-American entrepreneur and investor] Naval Ravikant says that "innovation requires **decentralisation** and a **frontier**". I think these two concepts are fundamentally important.

A new virtual frontier

I want to begin by talking about this idea of a frontier. Innovation, growth, productivity increases and wealth creation require something new to explore. There used to be lots of physical frontiers. Anyone educated in my home state of Victoria knows about how much the opening of physical frontiers can create opportunities for success and growth.

On 5 July 1851 – the month that Victoria formally became its own colony – gold was discovered by a Melbourne publican at Warrandyte. Within two years more than 160,000 immigrants had arrived in Melbourne from overseas to reap the benefits of the gold rush. These new arrivals sailed for up to ninety days across the world. Many had never seen the sea before. A further 110,000 arrived from other Australian ports.

These pioneers walked from Melbourne to the goldfields of Bendigo and Ballarat, carrying all their possessions on their backs.

The Government was rapacious about requiring the diggers to pay their dues, even if they had not yet found any gold. The authorities were aggressive and corrupt in their enforcement of the license requirement. Eventually, the diggers rebelled in the Eureka stockade – defending their rights and liberties against the heavy hand of the state and its brutal police force. Its spirit was against higher taxes and big government: a spirit that should be upheld in all entrepreneurial communities.

Melbourne quickly passed Sydney in population. The first telegraph poles were erected, the foundation stones of the university and public library were laid. Railway lines multiplied and crisscrossed the state.

Melbourne became one of the greatest and wealthiest cities in the world – Marvelous Melbourne. The pioneering spirit of those who arrived, took risks, worked hard, and made their fortune were the people who built Melbourne.

And it wasn't just the people who dug the gold out of the ground who benefited. There were whole cities that grew and flourished on the back of the industry.

Importantly, not everyone made money. Although hundreds of thousands of people travelled across the world, their success was far from guaranteed. As the great Australian historian Geoffery Blainey wrote: the seemingly small decisions, like which way to turn at a crossroads – whether to head for Bendigo, Beechworth or Ballarat – "often determined whether, a year hence, he would lie beneath a fall of clay in a shallow shaft or be sailing home to England with a bag of precious gold in the strong room of the ship".

The frontier is a risky place.

There are now very few physical frontiers – although Mr Musk and Mr Bezos with their space exploration aspirations might want to disagree with me on that.

At least for us?*earthly beings*, there are very few uncharted physical frontiers today.

The crypto ecosystem is a new virtual frontier.

I will not stand in the way of my fellow Australians chasing the opportunities and benefits presented by a new virtual frontier.

Crypto today is analogous to equity markets in the late 1970s prior to the boom in markets and trading technology and deregulation in the 80s; it's similar to the internet in the late 1990s. And the decisions now are very much like the decisions then: we can either sustain the right regulatory settings to accrue the benefits of the crypto asset revolution, or we will simply miss out.

Australia's digital asset economy could add 2.6?per?cent to GDP and create around 200,000 new jobs by 2030.

I believe that we need to keep these virtual frontiers open and leverage the pioneer spirit of this country in new and growing areas. The crypto industry, and its applications in defi, is one of the most exciting frontiers I have seen.

So my message to the room is: if you want to be a pioneer on the virtual frontier of innovation, Australia is open for business.

As the Minister for the Digital Economy, and the Minister for Financial Services, I am backing you.

Shifting the balance of power

The second point I want to dive into is decentralisation.

The internet in the 1990s was dominated by open protocols like email or HTTP. It was fair game for teenagers in their mothers' basement. But then came the Microsofts, the Apples, the Googles, the Facebooks of the world who built on top of the open protocols and created closed systems. These systems captured market share, and rightly so – they made the internet mainstream and user friendly.

But the platforms also centralised control of the internet. This led to enormous market power centralised in the hands of a few tech giants.

Now, I'm a small L as well as a big L liberal. I'm not keen on significant market power. I prefer free and competitive markets.

Google has a 95% market share in search in Australia. Facebook and Instagram's combined share of the online display advertising market in Australia is estimated to be 51%. They are the dominant platforms through which Australians engage with the internet.

The tech giants – the largest digital platforms – have transformed from tools that index content or enable communication, to surveillance platforms and gatekeepers of innovation.

This has led to harvesting and hoarding of consumer data. To de-platforming and censorship.

The growth of big tech has meant that software developers are prevented from using their choice of payments system, which has allowed monopoly pricing to flourish and suffocated small businesses and startups.

But most importantly, the centralisation allows tech platforms to change the rules on those who rely on them at any time. It has become much harder for startups and content creators to grow their businesses and their presence online. They do not have certainty. The rules of the game could change at any time and devastate their entire business model. This uncertainty stifles innovation.

Web3 will address these problems and provide alternatives and counterbalances to the power of big tech. It will be open, trustless and permissionless. Where users become the owners. Think Wikipedia rather than Encarta Encyclopedia.

Crypto assets are a powerful way to develop consumer owned networks. They provide a level playing field and don't change the rules.

Platforms and apps built on Web3 will not be owned by a central gatekeeper, but rather by users, who will earn their ownership stake by helping to develop and maintain those services.

…

Indeed, decentralisation and the distribution of power in general aligns strongly with Liberal values. There are parallels here.

Cryptocurrencies are not run by a central authority – they are distributed across a network of computers. Those computers make decisions and advance their own private goals in line with pre-agreed rules.

This is a lot like a free market with clearly defined laws.

Participants can have equal opportunity, they get a fair go and they know what the rules are in advance. The rules don't change without the consent of the governed.

Bitcoin has a fixed supply: 21?million coins. That can never be changed. It is basically a law of nature. And there's no more DAI in the world than MakerDAO users generate.

In a centralised system the odds are already stacked against you. In a decentralised system, they are not. You are not beholden to a central counterparty. And importantly, you don't need the government telling you what to do or who to trust.

History has shown us that freedom, opportunity and a fair go is the best way to produce innovation. And its innovation that breeds productive economies, jobs and growth.

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I ask young people what they like about crypto and they tell me that they like the fact it is not controlled by anyone – including the Government. The small L liberal in me loves that. It gives me great hope.

You are the thought leaders and innovation pioneers in the crypto space. You know what it is about crypto that attracted you and led you here. Your priorities are our priorities.

The policy paper released today reinforces our commitment to a predictable, minimalist, consistent and simple legal environment. This will help ensure that Australian crypto businesses can have an Australian-made badge of approval. It will ensure that Australians can trust the services which they use to interact with the crypto ecosystem…

Senator the Hon Jane Hume is Minister for Superannuation, Financial Services and the Digital Economy.

Doubts over the Eraring Power Station closure

Tony Dillon

When Origin Energy announced recently that it planned to close its 2922-megawatt (MW) Eraring Power Station, the largest coal-fired power plant in the country accounting for 20% of NSW's generation capacity, the NSW Government said it would underwrite the construction of a 700 MW battery by the time Eraring ceases to operate in August 2025.

However, in the words of Chief Brody of Jaws fame who said, "*You're gonna need a bigger boat*", surely NSW is "*Gonna need a bigger battery.*"

Measuring energy and capacity

To begin, we need to clarify two important power industry measures. First, there is 'capacity'. The typical rating measure for power stations, it is the maximum output of electric power able to be produced at a point in time. For example, Eraring has the capacity to generate a maximum 2922 MW of power at a given instant.

Second, there is the measure of 'energy', which is the amount of power output over a period of time, measured in watt hours (Wh). The annual output rating of Eraring therefore being 25,596 gigawatt hours (GWh), (2922 x 8760 hours in a year/1000), 1 GW = 1000 MW. Energy is the usual power rating for batteries (or energy that can be stored), therefore talk of "construction of a 700 MW battery" is obscure, as it does not indicate the period of time the battery can continuously supply 700MW of power.

In reality, power plants will never deliver full capacity over an entire year, for reasons such as energy demand, and planned outages for maintenance. This is where 'capacity factors' come in. An annual 'capacity factor' is the actual output measured over a year, as a percentage of the theoretical maximum output.

Required battery capacity

In the five years to the end of 2021, the average annual output out of the Eraring plant was 16,012 GWh. That is, an average capacity factor of 62.5% (= 16,012 / 25,596), which is the equivalent of 1828 MW continuous power generated (1828 = 0.625 x 2922).

Suppose then that to replace Eraring, continuous power rounded up to 2000MW will be needed in future. And assume that Eraring will be replaced with solar power plus battery storage, so that when the sun is shining, the solar plant produces 2000MW continuously at full capacity. What size battery will be required?

Assume also that on average, there are 10 hours of full sun per day, therefore battery storage will be needed for the remaining 14 hours. Meaning 14h x 2000 MW = 28,000 MWh of output storage required. The battery will also need to be charged daily when the sun is shining, so an additional 28,000 / 10 = 2800 MW of continuous power generation will be necessary. To deliver 2000MW all day every day will therefore require a power plant capacity of 4800 MW, and 28,000 MWh of battery storage.

Making up for cloudy days

But of course, these numbers assume continuous sunlight in the daytime hours, day in day out. The power plant's generating capacity and necessary battery storage blows out considerably in the event that the sun doesn't shine.

To demonstrate, suppose we have one full cloudy day every three days. One day without the sun shining requires additional storage of 24 hours times 2000 MW, which equals 48,000 MWh. With two full days of sunshine before the cloudy day, that means 20 hours are available to generate the 48,000 MWh needed for one full cloudy day. That is, an additional 2400 MW of generating capacity required. So we are now up to a generating capacity need of 7200 MW, plus storage of 76,000 MWh across probably multiple batteries, to ensure continuous supply of 2000 MW of power.

Now sometimes there will be more than one cloudy day in a row, including partial cloudy days, and at other times, more than two days of sunshine between cloudy periods. So there will be occasions when the additional generating capacity will not be enough, and times when it will be too much. Such is the unpredictability of sunshine. Add in the fact that batteries don't actually fully charge or discharge, and the numbers here are understated.

Similar calculations could be undertaken for wind generated energy, but being even more volatile than solar, would imply an even greater amount of generating capacity and storage required.

Clearly these calculations are simplistic, but they serve to give an order of magnitude, and highlight the inadequacies of the battery proposal, and the uncertainty that surrounds the intermittent nature of weather-dependent energy sources.

Tony Dillon is a freelance writer and former actuary. This article is general information and does not consider the circumstances of any investor.

Rising interest rates: risk or opportunity for global listed real estate?

Justin Blaess

Just as we seemed to be passing peak inflation, the recent attack by Russian forces on Ukraine has resulted in another spike in commodity prices. Along with heavy western sanctions, any thought of near-term inflation subsiding now appears to be on the backburner.

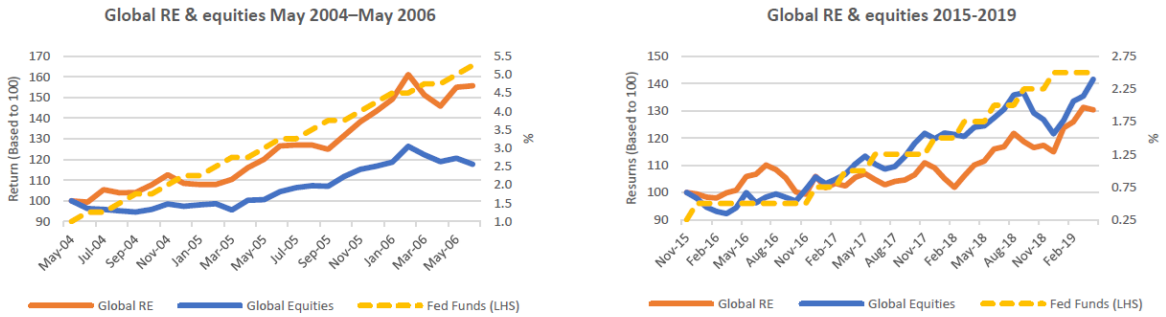
So, the big news – as it has been for the past few months – remains inflation, its (increasingly not so) transitory nature and the rising expectation that US interest rates will soon rise (and by how much). At the same time bond yields have been steadily rising, with the US 10-year recently reaching 2%, while US real yields have also been trending up from a low of -1.2% in November last year to -0.5% today.

Year to date, listed global real estate is down 8.7% (in Australian dollar terms). Is this an opportunity or a risk? To help answer this, we looked at past periods to see if we can draw any inference for the future.

Fed Funds rate and a look at the past

Fed Funds futures are implying lift-off for the first-rate hike at the March meeting – and between now and this next time next year, up to a total of seven 0.25% rate hikes. For those who view listed real estate as a yield play, and expect rising rates to be a headwind, if the past is any indicator for the future the opposite may hold true.

The two charts below show the performance of global listed real estate and global equities (indexed to 100) during each of the past 2 rising rate periods. In either period, neither global listed real estate nor global equities delivered negative returns, albeit back in 2004-06 global listed real estate was a significant outperformer.



Source: Bloomberg

In 2004–06, the US consumer price index (CPI) started at 2.9% and peaked at 4.1%, whereas in 2015–19, US CPI was more benign – starting at 0.4% and rising to 1.9%. In today's higher inflation environment, the relative returns of 2004-06 may be a better guide for today, which is also the conclusion we arrived at last year when we analysed listed real estate returns during periods of high inflation.

Wage inflation can be significantly more damaging for equities

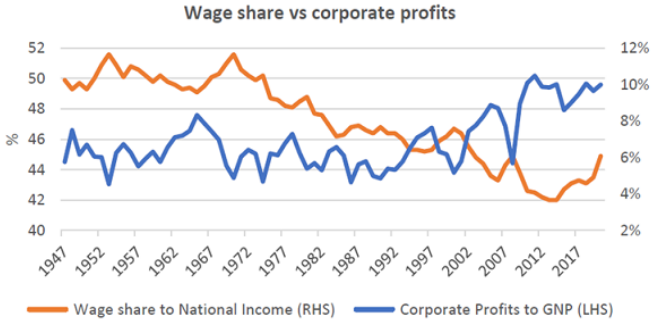
It is worth considering that wage growth is also ticking up, which may not be great for the relative returns of equities.

According to the Federal Reserve Bank of Atlanta, the three-month moving average median wage growth in the US is currently at +5.1% and at levels not seen in 20 years.

Source: Federal Reserve Bank of Atlanta

This is important because increasing wage share can detract from corporate profits. One wonders how much of the strong tailwinds for US (and global) equity performance since 2009 and until the start of the pandemic were because of the ongoing weakness in labour markets. The combination of top-line growth from strong economic growth combined with decreasing unit labour costs was a likely contributor to significant margin expansion.

As we have previously argued, if this reverses the downside may not be insignificant. Employees will seek higher wages to offset inflation, and in the absence of further fiscal support this will need to come out of corporate profits. If profit share moves from its current position of 10% to 8% (which is still high by historical standards) due to improving wages claims, this would represent a fall of 20% relative to gross national product. This could mean flat nominal growth for an extended period in the face of rising rates.

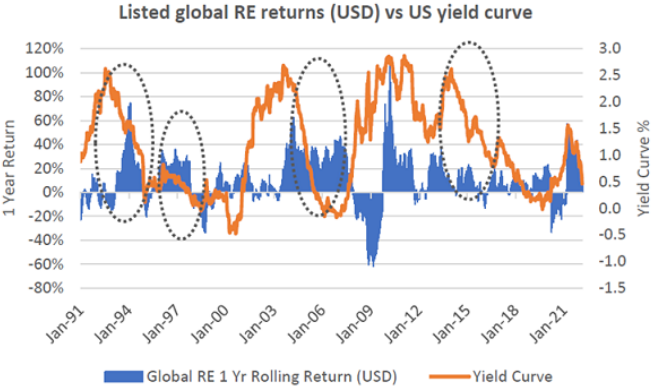


Source: Federal Reserve Bank of St Louis

Compare this risk to real estate. Most real estate has low labour intensity, but high capital intensity. Rising labour costs are not much of a headwind for operating margins but can lift replacement costs significantly.

What about bonds?

While US 10-year bond yields have been steadily rising, it is the front end that has been rising the fastest. That is, the yield curve (measured as 10-year less 2-year treasury yields) has been flattening. Anecdotally, and indeed historically, this has generally been regarded as constructive for listed real estate returns as highlighted by the dotted circles in the chart below.



Source: Bloomberg, FRED

In fact, our own analysis shows that while in the short term the correlation to changes in bond yields against global listed real estate returns varies, in the long term there is very little correlation.

20-year correlation across asset classes

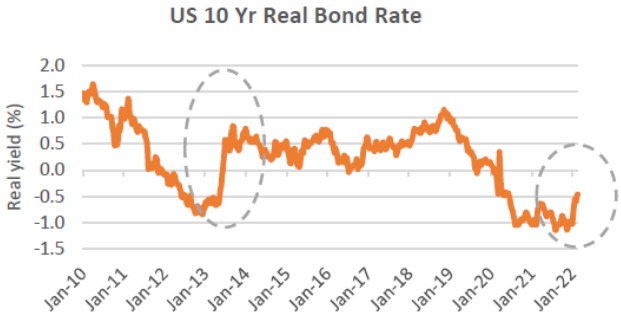
	Global real estate	US equities	Global infra.	Gold	Global shares	Bonds
Global real estate	1.00					
US equities	0.51	1.00				
Global infra.	0.70	0.54	1.00			
Gold	0.21	-0.12	0.12	1.00		
Global shares	0.68	0.43	0.58	0.14	1.00	
Bonds	0.09	-0.29	-0.01	0.34	0.00	1.00

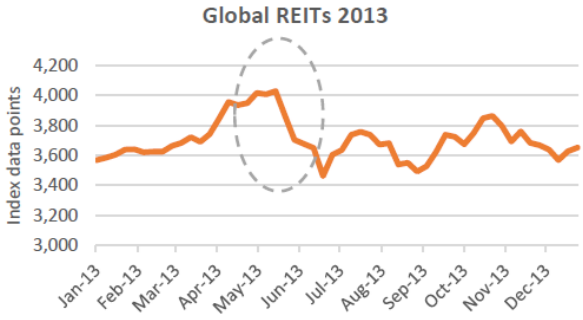
Source: Bloomberg, Quay

What about real yields?

If we run the same correlation analysis in the table above but substitute nominal for real bonds, the correlation is, surprisingly, still almost zero at only -0.06. Said another way, there is almost no long-term correlation between change in real bond yields and global listed real estate returns either. However, short-term observations can paint a different picture.

If we revisit the period April 2013 to July 2013, real bond yields spiked by +1.2% from -0.6% to +0.6%, driven by a sell-off in nominal bond yields in response to an anticipated reduction in the Federal Reserve bond-buying program, or the 'taper tantrum' as it is now known. Returns from global listed real estate suffered, with the index falling almost -20% over the same period (in USD terms) and then trading sideways for the rest of the year, only to regain +20% over the calendar year 2014 and then onwards and upwards. Back then, US CPI was ranging between 1-2% (and actually trended to zero over the course of 2014) and implied inflation was hovering around 2.5%.



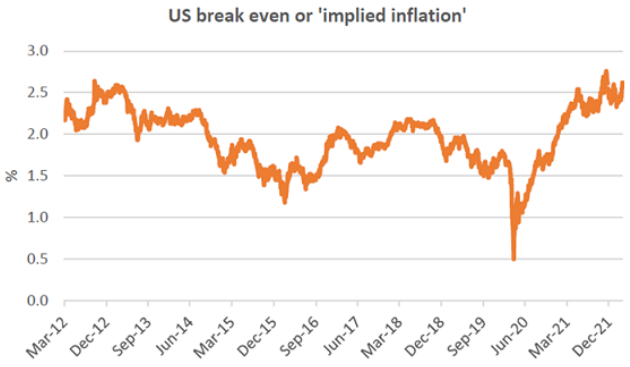


Source: Bloomberg

Of course, we now know this sell-off in listed real estate was an over-reaction by an inefficient market.

Lately, the real bond yield has crept up by around 70bps, now at -0.5% from a low of -1.2%. With implied long-term inflation now at 2.6% (10 yr nominal less 10 yr real bond yield) from a rate of 2.3% over the same period, long-term inflation expectations haven't really changed that much either.

Maybe real yields require watching? However, in the meantime, negative yields are still very accommodative for total returns.



Source: Federal Reserve Bank of St Louis

Concluding thoughts

Analysing the impact of interest rates, bond yields and real yields on historical returns is interesting and can be useful to understand how the past may impact the future. However, when we step back, it really is difficult to be conclusive based on this analysis. Yes, global listed real estate has historically performed well when rates have been rising, but there are always other variables at play. What was the supply and demand environment like, what is the outlook like and what is the value proposition?

We don't stay awake at night worrying about macro inputs we can't control but do try and understand what (if any) risks they may present. What we have learnt over the past 8 years is the best way to minimise the risk to our investors is to spend our time focused on understanding the fundamentals of what we are investing in. It is our opinion that long-term returns have nothing to do with rates, but everything to do with the fundamentals of our investees.

Justin Blaess is a Principal and Portfolio Manager at Quay Global Investors. This article is general information and does not consider the circumstances of any investor.

Ukraine-Russia conflict update: Compendium of research

Dave Sekera

Global stock markets had already been on a downtrend in 2022 but markets have taken another leg down following Russia's invasion of Ukraine. Europe, with its geographic proximity and closer economic ties, has borne the brunt of the selloff, but the conflict in Ukraine has global implications. For now, it appears the greatest risk to the markets is determining how high inflation will rise and how long it will remain before it subsides. Persistent inflation could depress global economic growth as well as pressure individual companies' operating margins.

Key takeaways

- Most global corporations' direct exposure to Russia is limited; however, rising commodity prices and supply chain disruptions will pressure consumer sentiment and raise inflationary risks.
- We have not made broad-based adjustments to our coverage universe. Most direct fallout is contained within the energy and mining sectors, as well as a few companies with larger-than-average exposure to Russia.
- The conflict will lead to a temporary growth deceleration and inflation acceleration across most economies, as reflected in the market sell-off.
- Russia may default on outstanding sovereign debt as early as later this month, yet we expect that fallout will be more limited than the 1998 default as foreign holdings of Russian debt are not as significant.

Exhibit 1 Intermediate Goods and Services Imports from Russia by Country and Sector (Percent of total, 2018)

	EZ	Fra	Ger	Ita	UK	US	Jpn	Chi	Ind	Bra
Total	**6.1**	**2.5**	**3.9**	**4.8**	**2**	**1.3**	**2.7**	**4.2**	**1.3**	**1.8**
Agriculture	1.6	0.2	0.5	0.8	3.6	1.1	3.4	2.9	0.3	0.2
Mining	16	12.5	16.6	19.6	4.4	1.4	5.2	8.9	0.9	2.5
Manufacturing	4.8	1.5	2.9	2.4	1.9	1.4	2.2	2	1.5	2.7
Food Prod	1	0.3	0.6	0.4	0.5	0.4	1.6	2.9	0.3	0.3
Textiles & Clothing	0.3	0.2	0.3	0.3	0.1	0	0	0.2	0.4	0
Wood & Paper	4	0.7	1.4	1.6	1.1	0.5	2.7	11	5.4	0.8
Chemicals & Pharma	10.4	3.7	5.2	4.6	5.7	2.8	1.9	3.4	1.7	4.2
Metals	9.5	1.4	6	4.3	1.1	3.8	8.1	3.1	1.6	5.4
Electrical Equipment	0.4	0.1	0.3	0.2	0.1	0.1	0	0.1	0.7	0.2
Machinery	0.4	0.2	0.3	0.1	0.1	0.1	0	0.1	0.3	0
Transport equipment	0.7	0.9	0.3	0.1	0.1	0.3	0.1	0.3	1.1	0
Utilities	4.6	0.4	0.5	0.3	0.4	0.5	2.9	2.3	1.1	0.2
Construction	4.4	1.5	2.2	2.5	1.5	1.7	1.9	5.7	2.5	1.4
Services	3.8	1.8	2.5	3	1.5	1.3	1.7	4.1	1.8	0.7

Source: Capital Economics.

Russian invasion of Ukraine adds to the headwinds hindering global markets

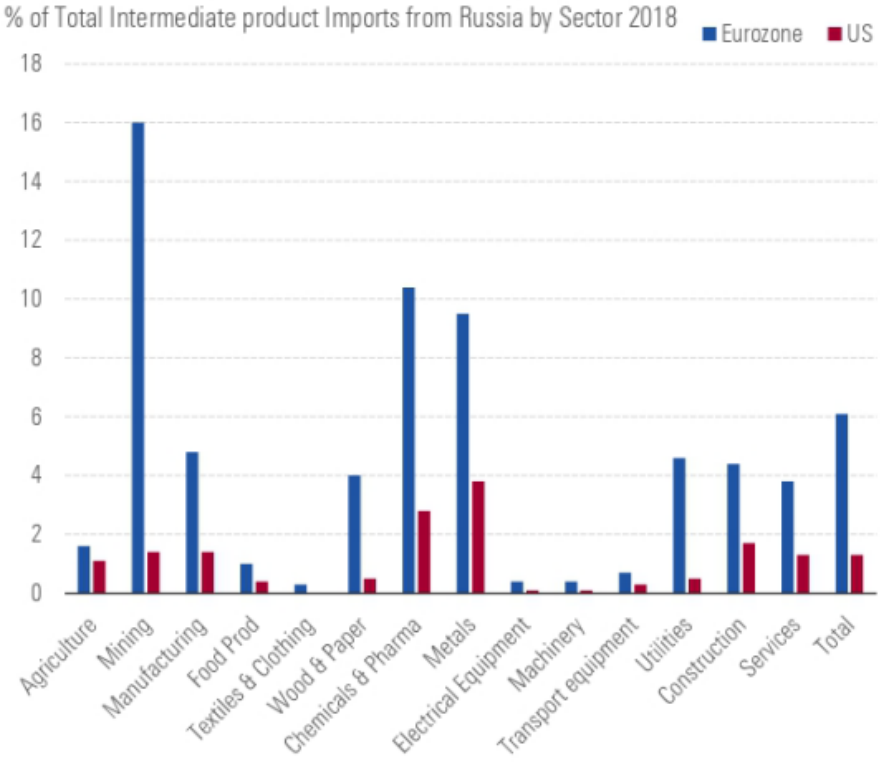
Global stock markets entered 2022 on a downward trend as investors had to contend with several headwinds. Slowing economic growth, tightening monetary policy, hot inflation, and rising interest rates took their toll on sentiment, but markets have taken another leg down following Russia's invasion of Ukraine.

Europe, with its geographic proximity to Russia and closer economic ties, has borne the brunt of the selloff as the Morningstar Europe Market Index has fallen 14.22% year to date through March 9, 2022. Across the rest of the markets, the Morningstar US Market Index has declined 10.61%, Asia has decreased 11.09%, and Australia has fallen a comparatively smaller 3.07%.

Global markets had already been in the process of integrating the impact of high inflation into valuations, but the conflict in Ukraine is leading to an even greater concern that inflation will be higher for longer. While the current sanctions exempt trade across most commodities including energy, agricultural, and industrial metals, prices have nonetheless spiked higher as risk premiums have expanded.

For now, it appears the greatest risk to the markets is determining how high inflation will rise and how long it will persist before it subsides. Persistent inflation on energy and commodities (especially food) could depress global economic growth by lowering the amount of spending on other goods and services as well as pressure individual companies' operating margins. We recently increased our forecast of U.S. inflation for 2022 to 4.3% from 3.6% and modestly lowered our 2022 forecast for U.S. GDP to 3.7% from 3.9%.

Exhibit 2 Eurozone and U.S. Dependence on Russia Exports



Source: Capital Economics.

The Ukraine-Russia conflict will certainly lead to a large (but one-time) increase in inflation. Yet, if our long-term price forecast is correct, these inflationary effects will eventually unwind, resulting in future deflationary pressures.

The impact on global real GDP is more complicated. It depends on central bank reactions, as well as the constraints central banks face, where the most important variable is inflation expectations. The main worry is that the burst in inflation from the Ukraine-Russia conflict leads to longer-run inflation expectations rising above the U.S. Federal Reserve's 2% target. If so, this would necessitate a steep slowdown in GDP growth to reduce inflation until inflation expectations settle back down (as occurred in the early 1980s).

If inflation expectations remain anchored, there's much less reason for central banks to react to the Ukraine-Russia conflict by tightening monetary policy compared with the path it would have pursued otherwise. But the dynamics of inflation expectations are inherently unpredictable, so central banks may opt for a good deal of precautionary tightening.

Ultimately, though, any impact on global real GDP (excluding Russia) would be almost entirely temporary. Russia's exports as a share of global GDP are merely around 0.3%, and the long-run supply-side impact on the global economy would be just a fraction of that (given the ability to adjust), even if exports stayed at zero (which is obviously far worse than a base case).

Impact on the EU's economies, which are more heavily connected with Russia, could be more meaningful, particularly if Russia plunges into a deep recession. Previous rounds of sanctions in 2014 didn't have a material impact on the EU economies, but the situation is different now. The severity of the current round of sanctions, a

greater likelihood of a more pronounced recession in Russia, and dramatically higher energy prices are likely to lift inflation and decelerate growth in the region. Capital Economics already revised its eurozone GDP growth forecast to 2.8% from 3.5% and lifted inflation expectations to 5.5% in 2022.

The U.K., while less exposed to Russia, isn't immune, with Capital Economics raising its inflation forecast by 200 basis points. Further rising energy prices have the potential to materially suppress consumer purchasing patterns, as retail energy prices are at all-time highs. Most European governments have indicated a willingness to partly shield households, but as Mark Rutte, the prime minister of the Netherlands, told lawmakers Tuesday, "We all have to deal with a loss of prosperity."

Why are global markets selling off?

Across our global equity coverage, the initial direct effects of the conflict do not have a significant impact on our equity valuations. The size of Russia's GDP is only $1.5 trillion and, outside of commodities, the country has relatively little global trade. Ukraine's GDP is only $156 billion and it has even lower global trade. Very few companies under our coverage have a significant amount of business tied directly to Russia or Ukraine. However, we note that several industries have greater direct exposure than others and if the conflict were to disrupt the supply of energy and agricultural exports, that impact would certainly have negative global ramifications.

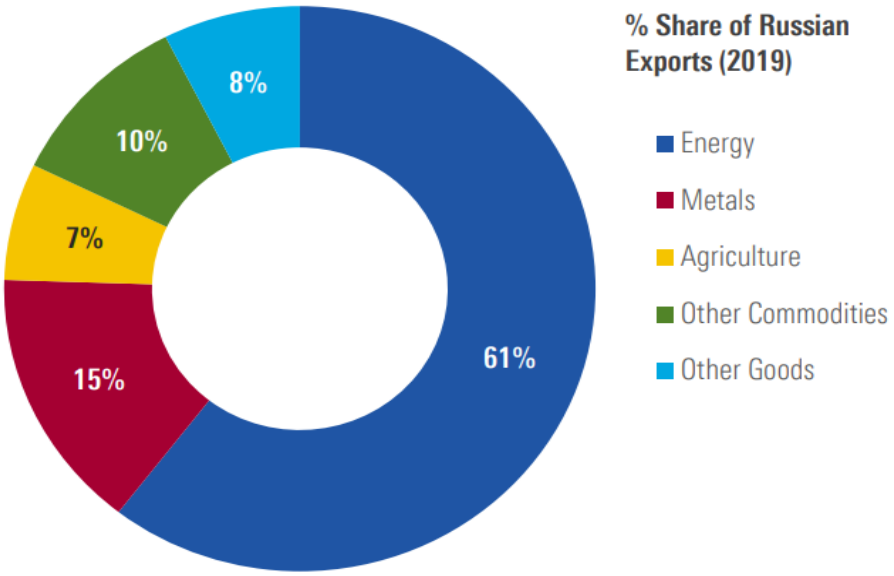
For now, the risk to the global economy, markets, and individual company valuations is mainly tied to the sanctions that the U.S. and many of its allies have levied against Russia as well as the spike across commodity prices as risk premiums have expanded. Additionally, even though we anticipate that, over time, global trade patterns will shift to absorb any dislocations, in the near term we anticipate that supply chain disruptions, already strained by COVID-19, will get worse.

The market now also needs to contend with a greater distribution of unknown effects of the conflict. The longer the hostilities occur, the greater the risks that the conflict could spread to other geographic areas or that unintended consequences that have not yet been identified could occur.

Commodity prices skyrocket as risk premiums expand

In the past two weeks, commodity prices have skyrocketed. While the dollar amount of Russia's overall global trade is not significant as compared with the size of the global economy, Russia is a key supplier of commodities, especially oil and natural gas, as well as agricultural products and industrial metals.

Exhibit 3 Preponderance of Russian Exports Tied to Energy, Metals, and Agriculture



Source: Observatory of Economic Complexity and Morningstar as of Feb. 1, 2021

Russia is responsible for approximately 10% of total global oil production, of which half is used within Russia and the other half supplied to global markets. To date, as we expected, there have been no disruptions to the flow of Russian oil. Nonetheless, prices have risen as non-energy sanctions have made it more difficult for Western customers to transact for Russian oil. As such, the prices for WTI and Brent have risen 17.7% and 14.8%, through March 9, respectively, since the invasion.

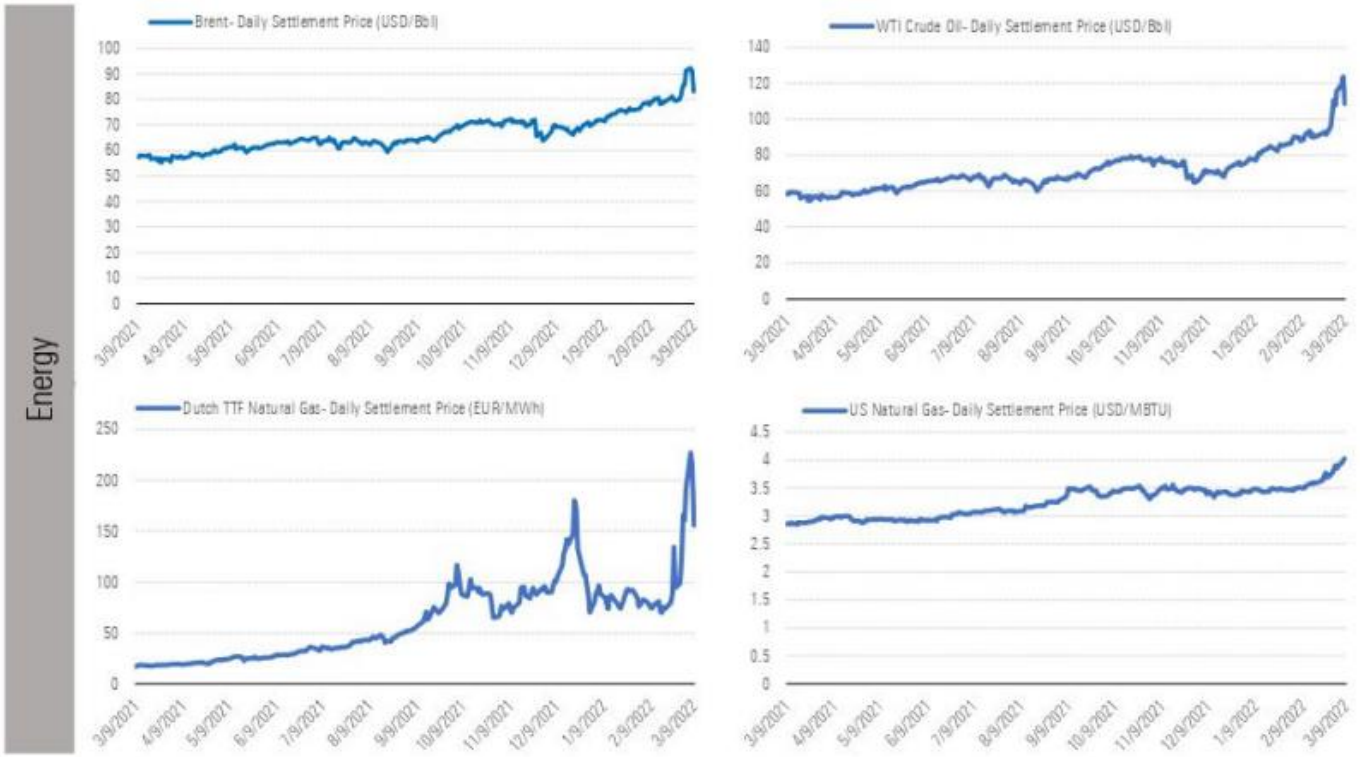
Natural gas prices have also risen, especially in Europe, which is reliant on Russia. If the numerous natural gas pipelines running through Ukraine that supply Europe were damaged during the conflict, this would significantly reduce the amount supplied to Western Europe. Looking forward, there are additional concerns that Western Europe could have a hard time replenishing its natural gas supply this summer if the conflict drags on and may not have enough natural gas in reserves for next winter. The price for the Dutch TTF Natural Gas futures contract has risen 185% between Feb. 22 and March 7.

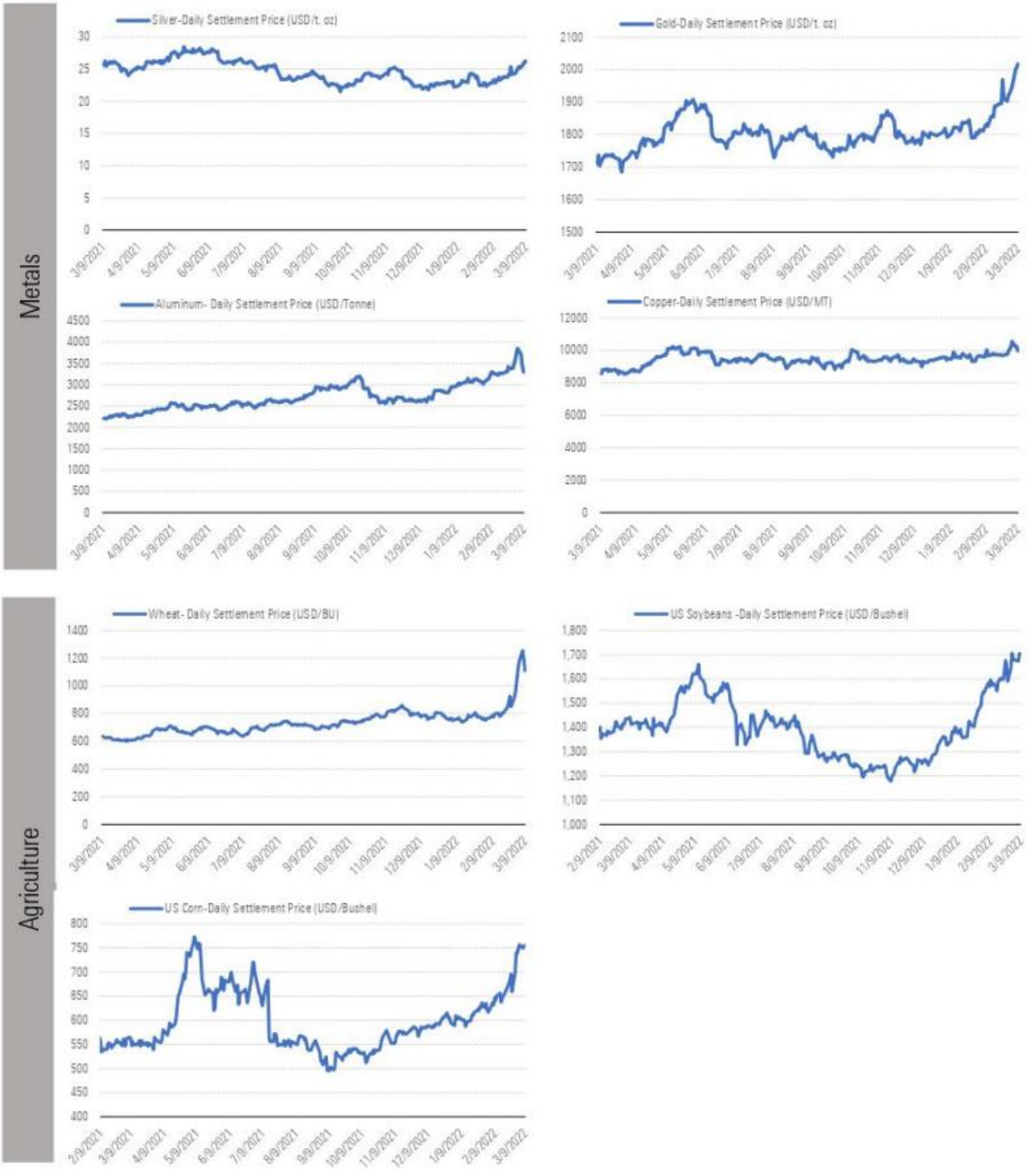
Exhibit 4 Russian natural gas export routes to Europe through Ukraine

Source: The Oxford Institute for Energy Studies as of February 2022

Prices for agricultural commodities have also spiked. For example, the prices of wheat and corn have risen 42.1% and 8.9%, respectively, since Russia's invasion of Ukraine. Combined, Russia and Ukraine provide about 25% of the global wheat supply, slightly larger than that of the United States. The conflict could disrupt the ability of farmers to either plant or harvest their crops. Russia is also a large exporter of fertilizer, and any supply disruptions that limit fertilizer could reduce global crops.

Exhibit 5 Global Commodity Prices Spiking





Source: Morningstar Research Services LLC. Data as of March 9, 2022

Sanctions

Russian banks and financial institutions have been barred from the SWIFT platform and the Russian Central Bank has been precluded from accessing reserves held outside of Russia. It is important to note that neither of these actions precludes using SWIFT to conduct transactions in energy and other specified commodities that are excluded from the sanctions.

These sanctions reduce Russia's ability to use its foreign currency reserves to defend the ruble, which has depreciated by 42.4% since the invasion. In addition, there are reports that Russia may default on outstanding

sovereign debt as early as later this month. Contagion from Russia's last default in 1998 rippled across the globe, but the current foreign holdings of Russian debt are not as significant, which should limit the fallout.

The sanctions also limit foreign companies' ability to conduct business with Russian ones and many other global corporations have voluntarily taken steps to halt their own business in Russia while the conflict is ongoing. However, a number of countries have notably not joined in the sanctions, mainly China and India. In addition, while the SWIFT sanctions impair the ability of Russian banks to make international payments, there are workarounds that can still occur.

Corporate exodus unlike any other

A rapid and broad-based departure of Western businesses from Russia is almost unprecedented. For example, pressure from both investors and the general public—as was the case with McDonald's and Coca-Cola—led to quick (albeit likely reversible) departures. For most businesses, Russia represented only a small portion of their total revenue and growth. As such, we expect that the direct effect of this exodus on corporate earnings will be rather muted. The main exceptions would be notable decisions by many integrated oil companies to end their long-shelf partnerships or direct investments in Russian oil and gas companies. Naturally, higher commodity prices currently more than offset any value left behind, making these decisions more palatable.

Known unknowns and unknown unknowns

The global pandemic over the past two years and the resulting shift in consumer spending to goods from services had already led to a shortage in semiconductors. This shortage was not expected to be alleviated in 2022 but could become even more pronounced in the months ahead. Ukraine reportedly provides half of the world's supply of neon gas. Neon gas is used in the lasers that etch patterns onto semiconductors. For now, chip manufacturers reportedly have enough supply, but a drawn-out conflict could not only impair the ability of the semiconductor industry to build enough additional capacity to resolve the existing shortage, but also make the existing shortage even worse.

Several European automakers have already had to shut down assembly lines. Ukraine had supplied these assembly lines with parts such as wire harnesses and the automakers have not been able to quickly source new supplies. We expect that issues like these will be overcome as manufacturers will be able to ramp up production elsewhere, but it will have additional cost and distribution implications going forward. While this example will be temporary, it is an indication that there will be other unknown consequences stemming from this conflict.

Dave Sekera, CFA, is chief U.S. market strategist for Morningstar.