

The Return of Stagflation?

Post-Pandemic Implications for Asset Owners

April 2020

The following paper was originally written in October 2019, in response to a client question about the possible impacts of a stagflationary environment on long-term asset owners' portfolios. At the time, the risk of stagflation seemed a remote possibility. However, the unprecedented fiscal and monetary stimulus provided by central banks and governments in response to the Covid-19 pandemic has prompted a fascinating debate in economic circles, between those who see the sudden and widespread impact on consumption precipitated by the crisis as having a deflationary effect, and those who view inflation as the inevitable result of the unprecedented supply shock and injection of capital into developed economies. Regardless of which side of the inflation debate one takes, the post-pandemic state of the global economy merits consideration. In light of that, we are sharing our insights into the potential implications of a stagflationary environment on asset owners' portfolios and the possible solutions that can be put in place to mitigate its effects.

1. Introduction

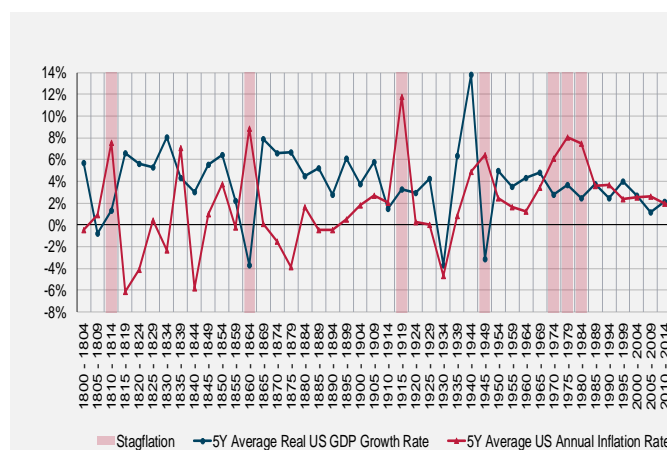
Some describe central banks as chaperones, whose job it is to take away the punchbowl just as the party gets going. In the clutches of the Covid-19 pandemic, however, the response has been to lace the punch with an unprecedented injection of liquidity and public debt. Consequently, it seems entirely possible that when we emerge from this extraordinary situation we will be confronted by, in Niall Ferguson's words, 'An almighty fiscal and monetary hangover¹', in the form of renewed inflationary pressures. At the same time, growth rates have stalled - obstructed initially by trade wars and unstable geopolitics, and more recently (and significantly) by the aggressive social measures taken to contain the pandemic. In light of this, it is not inconceivable that stagflation could make a late entrance and ruin the party for everyone.

We define stagflation in a way that is of most relevance to pension plans: the combination of sustained high inflation and prolonged stagnant economic growth, which leads to persistent erosion in the real value of asset owner portfolios.

We utilise data from deep history to understand the nature of stagflation occurrences and their potential impact on traditional portfolios. Furthermore, we study more recent data to make our analysis relevant to today's world. We demonstrate that a commodity-heavy trend following system combined with multi-asset cross-sectional carry models as well as potential short-

term alpha trading strategies can provide a well-rounded solution for traditional portfolios during stagflationary periods. Our solution also has positive expected returns during non-stagflationary periods. Given the low likelihood of stagflation occurring but its impact being profound, such a solution needs to produce useful returns during non-stagflationary periods, which is something that long allocations to commodity markets fail to achieve.

Figure 1: Historical periods of stagflation in the US: 1800 to 2019



Source: Aspect Capital, GFD

1 Coronavirus: the legacy of a lockdown, Niall Ferguson, 19th April 2020

By our definition, the shaded 5Y periods in Figure 1 can be classified as being ‘stagflationary’. In other words, the shaded periods highlight prolonged periods where inflation significantly outstrips growth. These periods would be problematic for traditional long-only equity and bond portfolios. We classify the following five stagflationary periods:

The first four periods were the result of US wartime activity which saw the US expand monetary supply substantially and purchase goods faster than they were being produced in many cases:

- 1810 to 1814 – The War of 1812 – The US chapter of the Napoleonic Wars (1812-1815)
- 1860 to 1864 – The American Civil War
- 1915 to 1919 – World War I
- 1945 to 1949 – Aftermath of World War II

The fifth period was markedly different from previous ones. Not only was it the longest, but its causes were rooted in external oil shocks and misguided monetary policy.

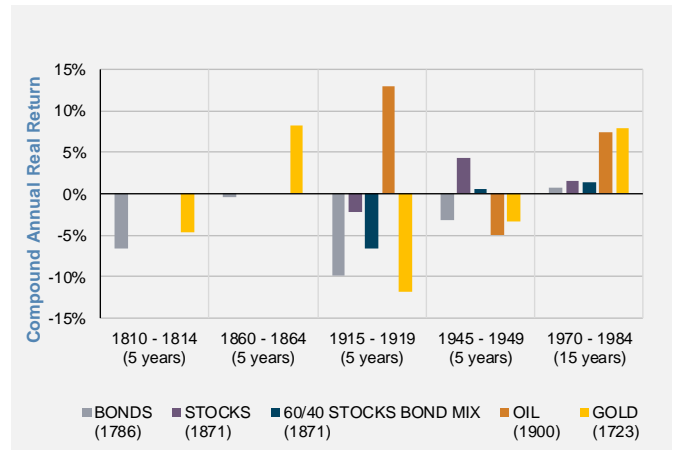
- 1970 to 1984 – ‘The Great Stagflation’

2. Deep history analysis

We use real (inflation-adjusted) returns for traditional assets to see which ones kept up pace with inflation during each stagflationary period.

The chart below compares their performance (note: only bond and gold returns were available for the first two periods):

Figure 2: Compound annual real return: 5 stagflation periods



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

The promissory nature of nominal assets such as bonds and stocks may help explain their relative weakness over these five phases.

In the case of bonds, promised streams of money are fixed and the purchasing power of the streams decline as inflation increases, causing a downward re-pricing of existing bonds in real terms.

All else equal, the rise of bond yields increases discount rates for future stock cash flows, which in turn depresses real stock prices.

Stagnant or lower economic growth can also stunt stock prices due to reduced profitability and increased riskiness.

Stocks outperformed between 1945 to 1949 due to a post-war ‘victory’ rally mostly attributable to dividends.

For real assets such as gold and oil, the picture appears more mixed, especially before the 1970s, which saw reductions in restrictions on the usage of these assets by markets.

The primary reason for gold’s periods of negative real return was that the US government effectively fixed prices under a gold standard until the 1970s.

To fund the civil war in the 1860s, the US issued its first paper currency and briefly moved away from a gold standard. High inflation and loss of convertibility and confidence in the dollar caused gold's strong real returns in this period.

The technological revolution and WWI initially drove early 20th century oil demand. However numerous oil discoveries and price controls kept oil prices suppressed until the 1970s.

In the 1970s, a combination of repeated global oil supply disruptions, record-breaking inflationary fears and the untethering of gold from the dollar boosted both gold and oil in the Great Stagflation.

The heuristic approach of favouring commodities over stocks and bonds during stagflation is not necessarily corroborated by extensive historical data but is probably based on post-1970s data.

It is essential to remember that the foundations and anatomy of each stagflation period are different with each period also featuring once-in-a-generation events.

Consequently, we cannot rely on prior stagflation period returns as our sole guide.

3. Contemporary data analysis

We aim to investigate investable assets and strategies under financial conditions more akin to today with the following approach:

- We will focus on the inflationary aspects of stagflation by analysing the inflationary resilience of assets and strategies.
- Assets and strategies which tend to keep pace with US inflation irrespective of economic growth should be emphasized within a stagflationary investment solution.
- This approach provides more data points from which more reliable conclusions can be drawn.
- Overall performance will be considered to ensure assets/strategies do not harm portfolios if stagflation does not materialise.
- Previous stretches of stagflation have compelled extraordinary central bank action, e.g. drastic fast-paced short-term interest hikes during the early 1980s.

A stagflation solution design should be able to withstand this stress and possibly even take advantage of it.

- The onset of stagflation and associated central bank reaction could easily create short or longer periods of market instability.

It is worth considering solution components that can respond to mitigate unsteadiness and tail-risk.

3.1. Traditional Long-Only Asset Behaviour

Assets are represented using datasets (from 1950s onwards) more consistent with today's financial conditions.

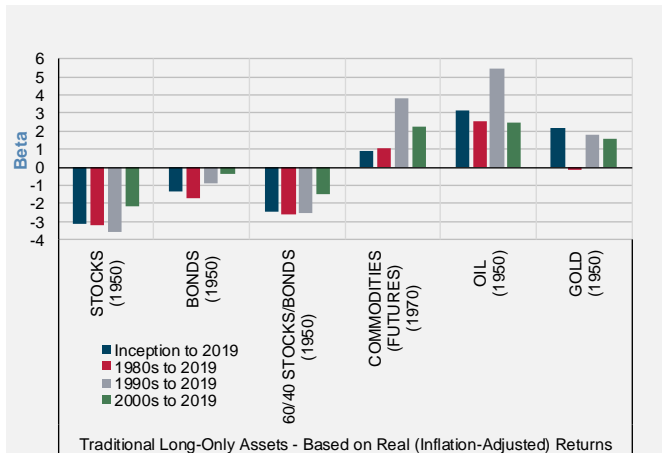
Figure 3 shows how the real asset returns have generally responded to increases in the US annual inflation rate in terms of direction and magnitude of co-movement.

Figure 4 shows average real risk-adjusted returns (IR) during months with increases in the US annual inflation rates

An asset could be viewed as having inflation-hedging properties if it has both a consistently positive conditional beta and IR with respect to upward inflation movements.

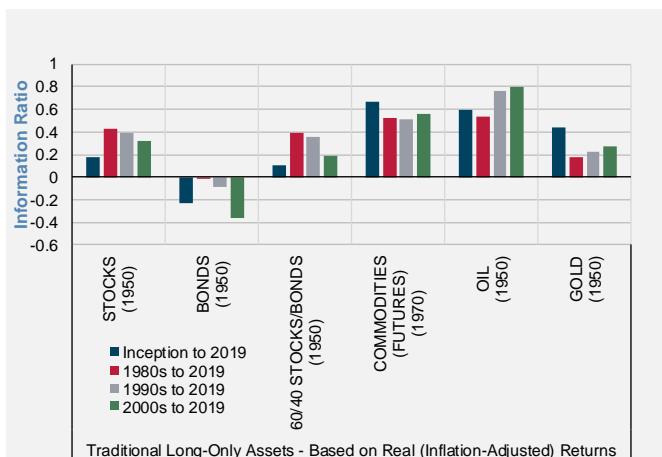
- Commodity futures, oil and gold have demonstrated inflationary resilience since the 1950s showing both real return growth and positive sensitivity during inflation rate rises.
- Real returns on bonds were not able to keep pace with inflation during inflation rate increases and showed adverse reactions to inflation rate upticks.
- Real returns of stocks and a 60/40 stocks bond mix are more likely to see real return erosion during persistent inflation rate increases despite providing positive performance.

Figure 3: Conditional beta for months with US inflation rate upticks: multiple time frames



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

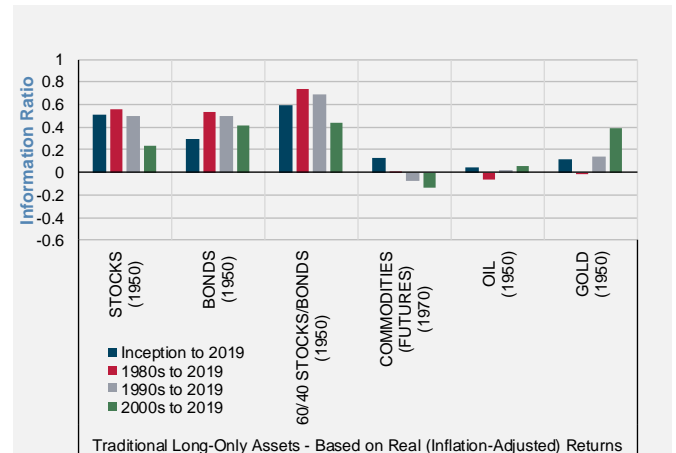
Figure 4: Conditional IR for months with US inflation rate upticks: multiple time frames



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

Figure 5 shows long-term real (unconditional) information ratios. It is evident that the commodity futures and commodity assets have consistently underperformed stocks, bonds and a 60/40 mix.

Figure 5: Unconditional information ratio: multiple time frames



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

In the absence of inflation increases or deflation, commodities have been seen to underperform nominal assets such as stocks and bonds.

A major risk of over-reliance on commodities for inflation-hedging comes in the form of muted or negative overall risk-adjusted performance over longer-term timeframes.

These traditional long-only assets are unlikely to be enough for an effective stagflation solution.

3.2. Beyond Traditional Long-Only Assets

To combat stagflation effectively, favourable strategies should harness rising inflation without harming portfolios in the absence of inflation.

One approach to protect against stagflation whilst minimising long-term performance degradation could be to dynamically alter a portfolio's sensitivity to inflation by changing allocations between traditional long-only assets.

Besides the fact that this is akin to factor timing, which is notoriously difficult, here are reasons why one might avoid this route:

- Identifying stagflation on an ex-ante basis without incurring false positives is unlikely to be straightforward

- At the point of reallocation, liquidity constraints may appear within the asset classes requiring overexposure
- During choppy macroeconomic regimes, frequent reallocation would likely sustain unnecessary and penalising trading costs

A more robust stagflation solution needs to extend beyond traditional long-only assets and focus on the following:

- A well-balanced combination of alternative investment strategies may allow one to benefit from varying dynamics across asset classes without being overexposed to inflation risks
- Strategies with sound theories or evidence surrounding their ability to perform during inflationary regimes.
- These strategies should not necessarily rely on US growth only and should be implemented globally in a scalable and liquid manner

4. Spotlight on trend following as a stagflation solution

During stagflation, surging inflation is likely to cause a series of persistent directional movements in many asset classes – these can be captured with a trend following system.

We use the Mt. Lucas Management Index to characterise trend following because it has a very long history, having been first introduced in 1988 and using data going back to 1961.

It represents the intrinsic features of trend following that have positive stagflation characteristics.

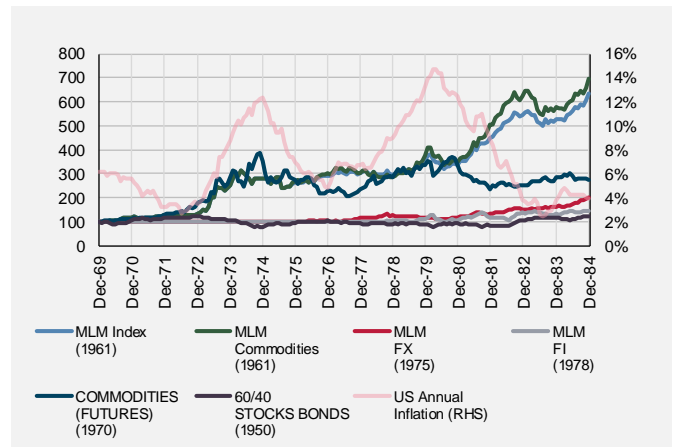
Clearly superior trend systems such as those developed at Aspect are always preferable, but we wanted to highlight that even the most simplistic and rudimentary trend implementation still possesses the correct attributes which we seek. The MLM Index has the following features:

- 22 equally weighted markets with the following composition: 11 Commodities, 6 FX, 5 Fixed Income (FI)
- Each month, if the 200-day moving average is above a market's nearby future's close price, go short, otherwise go long

1970 to 1984 houses the most recent and arguably the most (in)famous and prolonged period of stagflation in recorded

history. Figure 6 and Table 1 compare real (inflation-adjusted) performances over this period:

Figure 6: Real growth of USD 100 for selected indices and US annual inflation: 1970 to 1984



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

Table 1: Real (inflation-adjusted) performance of selected indices: 1970 to 1984

Dec 1969 to Dec 1984	MLM Index	MLM (COM)	MLM (FX)	MLM (FI)	(Futures)	(60/40)
Ann Ret	13.1%	13.8%	7.8%	6.2%	7.0%	1.4%
Ann Vol	14.0%	15.5%	7.2%	14.6%	19.4%	11.5%
IR	0.93	0.89	1.08	0.43	0.36	0.12

Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

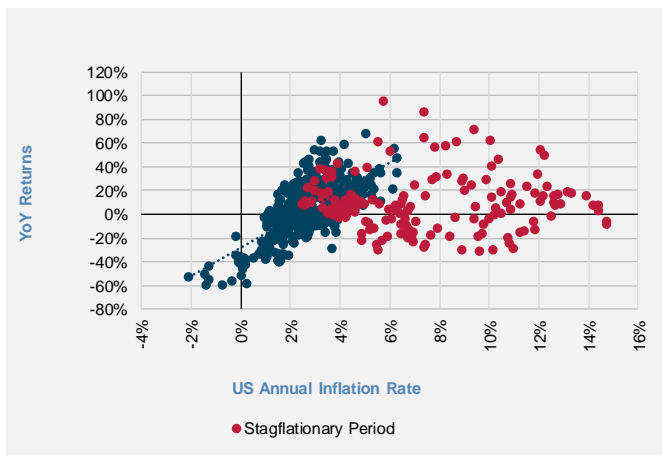
- The MLM index comprising a simple commodity-heavy trend following system provides the strongest real performance with positive real contributions from each sector
- The MLM index also only had a 0.26 correlation with long-only commodities and -0.04 correlation with the 60/40 stocks bond mix over this period
- Commodity futures fared reasonably during this period but struggled as inflation came down

- Meanwhile, a traditional long-only 60/40 stocks and bond mix had very little real performance

Figures 7 to 9 use monthly data to visualise and compare relationships between rolling 12-month (YoY) real (inflation-adjusted) returns and US annual inflation.

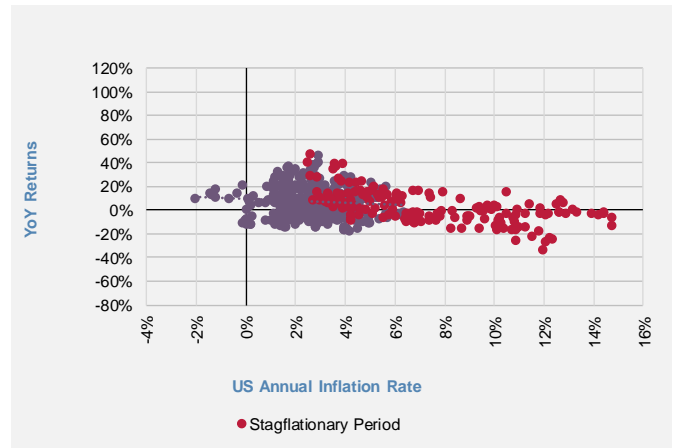
- Long-only commodity futures show the strongest positive relationship and strongest real performance during stagflation; however, they suffer immensely when inflation doesn't materialise or during deflation
- A 60/40 stocks bond mix has a slightly negative relationship with inflation and showed negative real performance during stagflation. It also appears to deteriorate when inflation is negative, preferring mild inflation (around the Fed's 2% target)
- The MLM index shows the most favourable characteristics with mostly positive real performance during stagflation and the ability to take on inflationary sensitivity to mitigate the erosion of real value. It also shows positive real performance during deflation.

Figure 7: Commodities (Futures) vs inflation: 1970 to 2019



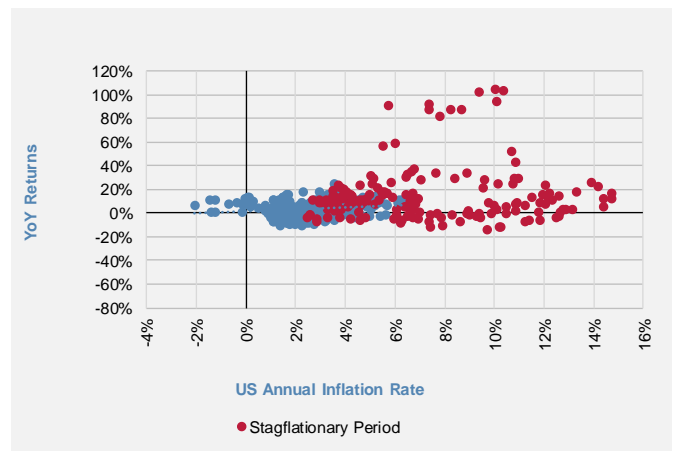
Source: Aspect Capital, Datastream, GFD. Please see disclaimer on pages 11 and 12.

Figure 8: 60/40 Stocks/Bond mix vs inflation: 1970 to 2019



Source: Aspect Capital, Datastream, GFD. Please see disclaimer on pages 11 and 12.

Figure 9: Trend following (MLM index) vs inflation: 1970 to 2019



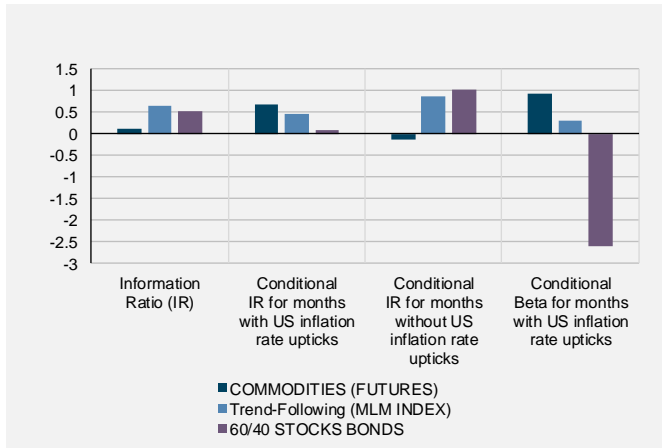
Source: Aspect Capital, Datastream, GFD. Please see disclaimer on pages 11 and 12.

The long-term statistics above demonstrate that trend following should be considered when trying to mitigate the damaging inflationary effects of stagflation.

Trend following has been shown to achieve this without sacrificing real performance if stagflation doesn't materialise which cannot be said for long-only commodities.

Trend following can also participate during inflationary environments, unlike 60/40 stocks and bonds which have appeared to be adversely sensitive to accelerating inflation.

Figure 10: Long-term statistics based on real returns: 1970 to 2019



Source: Aspect Capital, Datastream, GFD. Please see disclaimer on pages 11 and 12.

The summary in Figure 10 highlights the effect we were aiming to show. Although commodities provide protection during rising inflation, they can be a drag in the absence of inflation. Also, the traditional 60/40 portfolio struggles during inflationary periods and furthermore its sensitivity to rising inflation is progressively worse as inflation rises. This is evidenced by the strong negative beta during months with rising inflation. Only trend following, despite it being represented by a rudimentary index, provides strong real returns in both rising and non-rising inflationary periods.

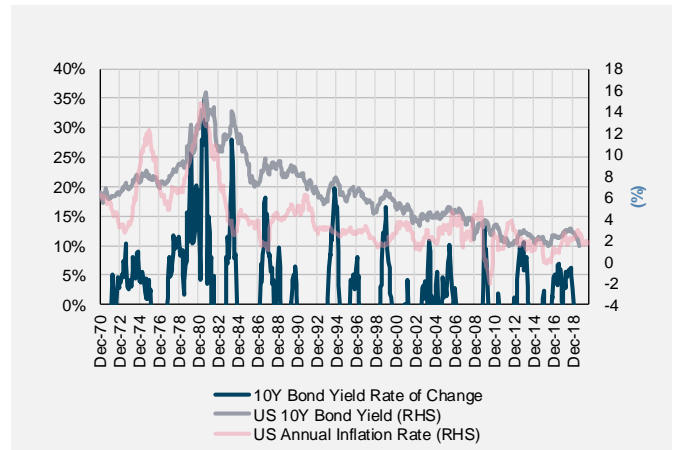
4.1. Stagflation and central bank reactions

We would like to consider the possible ancillary effects of likely central bank actions that seek to combat inflation or the threat of inflation. There are times when the threat of inflation, particularly against a low growth environment, elicits central bank policy changes.

Following the early 1980s stagflation, the Fed opted to focus less on reviving growth and more on combatting inflation by tightening monetary policy at a rapid pace.

The chart below represents the pace of tightening as the positive average monthly rate of change in the 10Y bond yield (on a rolling 12-month basis).

Figure 11: Stagflation and central bank tightening



Source: Aspect Capital, Datastream, GFD. Please see disclaimer on pages 11 and 12.

We identify the three historical hiking cycle periods with the largest peaks and observe that two of them occurred during stagflation:

- July 1980 to July 1981:

The Fed's then new chairman, Paul Volcker, took unprecedented measures to fight inflation during the Great Stagflation by doubling the fed funds rate to 20%, its highest point in history.

Inflation was sent spiralling lower restoring Fed credibility but not without the triggering of the 1981 recession. This commenced a new paradigm of managing inflation expectations alongside swift or even pre-emptive interest rate action.

- October 1983 to June 1984

Investors were spooked by US inflation flirting around the 4% mark and took concern that inflation was about to come back in full force so fed funds were raised to a peak of 11.44% (from 8.50% at the beginning of the hike cycle).

- February 1994 to November 1994

Referred to by many as ‘The 1994 Bond Massacre’ as the FOMC exuberantly raised the Fed funds by 300 bps in a year to head off the threat of inflation. This followed a period of complacency which came after inflation during the early 1990s appeared to be contained.

Whilst the 1994 Bond Massacre did not occur within stagflation, it shared, in common with the other two periods, the fear of great inflation as its primary trigger. It is conceivable that the reappearance of stagflation or roaring inflation in the US would elicit similar reactions and it would be prudent for a solution to be able to navigate these episodes. With this in mind, Figure 12 compares the real returns of traditional long-only assets and trend following.

Figure 12: Real returns for selected assets

	STOCKS	BONDS	60/40 STOCKS BOND MIX	COMMODITIES (FUTURES)	OIL	GOLD	TREND-FOLLOWING (MLM INDEX)
Jul-1980 to Jul-1981	8.97%	-20.28%	-3.41%	-15.99%	-20.44%	-44.19%	18.85%
Oct-1983 to Jun-1984	-7.39%	-6.97%	-7.19%	6.83%	-5.14%	-10.58%	9.19%
Feb-1994 to Nov-1994	-5.72%	-11.85%	-8.16%	-8.18%	15.60%	-2.58%	9.14%

Source: Aspect Capital, Datastream, GFD. Please see disclaimer on pages 11 and 12.

A 60/40 stocks and bond mix provided negative real returns in each period and commodity futures, oil and gold were very mixed.

Higher interest rates have been known to hurt commodities such as gold due to the increase in opportunity cost as gold does not yield anything.

It is noteworthy that trend following is the only consistent source of real return – having been strongly positive over each period.

In each case, positive real contributions came from the commodities, FX and FI sectors of the MLM index highlighting the breadth of performance contributions.

4.2. Spotlight on cross-sectional carry

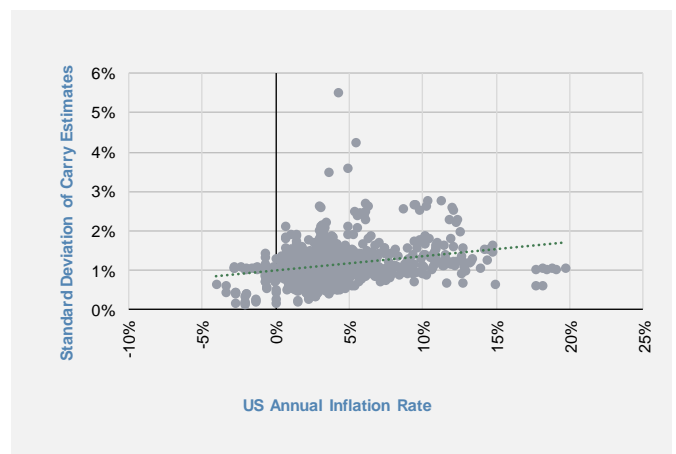
Whilst we cannot know how the Fed would react to a revival of inflation, their reaction could very well create global central bank policy divergence.

This could create new dislocations throughout the global cross-section of term structures within asset classes which could be harvested by relative carry models.

Using long-term historical data, we derived monthly carry estimates going back to 1936 for a group of fixed income and equity assets as follows:

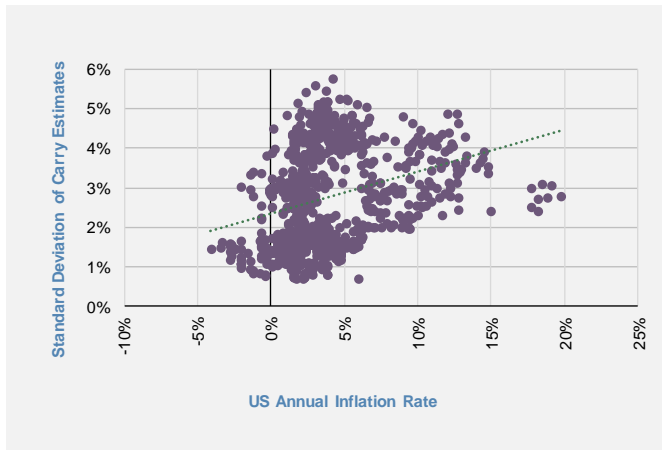
- Fixed income carry: bond yield minus 3-month repo rate for 20 global bonds across maturities and developed market regions (e.g. USA, UK, France, Germany, Japan, Australia, etc.)
- Equity carry: dividend yield minus 3-month repo rate for 25 global stock indices from both developed and emerging market regions (e.g. USA, UK, France, Germany, Japan, Australia, Thailand, India etc.)

Figure 13: Standard deviation of fixed income carry: 1936 to 2019



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

Figure 14: Standard deviation of equity carry: 1936 to 2019



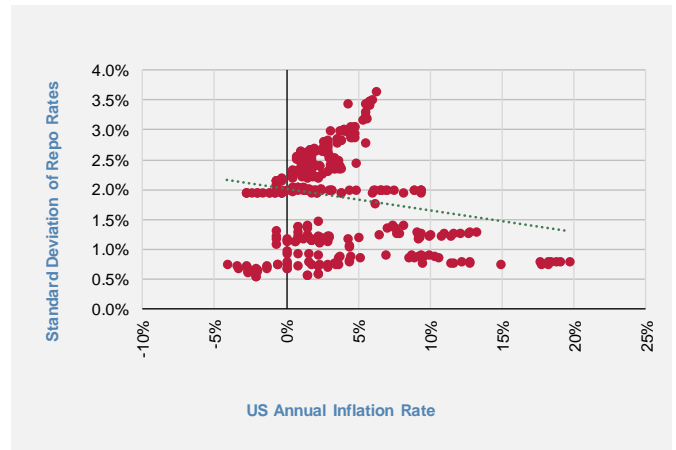
Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

For both asset classes, we see that the standard deviation of carry estimates tended to rise with increased US annual inflation rates. One could argue that this presents more opportunities for a relative cross-sectional carry model.

FX carry relies on short-term rate differentials within a basket of currencies, which we can attempt to measure using the standard deviation of repo rates amongst the same 25 countries used to estimate equity carry.

Figures 15 and 16 show that pre-1970 and post-1970 display a marked contrast in the relationship between general interest rate differentials and inflation.

Figure 15: Standard deviation of repo rates: 1936 to 1969



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

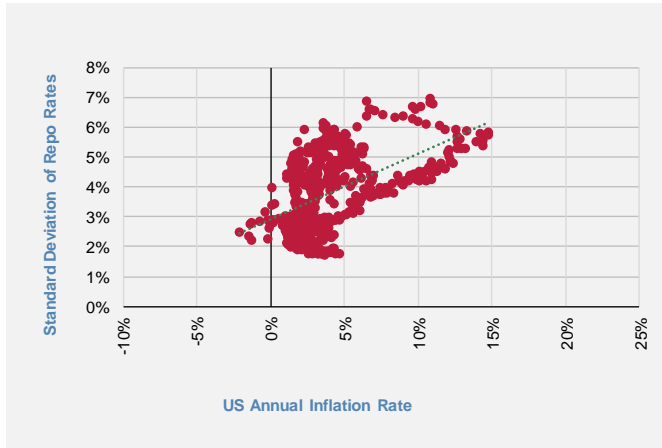
The 1970s were significant not only because it was a decade characterised by stagflation but it also saw the passing of the US Federal Reserve Reform Act.

Here, price stability was explicitly mandated as a US national policy goal giving the Federal Reserve more authority to instigate unprecedented short-end rate hikes to combat gruesome bouts of inflation.

In currencies, over the long-term, surging inflation is damaging for the currency but over the short-term, the carry trade will boost the currency if rates are hiked.

A relative currency carry model might be well placed to exploit an increased range of short-term rates which may occur if US stagflation materialises.

Figure 16: Standard deviation of repo rates: 1970 to 2019



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

Limited history for multiple expiry futures contracts precludes very reliable scrutiny of the relationship between commodity carry dispersion and inflation.

Despite this, there appears to be positive correlations between the standard deviation of carry estimates and US inflation for major commodity subsectors such as precious metals and agricultural.

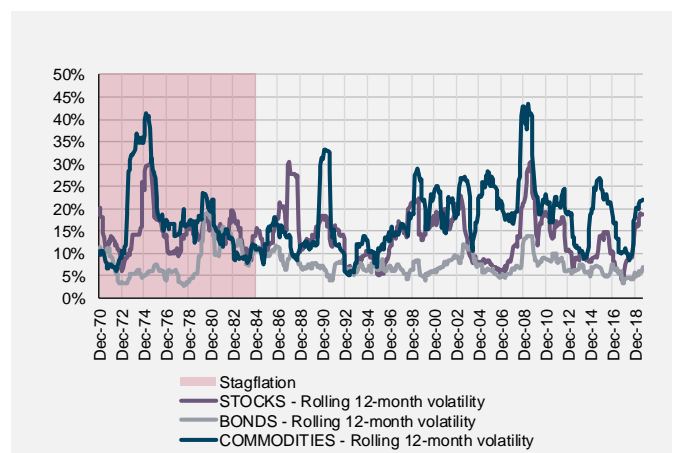
Once again, this is potentially supportive of incorporating relative commodity carry models during high inflationary or stagflationary environments.

5. Stagflation and market instability

Another ancillary effect that we would like to highlight is the potential for market instability during periods of stagflation.

Figure 17 shows how stagflation coincided with some of the largest jumps in volatility ever recorded across asset classes. Of course, there are many reasons and drivers for market instability, but stagflation could certainly be one of them.

Figure 17: Stagflation and instability



Source: Aspect Capital, GFD. Please see disclaimer on pages 11 and 12.

The addition of shorter-term strategies designed to capture opportunities in expanding volatility environments – whether these strategies are operated on liquid futures or option markets – would offer useful complementary performance to traditional assets in the early stages of market instability – regardless of the source of the market instability.

Aspect’s buildout over the years of systematic and complementary trading strategies spanning timeframes from days to several months gives us a wide-ranging set of strategies to utilise in the design of a stagflation-mitigation solution.

6. Stagflation solution

We have explored ways in which we can mitigate the risks of stagflation on pension plan portfolios.

- A holistic approach should include trend following components providing dynamic directional exposure to a diversified set of asset classes, particularly commodities.
- It would be likely to benefit from relative carry models to capture policy-driven dislocations.
- It should also contain some faster strategies designed to protect from short-term market shocks caused by market instability.

Aspect can tailor scalable customised stagflation mitigation solutions for our pension plan clients, at various levels of complexity and capacity, that benefit from:

- Aspect's research-enhanced trend following models, continuously developed over 22+ years' experience.
- Carefully chosen additional systematic models designed to capture diversifying enhanced multi-asset carry opportunities.
- Potential additional allocation to faster, lower capacity, alpha strategies that seek to deliver strong returns during periods of short-term market instability.

References and notes

1. Traditional asset classes, inflation and growth references

STOCKS	S&P 500 Total Return Index
BONDS	GFD USA 10-year Government Bond Total Return Index
COMMODITIES (FUTURES)	S&P GSCI Total Return Index
OIL	West Texas Intermediate Oil Price (US\$/Barrel)
GOLD	Gold Bullion Price-New York (US\$/Ounce)
US INFLATION	United States BLS Consumer Price Index
US REAL GDP	United States Real GDP 2012 Dollars (Federal Reserve)

Note: The data with respect to various indices is shown for illustrative purposes only. Detailed descriptions of the indices used are available from Aspect upon request.

2. Dates within parentheses indicate inception date within utilised data series
3. Inflation adjustments consist of a subtraction of monthly inflation rates based on the United States BLS Consumer Price Index

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