



REVIEW OF INFLATION IMPACT ON EAST SUSSEX PENSION FUND'S PORTFOLIO

William Bourne

Independent Adviser

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1. Executive Summary and Contents Index

At the 25th November 2021 Committee meeting, a request was made for more information about the potential impact of inflation and the resulting policy response on East Sussex Pension Fund's ("ESPF") assets. This paper sets out the background to the recent rise in inflation, and four potential scenarios for the medium-term future, defined as five to ten years. It looks at how the Fund's assets might behave, using both a qualitative approach based on causality and a stochastic model to provide some mathematical grounding.

I find the major unmitigated risk to ESPF is under the Stagflation scenario, where inflation remains above 5% and economic growth remains low. The recently appointed actuarial consultant will be conducting a valuation in 2022, and I do not recommend making major changes ahead of their report. I discuss how best to mitigate this 'gap' and suggest some steps as listed below for the Committee and Investment Working Group to consider.

Next step	Rationale	Who
Await next SAA review (2023) before implementing any major changes	Valuation preliminary results due late 2022	IWG, PFC
Postpone reductions in Newton and ILG allocation till after the next SAA review	Reconsider rationale for doing so in light of higher inflation	IWG, PFC
Consider allocating to broader more flexible strategies at the next SAA review	Greater flexibility to allocate tactically in more volatile market	IWG, PFC
Explore whether an overlay to mitigate risks under Stagflation is feasible	Mitigate risk in 5%+ inflation scenario	IWG

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2. Background to resurgence of inflation

Since the Global Financial Crisis in 2008, the authorities have tried to sustain economic growth through easy monetary policy and expanding central bank balance sheets. This trend was accelerated after the spread of COVID in early 2020 and subsequent lockdowns round the world. Central banks in the West responded on an unprecedented scale of quantitative easing. For example, the Bank of England's balance sheet was almost 4.5 times larger at the end of 2020 than eleven years earlier.

Chart 1 shows that U.K. consumer inflation ("CPI") stayed in the 0 to 3% range between 1993 and 2020 except for two short periods, first the Global Financial Crisis in 2008/9 and secondly 2011/12. This relatively low inflation reflects some strong disinflationary trends, most notably globalisation and technology.

Chart 1 – UK Consumer inflation 1990-2020



Source: [Macrotrends.net](https://www.macrotrends.net)

In contrast, asset inflation over this period has been much higher: the excess of money or credit not needed in the real economy has gone into assets, both financial and real. Stock markets, art, vintage cars, and football stars have all risen in price by many multiples. The impact of easy monetary policy has been seen here rather than on the high street.

In 2021 there has been a sharp rise in supply-side inflation, especially in commodities. U.K. consumer inflation in December 2021 stood at 5.4%, the highest level since 1993. This change in behaviour has primarily been caused by supply-side factors:

- A rise in energy costs caused partly by increased demand from China, and partly by Russian geo-politics over gas supplies.
- Pressure on labour costs caused by shortages in particular sectors (e.g. truck drivers).
- Trade-related constrictions, including shipping and container shortages and COVID-related frictions.

3. Inflation prospects

The consensus view today is that at some point in the future there will be a sustained period of higher inflation. Government borrowing has vastly increased and will have to be repaid somehow. In the absence of tax generation through higher growth, politicians may choose to inflate the real value of the debt away rather than cut spending, raise tax, or default.

The counterview is based around the experience of Japan in the 1980s and 1990s. After the 1980s bubble, asset prices collapsed by up to 80% when it burst. One secondary impact was to engender a deflationary mindset which has lasted thirty years and is still in place.

There are substantial, albeit not complete, parallels between Japan with the world today: money is effectively free, growth is anaemic, asset prices have spiralled ever upwards, demographics in the West are peaking, and there are only limited policy options available to the authorities. However, policy-setting is arguably more competent and government borrowing is lower with longer duration, so refinancing problems are less acute.

In the background, but not to be forgotten, are longer-term macro-economic trends. On the more inflationary side, these include:

- The increasing ratio of dependent to working-age populations
- the move to a carbon-free world and competition for scarce resources
- less efficient resource allocation as government interference increases.

There are also disinflationary trends:

- technology continuing to disintermediate whole industries
- a generational swing away from materialism in the West.

In the short-term, the question is whether the current surge in inflation turns into something more sustainable or is just a blip. The Bank of England forecasts¹ that CPI will peak at 7% in April 2022, but will then fall back to close to its 2% target rate. The bond markets, often reliable predictors, are predicting around 3% in inflation in five years' time, less in the U.S. and more in the U.K.

4. Four inflation scenarios

ESPF's liabilities are linked to CPI without a cap. I therefore use that index to define four possible inflation scenarios over the next five to ten years and look at the impact these might have on ESPF's assets. Inflation elsewhere in the world will undoubtedly have an influence, but I treat them as an input rather than an output.

I have ascribed a probability to each scenario. I expect governments generally to interfere more with the allocation of resources, which historically has been a major cause of inflation. The major variable will be the behaviour of central banks, which could either counter or exacerbate this. I expect institutional memories of inflation in the 1970s and 1980s to lead them to be tighter rather than looser, as per the recent comments by the Federal Reserve.

Central Scenario (40%) - Sustained inflation

In the central scenario (Sustained), I expect these two factors very roughly to balance each other out. Technology will continue to keep downward pressure on inflation generally, but supply side frictions begin to engender an inflationary psychology. Growth stutters on the back of higher energy prices but remains positive. Inflation stays at 3-5% i.e. the upper band of the last thirty years.

Stagflation Scenario (20%)

If I am wrong about central banks, both factors will face towards inflation in the second scenario, Stagflation. The authorities choose to continue QE policies (effectively the magic money tree) and the result is to devalue paper currencies. This will add a further impetus to inflation from more expensive imports. Growth becomes increasingly dependent on government spending and investor psychology focuses on trying to maintain the real value of wealth. Inflation rises above 5% and stays there despite the authorities' efforts.

¹ Summary of Monetary Policy Committee meeting 2nd February 2022

Goldilocks Scenario (15%)

Central banks tread a middle path, tightening policy while western economic growth stays at about 2%. Inflation stays in the 1 to 3% range. Supply-side restrictions largely disappear, and governments in the main refrain from interfering with the allocation of resources.

Zero Inflation Scenario (25%)

The authorities are too harsh in bearing down on inflation and raise rates too aggressively. Demand falls as a result of tighter policy and higher energy prices, and real economic growth is elusive. Consumer psychology turns to one of minimising spending and inflation falls to zero or even deflation, as happened in Japan in the 1990s.

Table 1 sets out some key metrics for each scenario. These are only intended as an illustration. I assume that U.K. policy stays broadly in line with other western countries. If it chooses a different path, the prospects for sterling would likely diverge greatly.

Table 1 – Key metrics of four inflation scenarios over the medium-term

	Central	Stagflation	Goldilocks	Zero inflation
Inflation (CPI)	3-5%	Above 5%	1-3%	Below 1%
Real Growth	1-2%	0-1%	2-3%	Negative
GBP	Neutral	Falls	Rises	Neutral
10 yr gilt yield	4%	7%	3%	1%

5. General impact of inflation on asset prices

Inflation can affect the returns from all asset classes in two ways. It may directly affect the nominal income stream or capital return received from the asset. For example, if a company is unable to raise prices to make up for higher supply side costs, the impact on its earnings will be negative. Conversely, if inflation leads to weaker GBP, that may increase the GBP value of overseas earnings. As dividends paid ultimately depend on earnings made, the income stream for investors will be affected.

Secondly, it may affect the valuation of that income stream. Higher inflation will reduce the real (i.e. after inflation) value of a future nominal income stream. In financial terms, the present value will be lower. This is particularly relevant for investments with long duration, such as government bonds (gilts), growth equities, some real estate, and infrastructure.

Some assets will have a correlation (i.e. tendency to move in the same direction) with inflation which mitigates the risk. These include index linked bonds, infrastructure, and to a lesser extent real estate and equities. However, those with good protection abilities, such as index linked gilts, have a high opportunity cost. Equities' relationship with inflation is not linear. The correlation is highest when inflation is in the 1 to 3% range, but lower or negative when it is either lower or higher.

6. ESPF portfolio returns under each inflation scenario

Table 2 – ESPF projected nominal returns under different inflation scenarios

Ann. Return (%)	SAA %	Central	Stagflation	Goldilocks	Zero inflation	Actuarial Projection
Listed Equity	40.0%	4%	-2%	6%	-3%	6.6%
Private Equity	5.5%	12%	8%	12%	6%	8.0%
Ruffer DGF	10.0%	5%	8%	4%	2%	5.35%
Newton DGF	7.0%	5%	4%	5%	1%	5.35%
Infrastructure	11.0%	6%	4%	6%	5%	6.35%
Real Estate	11.0%	6%	6%	6%	0%	5.85%
Private Credit	15.5%	7%	5%	8%	3%	4.0%*
Index Linked Gilts	0.0%	1%	6%	-1%	-2%	1.0%
TOTAL	100.0%	5.5%	2.6%	6.4%	0.4%	5.9%

*estimated by Linchpin using 1.4% illiquidity premium. Source Barnett Waddingham, Linchpin

Table 2 gives the projected medium-term nominal return from the components of the ESPF portfolio under each scenario on an annualised basis. It is important to emphasise that these are subjective projections which will certainly be wrong. They are intended to give a sense of the likely behaviour of each asset and the overall portfolio in different scenarios.

I have also added a column to show the projected portfolio return using the new actuary's current projected return forecasts over 20 years. These cover a longer period than this paper's horizon and may well change before the 2022 actuarial valuation is published. They are shown for illustrative purposes only.

Conventional gilts offer a secure nominal income stream for up to 40 years. The valuation placed on this will be directly affected by the level of inflation, and the longer dated the gilt is, the greater the compounding effect is. They are therefore likely to perform poorly in any higher inflation scenario but offer good protection in the Zero Inflation scenario.

Index linked gilts (“ILG”s) offer a secure inflation-linked income stream for up to 40 years. They therefore offer perfect protection against all inflation scenarios, but for that reason the real yield is -2.5% at the long end of the yield curve. The PFC in November approved the sale of the current 3% weighting to fund a new credit allocation, though this has not yet been implemented.

Listed Equities are the mainstay of the portfolio. In general, the earnings and dividend streams will do well in an environment of economic growth and moderate inflation. Valuations, especially of the growth tech stocks which dominate the global indices, will do best in an environment of low bond yields.

Current valuations are close to historic highs; even in the more positive scenarios, I doubt there will be further appreciation. In Zero Inflation I assume weak earnings growth and more company failures. In Stagflation I assume that high bond yields lead to a fall in equity valuation, especially among the Large Tech stocks which currently dominate the market.

Private assets are subject to the same macro-economic forces as listed assets but are not marked to market every day. It therefore takes longer for net asset values and transaction prices to reflect realities.

Historically, **private equity** has provided higher returns than listed equities, mainly through using leverage. I expect this to continue even in the more adverse scenarios, albeit their returns may be lower than the 12 to 16% achieved historically. However, as with listed equities, in the more extreme scenarios either the earnings stream or the present value of that will fall. While nominal returns may be higher, I doubt the asset class will provide any greater inflation mitigation than listed equities.

Infrastructure covers a range of assets: core assets such as water utilities, where the cashflow generated is driven by the regulatory regime, are considered low risk and tend to have inflation linked contracts built in. Those with more economic exposure or which provide utility services to private companies, tend to exhibit higher risk with lower correlations to inflation. However, the recent example of Southern Water may be a symptom of increasing regulatory or political risk, especially in more extreme scenarios.

There is active interest from many investors in infrastructure, and any high-quality assets, especially core, tend to go for high prices. However, there is also substantial supply as aging infrastructure is updated or replaced. I therefore expect the underlying income stream to be reasonably stable whatever the inflation environment.

The valuation placed on this income stream will be affected by the discount rate which investors choose to use to value it. This is especially true of infrastructure assets, which tend to throw off income over a long period. Academic theory would price off gilt yields with an added premium for the risk. In practice, investors may choose to discount future income at a higher rate on the basis that gilt yields are artificially low because of government policy. I have chosen to reflect this in the Stagflation scenario negatively. Conversely, in the Zero inflation scenario where bond yields fall further, I have assumed that there is a positive valuation impact.

The Fund's exposure to **private credit** comprises both a multi asset credit fund, and some more targeted offerings such as an exposure to real estate debt. The objectives are all couched in terms of nominal returns, and it is likely that the underlying assets will be too. In normal conditions the credit risk will be small, and the asset class will deliver close to its expected return.

Under Zero Inflation, defaults will rise because of lower growth, but nominal and real returns should remain positive. The correlation with inflation will be limited, but even low nominal returns will be useful defence. In a Stagflation scenario, within private credit only the multi asset credit fund's ability to allocate tactically and flexibly can offer much protection against inflation.

Real estate lies somewhere between equities and infrastructure, but with a greater element of real assets behind their valuation. Some underlying contracts will be linked to inflation, but may be hard to enforce in a stressed environment. On the other hand, the nominal value of real estate assets is likely to rise in the Stagflation scenario.

ESPF's two **diversified growth fund** allocations, managed by Ruffer (10%) and Newton (7%), are multi-asset portfolios targeting a real return. The core of **Ruffer's** strategy is a large inflation linked gilts position, with the balance allocated to mitigate other risks. They set up their portfolio to deliver in all inflation environments, but particularly under the Stagflation scenario **Newton's** strategy has a higher equity beta (i.e. will be more affected by equity movements). It is likely to do less well in the more extreme scenarios when equities fall.

7. Stochastic model

I have used a stochastic model produced by Alpima² to look at the likelihood of the current SAA achieving the target return over five years (the model's limit), using the return expectations for the Fund's assets under each scenario (as per Table 2). Table 3 shows for each scenario and the actuary's projected returns:

² www.alpima.com

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- Portfolio mean return (i.e. the average of all returns)
- Likelihood of achieving a return higher than the 3.8% discount rate
- 95%ile return (i.e. a very bad outcome).

The model suggests that that the mean (average) portfolio return under either of the Central or Goldilocks scenarios will be broadly in line with the actuarial projections and 1 to 2% above the Fund’s 3.8% discount rate. In each case the Fund has a roughly two thirds chance over 5 years of reaching its target return.

Table 3 – Modelled SAA returns over 5 years (%)

Scenario	Mean	% prob. of >3.8%	95%ile
Central	5.3	60	-9
Stagflation	2.4	35	-20
Goldilocks	6.0	67	-5.5
Zero Inflation	0.6	18	-27
Actuarial forecast*	5.9	67	-5.6

**over 20 years Source: Alpima, Barnett Waddingham, Linchpin Advisory*

The projected return in the two more extreme scenarios, Stagflation and Zero Inflation, are lower over 5 years, with one third or less chance of reaching the actuarial target. **Here I remind readers that periods of lower performance are inevitable. They are not inconsistent with achieving the longer-term return target set by the actuary and should not cause undue concern.**

In these more negative scenarios, the primary consequence is likely to be a reduction in the funding ratio, rather an inability to pay pensions on time. There may be implications for employer contribution rates which should not be ignored. However, any risk to ESPF’s solvency is mitigated by the level of prudence which the actuary adopts when setting the discount rate and its long investment time horizon.

8. Gap analysis

ESPF’s portfolio is well diversified and can be expected to deliver returns close to the actuarial return expectation if inflation stays in the approximately 1 to 5% range over the medium-term. A gap analysis should focus on the more extreme scenarios, which together have a 45% probability. This may seem a high number, but the monetary and market environment are both stretched today, and a pain-free exit should not be assumed.

Under the new actuary's current long-term forecasts, the projected return (5.9%) is 2% higher than the discount rate (3.8%). There will be many other considerations in setting the SAA, and the new actuary will be using different assumptions and methodology when setting the new discount rate. **Major changes to the SAA should therefore await the result of the next valuation.** But the 2% spread suggests that there is scope to de-risk the fund by reducing the allocation to equities if desired.

Table 4 shows the projected return under each scenario (taken from table 2) and the resultant real (i.e. after inflation) return.

Table 4 – Projected annualised real returns under each scenario

	<u>Central</u>	<u>Stagflation</u>	<u>Goldilocks</u>	<u>Zero inflation</u>
Nominal return	5.3%	2.4%	6.0%	0.6%
Inflation	4.0%	7.0%	2.0%	0.0%
Real return	1.3%	-4.6%	4.0%	0.6%

Under the Zero Inflation scenario, the real return remains positive, despite the minimal nominal return. Assets would grow more slowly than the actuarial projections, but the liabilities would also be substantially lower. Positive nominal returns come from the private equity and credit and DGF portfolios (together nearly 50%).

The dangerous scenario for the Fund is Stagflation, where the portfolio nominal return is moderate, but real returns are highly negative. Equities are the major detractor, while most other assets will deliver positive nominal returns, but negative real ones. This is the major gap in ESPF's investment risk mitigation, where I focus the remainder of this report.

9. Mitigating risk under the Stagflation scenario

The only way to protect completely against all inflation scenarios would be to purchase ILGs to match the Fund's expected liabilities. Because of the very low yields on these, ESPF would need to either use leverage or to levy substantial additional contributions.

I discuss three other potential strategies to help mitigate the 'gap' identified. The first is to vary the SAA to provide greater risk mitigation against >5% inflation. As above this should await the result of the 2022 actuarial valuation and only after due consideration of all the other factors to be taken into account when setting ESPF's SAA.

I used the Alpima model to look at varying the SAA in two ways:

- Inclusion of Index Linked Gilts because they represent the best protection
- Optimisation of the portfolio to minimise the average size of drawdowns.

No model should be taken as gospel truth, but the direction it indicates is of value. As Table 5 shows, it allocated away from equities towards DGFs and IL Gilts. I pay less attention to its private asset allocations (e.g. the reduction in infrastructure), because of the difficulty of modelling illiquid assets, but I note that it puts more into Private Credit. The benefit of the optimised portfolio is not in the return, which is lower, though still well above the 3.8% target, but in a less bad ‘worst outcome’ at the 95%ile.

Table 5 – Optimised model versus the current SAA

10 yr ann. Return (%)	SAA %	Model
Listed Equity	40.0%	30.0%
Private Equity	5.5%	0.0%
Ruffer DGF	10.0%	25.0%
Newton DGF	7.0%	5.0%
Infrastructure	11.0%	5.5%
Real Estate	11.0%	5.0%
Private Credit*	15.5%	19.5%
IL Gilts	0.0%	10.0%
TOTAL	100.0%	100.0%
<i>Mean return</i>	<i>5.9%</i>	<i>5.0%</i>
<i>% chance of >3.8%</i>	<i>67.0%</i>	<i>61.0%</i>
<i>95%ile</i>	<i>-5.6%</i>	<i>-1.0%</i>

Source: Alpima, Linchpin

I also note in this context that Ruffer’s portfolio consists of nearly 50% ILGs, and one way of obtaining exposure while still gaining a positive real return would be to increase the exposure to Ruffer. This would have to be done in the context of the overall SAA allocation.

The second risk mitigation I considered was to implement an overlay on either the assets or the liabilities to provide protection. I set out four ideas for further discussion:

- An inflation protection overlay on the ESPF’s liabilities
- An inflation rate swap with a counterparty
- A transaction to purchase tail risk strategy off a private sector pension fund
- A protection strategy on the Fund’s assets.

Generally, the private pension sector favours the first two strategies. The first involves using leverage to fund a portfolio of ILGs. It provides good protection against all inflation rates but involves extra risks and governance. In theory it is possible to use derivatives to replicate the desired exposure for these, but liquidity is poor and in practice it is difficult.

The second strategy of an inflation rate swap has a linear pay-off involving downside if inflation were to fall as well as protection if it were to rise. I do not think this is appropriate for ESPF.

The third has rarely been done and is complex but is a neat way to bridge the identified 'gap'. Some private sector pension funds have an inflation cap at 5%, and do not need protection above that level. They regularly employ overlays to hedge their inflation risk, and may be willing to sell the tranche above 5% to ESPF in order to cut their own hedging cost. Consideration would need to be given to sizing, structuring, and the use of complex instruments within the LGPS.

Finally, less targeted overlays may be sought on the Fund's equity exposure or duration. The first would be based on nominal values (i.e. the index rise or fall), and so would not provide protection against real losses. A duration overlay could provide mitigation against a rise in interest rates, as might be expected under Stagflation, but is not a precise hedge.

The third broad approach is to mitigate risk through a more tactical approach to allocation. The clearest parallel to the Stagflation scenario is the 1970s, when there was substantial volatility in inflation, economic growth, and politics. A similarly stressed environment is likely under Stagflation, with less stable politics, individual politicians, and policies.

I doubt that a static SAA will perform well in this environment and suggest that an element of tactical decision-making will be desirable. Broader mandates with scope to react more quickly to changing markets may be better placed than ESPF's static SAA. Examples might be diversified growth funds, multi asset credit funds, or hedge funds. Ruffer's DGF strategy may be particularly appropriate, given its high weighting in Inflation linked bonds.

10. Conclusion and next steps

I find that **ESPF's portfolio is well diversified and should deliver adequate returns to pay pensions in most inflation environments. The long-term investment horizon and healthy level of funding mean that it can cope with a period of lower returns.**

The most significant 'gap' I find is an environment where inflation rises by more than 5% for a period of five years, i.e. the Stagflation scenario. Unlike the private sector, the LGPS has no inflation cap to its liabilities, and in this scenario the asset portfolio is unlikely to keep pace with that level of inflation

Perfect hedges to this, such as matching the liabilities with a portfolio of ILGs, are available, but incur a high opportunity cost. The Ruffer portfolio is probably the most cost-effective way to gain exposure to ILGs.

When setting the SAA, it is necessary to balance many risks and consider other factors.

Mitigating inflation risk is important, but so are other considerations such as diversification of assets and managers, costs, and pooling. Measures taken to mitigate the risks discussed in this paper will necessarily be partial and must be considered in the context of the whole portfolio.

ESPF also has a new actuary who may take a different view on the Fund's solvency. I therefore suggest that any major changes should await the 2023 SAA review when the results of the 2022 actuarial valuation should be available.

Table 6 sets out some suggested next steps for consideration for both the IWG and the PFC.

Table 6 – Suggested next steps

<u>Next step</u>	<u>Rationale</u>	<u>Who</u>
Await next SAA review (2023) before implementing any major changes	Valuation preliminary results due late 2022	IWG, PFC
Postpone reductions in Newton and ILG allocation till after the next SAA review	Reconsider rationale for doing so in light of higher inflation	IWG, PFC
Consider allocating to broader more flexible strategies at the next SAA review	Greater flexibility to allocate tactically in more volatile market	IWG, PFC
Explore whether an overlay to mitigate risks under Stagflation is feasible	Mitigate risk in 5%+ inflation scenario	IWG