Inflation and the Value premium: Simple Story or Tangled Tale?

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We have all heard the notion that value-style investments ("Value") outperform during periods of high inflation. We decided to test the truth of this conventional wisdom and see what other factors might be at play in this situation.

Certainly, Value has often performed strongly throughout history, and if we look from a distance, it seems to coincide with high inflation. The main argument supporting this idea is that growth stocks ("Growth") are perceived to have higher duration than value stocks, and so nominal interest rate rises affect growth stocks more.

Following further analysis, we emerge with four main conclusions:

- *The world has changed and we can't rely on history.* Central bank inflation policy has changed since the 1980s, meaning that sustained periods of high inflation are now unlikely. Spikes in inflation are still likely, as we are currently seeing.
- *Inflation and Value are positively related but it depends on which period you choose.* Selected historical periods of high or rising inflation in the past do indeed correspond with good value performance, but there have been periods where this is not true; in fact the reverse might sometimes hold.
- *Any relationship between Value and inflation hasn't really returned (yet).* Recent times have seen some evidence of a positive relationship between realised inflation and the performance of Value, but economic and inflation uncertainty are still very high. We also lack data: for many years, inflation has been low and Value has not outperformed.
- *There is more to the story.* A number of other factors influence the value premium over growth, for reasons not directly related to inflation. Growth in corporate profits and forecast (rather than realised) inflation are among them.

Defining Inflation

What does it represent? In principle, inflation is intended to represent the increase in prices of a basket of consumer goods through time. In a real sense, inflation is the degradation of the value of a dollar held by a consumer.

Inflation has different components and there are different ways to measure it[1]. Consumer price inflation (CPI) is the price move of a very broad set of consumer items, including basic food and beverage, household costs like furniture and apparel, and mortgage and rental costs. (This is the commonest measure and the one we will refer to throughout this note.)

What is known as *core consumer inflation* is the change in value of a more stable basket of goods that does not include more volatile items like food or energy. Food and energy inflation are often reported separately, and even more granularity is available for specific uses (e.g. employment costs, food at home vs food away from home, and so on). A group of other measures look at personal consumption expenditure (PCE) only.

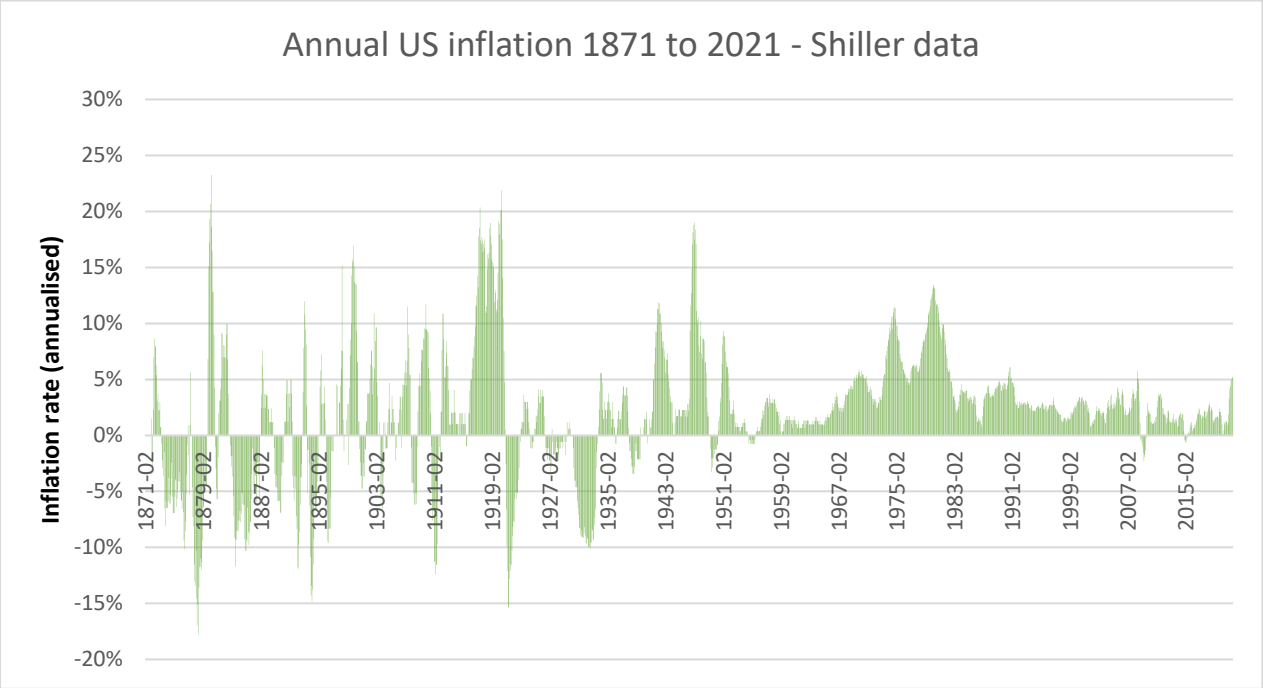
Finally, there is a set of inflation forecasts that represent the prices received for goods sold, not bought. These are known as producer price indices (PPIs), and are split out by food and energy in the same way as CPI.

Inflation history

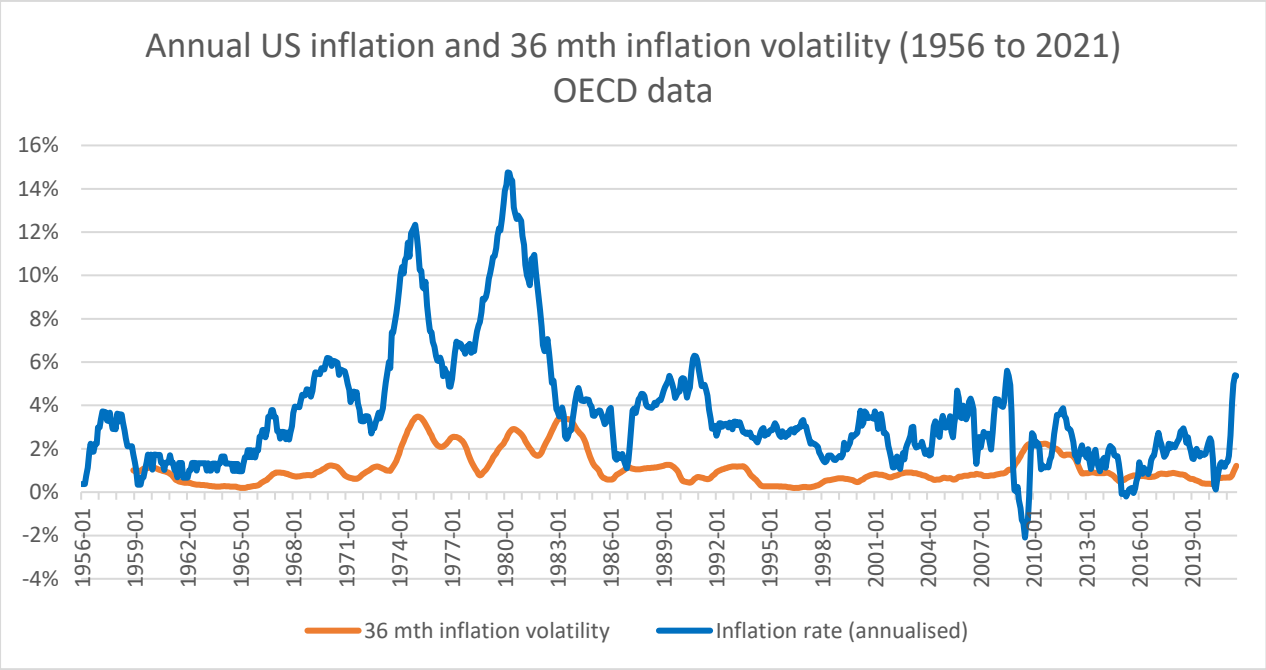
Most inflation data series are fairly short: e.g. OECD only publishes US inflation data from 1956[2]. However, other data series go back on monthly[3] or annual[4] basis to 1913 (when the US Bureau of Labor Statistics started publishing the CPI index). FactSet data is very granular in terms of components of inflation but only starts in 1947. Shiller[5] backfills or extrapolates the official CPI data series to 1871 using price indices from an older unofficial publication[6].

We can see from the three charts below that inflation has traditionally been higher and more volatile than we have seen over the last 30 years or so. Australia shows a similar history to the US.

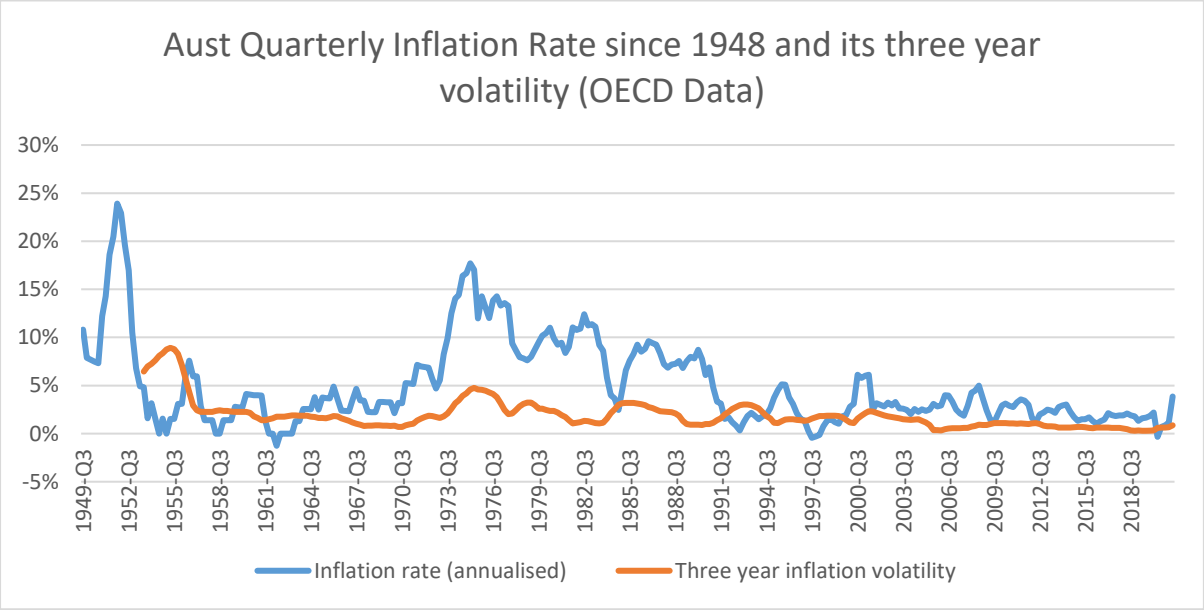
[1] See https://www.imf.org/external/pubs/ft/fandd/basics/30-inflation.htm for a good introduction
[2] https://data.oecd.org/price/inflation-cpi.htm
[3] E.g., https://www.rateinflation.com/inflation-rate/usa-historical-inflation-rate/
[4] https://www.minneapolisfed.org/about-us/monetary-policy/inflation-calculator/consumer-price-index-1913-
[5] http://www.econ.yale.edu/~shiller/data.htm
[6] George F. Warren and Frank A. Pearson, *Gold and Prices* (New York: John Wiley and Sons, 1935)



Source: Monthly data from 1871-01 to 2021-09. http://www.econ.yale.edu/~shiller/data.htm



Source: Monthly data from 1956-01 to 2021-09. https://data.oecd.org/price/inflation-cpi.htm



Source: Quarterly data from 1956-01 to 2021-09. https://data.oecd.org/price/inflation-cpi.htm

Policy Changes

Since World War 2, the Philips curve dominated economic thinking on this issue. It refers to the inverse trade-off between unemployment and inflation[7], and it was combined with a deliberate *full employment* policy. By 1964 this led to low growth and high unemployment, and finally high inflation – a condition known as "stagflation". Post-war macro-economic polices like the Bretton Woods agreement were blamed for much of the economic uncertainty.

Changes in central bank policy in the late 70s and early 80s aimed to reduce boom-bust cycles. The Great Inflation[8] period (1964-1981) only ended when Paul Volcker was appointed to head the US Federal Reserve in 1981 and implemented polices to combat inflation. These included targeting inflation and balancing it against an acceptable level of unemployment.

A recession in 1981, with high unemployment but lowered inflation, lasted until the end of 1982. The post-WW2 period and the Great Inflation period taught macroeconomists and policy setters many lessons, leading to a long period of much less inflation volatility and more stable unemployment levels. Periods of high inflation (relative to the whole sample) have been almost non-existent since the mid-1980s, and these policy settings are unlikely to change.

Very recently, post-COVID, we have seen a strong spike in global inflation as stimulatory policy and tight supply chains impacted consumer prices. This has coincided with a bounce in energy prices (and a resulting rise in inflation) - which almost always accompanies an economic rebound. However, most economic commentators believe sustained high inflation is unlikely.

[7] Phillips, A.W. "The Relationship between Unemployment and the Rate of Change of Money Wages in the United Kingdom 1861–1957." *Economica* 25, no. 100 (1958): 283–99

[8] https://www.federalreservehistory.org/essays/great-inflation

Why inflation might affect Value[9]: Duration.

We are not economists and this is not intended as a treatise on inflation. Instead, the aim is to see whether inflation might play a role in the performance of Value and Growth.

The inflation story can be summarised in the classic way used for fixed income instruments: *duration*. If duration is long (effectively, cash flows are further into the future, like growth stocks), then sensitivity to movements in interest rates is higher than for short duration (value) stocks. There is a view that increased interest rates, due to inflation increases, will adversely affect long duration or growth names.[10]

Growth stocks are usually those which are expensive relative to near-term asset values or earnings measures. For example, a firm with a high P/B or P/E would be considered more likely to be a growth stock than one which is trading on a low P/B or P/E – i.e. a value stock. This distinction is quite rough, but at least gives us a starting point.

Growth stocks tend to be expensive because their future cash flows grow at a greater rate than for value stocks. Investors are willing to pay more for these future cash flows. In fact, valuation models like DCF project out these future cash flows (either directly or by some growth rate assumption) and then discount them back to the present day using a discount rate that should reflect the risk of the investment. This is often proxied by a simple weighted average cost of capital, embedding the projected corporate or government yield curve as the cost of debt.

So in low interest rate or low inflation environments, the discount rate will be lower, all else equal. From this we might read that increases in inflation reduce the valuation of growth stocks, and so lead to relatively better performance for value.

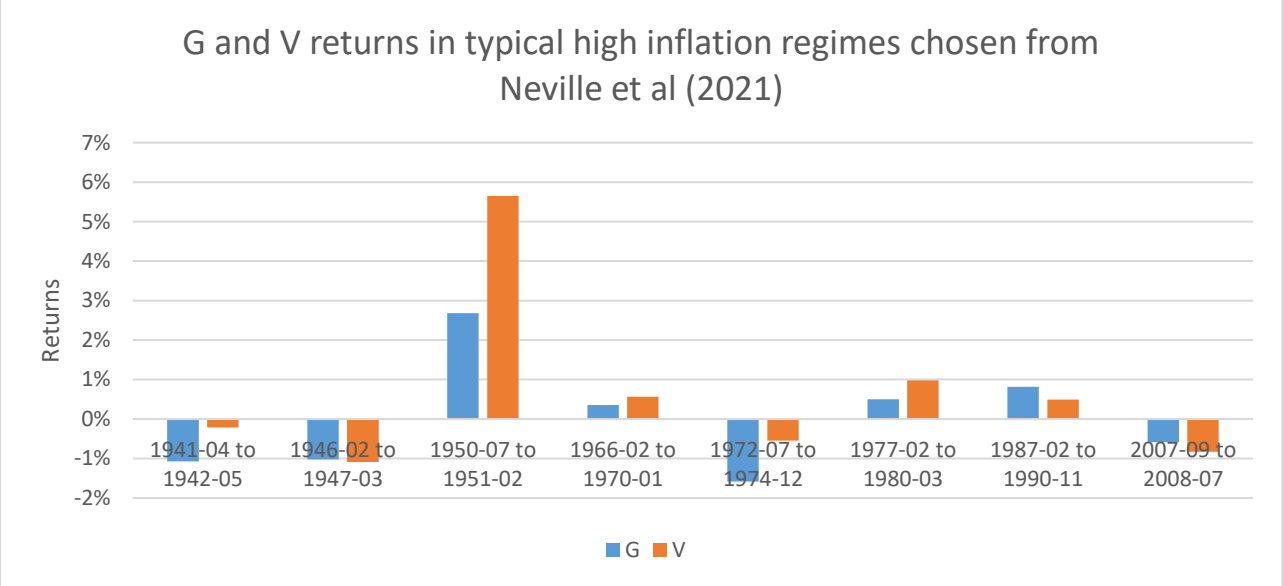
This misses an important point – cash flows will also increase due to inflation, so the impact is both positive and negative, and is not clear cut. A central issue will be the ability for the firm to pass through its increased costs into sales. Even further, realised inflation is public information and so should be priced in – for example, if the market is expecting 2% inflation, and the forecast is correct, then there should be little response from stocks. Looking backward, we might correlate a high inflation period with certain return outcomes, but that is of little use looking into the future.

[9] On Measuring Value: As it has a long history (from 1926) and is freely available we use Fama-French high-minus-low (HML) growth (G) and value (V), as do almost all other papers in this space. However, we have reservations on this as a measure of value. Its construction method is contrived and somewhat impractical, it only uses book value (ignoring intangibles growth) and it is one dimensional.

[10] It can be argued that the duration of value and growth stocks are not as starkly different as this would suggest. While we will not pursue this argument here, it centres around the idea that the capital gain/loss contribution to stock returns can be dependent on the rebalancing of the growth and value portfolios over time.

So what do we see?

Many industry publications[11] have shown that high trailing inflation and positive returns to Value are linked. For example, the inflation regimes defined by Neville et al (2021)[12] show:



Source: Inflation data from https://fred.stlouisfed.org/tags/series, HML data from https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

We analyse the data with less reliance on retrospectively choosing high inflation periods. Our method does look back to choose these periods, but includes all data at hand. To do this, we have constructed our own classification scheme.

We look at simple averages of returns to Value- and Growth-based high, medium and low inflation regimes as we define them. Our sample uses the OECD US inflation data sample from 1956-01 to 2021-08, but with a rolling look-back period for comparison of 10 years. That is:

- High inflation months are those in the top 30% of all months over the last 10 years.
- Low inflation is the bottom 30% of all months over the preceding 10 years.
- Medium inflation is all remaining months in the same window.

[11] See for example: Vanguard (2021) *Value versus growth stocks: The coming reversal of fortunes*. Some of the metrics discussed there are also used here.

[12] Neville et al (2021), Man group working paper, *"The Best Strategies for Inflationary Times".*

To show how this looks, we construct a long time series "wall chart",[13] where we add the growth-value premium, and high, medium and low inflation regimes to inflation and its volatility. If growth outperforms value, the green line trends upwards. A quick glance at the chart suggests that value often outperforms growth *during or following* periods of high inflation.

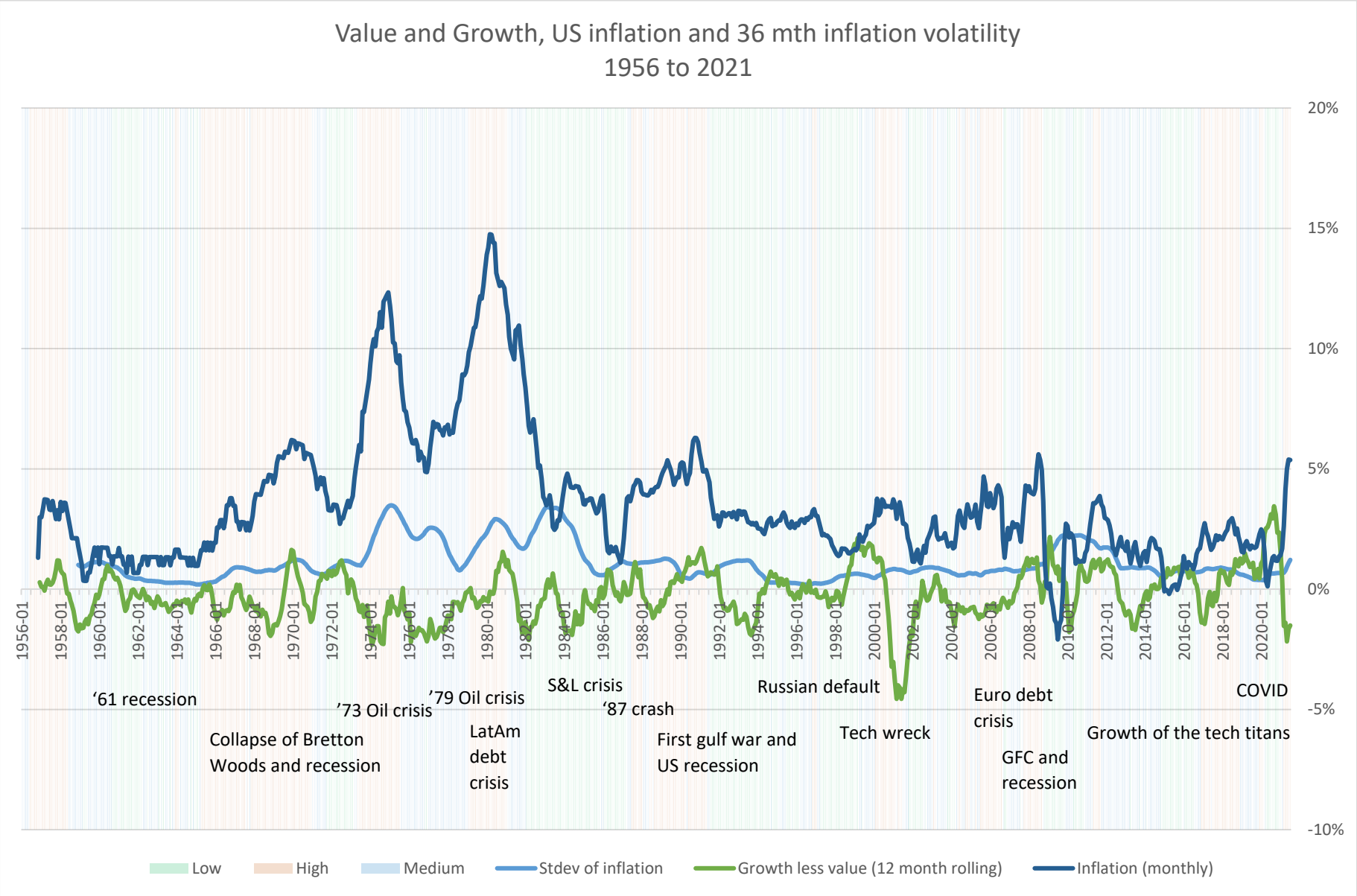
The macroeconomic policy changes that aimed to lower inflation and its volatility are also evident from the mid-1980s.

There are a few things to note, however:

- The Value minus Growth chart is rolling 12 months to avoid too much noise in the chart. However, this can be misleading when trying to visually line up with inflation.
- The performance of Value minus Growth is highly variable during the low, medium and high inflation periods.
- Value performs very well during medium inflation periods like the late 1950s, the mid-1970s, the late 2000s and the mid-2010s.
- Value's strongest rallies do appear to coincide with high inflation periods
- However, the large value sell-off several years after the tech wreck coincided with a high inflation period.
- Much of the strong outperformance of Value over Growth dates to the high inflation periods in the mid and late 1970s.

[13] Source: HML data from https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, inflation data from https://data.oecd.org/price/inflation-cpi.htm

Realindex Investments

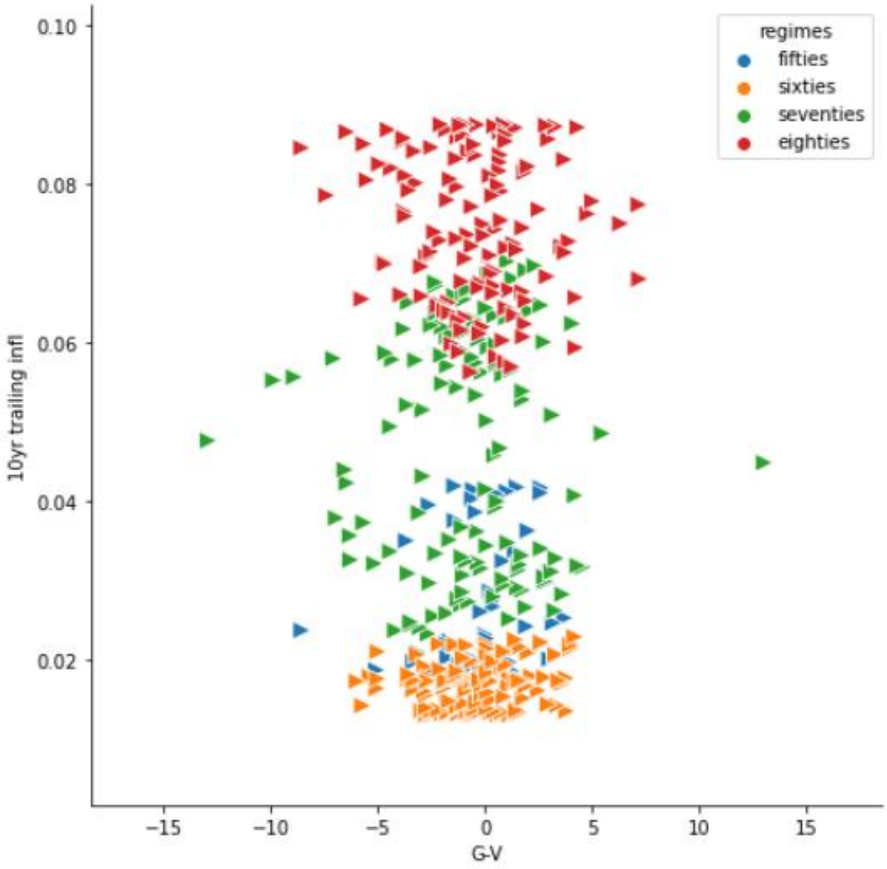


Some Graphical Results

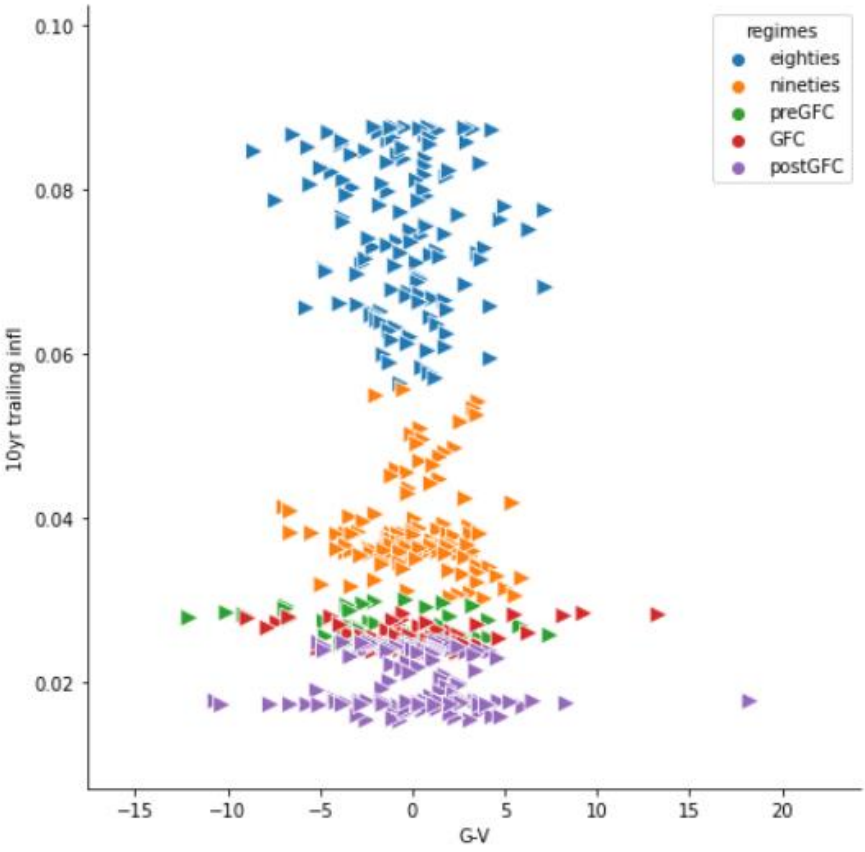
The first two plots show a scatter of months of long term (10 year) trailing inflation against the premium of Growth over Value for the 1950s (actually starting in 1956-01) to the 1980s, and then repeated for periods from the 1980s to the present day. The pre-GFC period is defined as 2000-01 to 2007-06, and the post GFC period is from 2011-06 to the present day. If growth outperforms value, G-V is greater than zero and so the data points are in the right hand side of the chart.

As per the last chart, we see the trend of inflation over time – upwards from the 1950s into the 1980s, and the strongly downwards trend to the present day as central policy to restrain inflation takes hold.

There is little obvious relationship between value (V) and growth (G) and trailing inflation here. We do see some large outliers in G-V which might skew summary results.



Source: HML data from https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, inflation data from https://data.oecd.org/price/inflation-cpi.htm

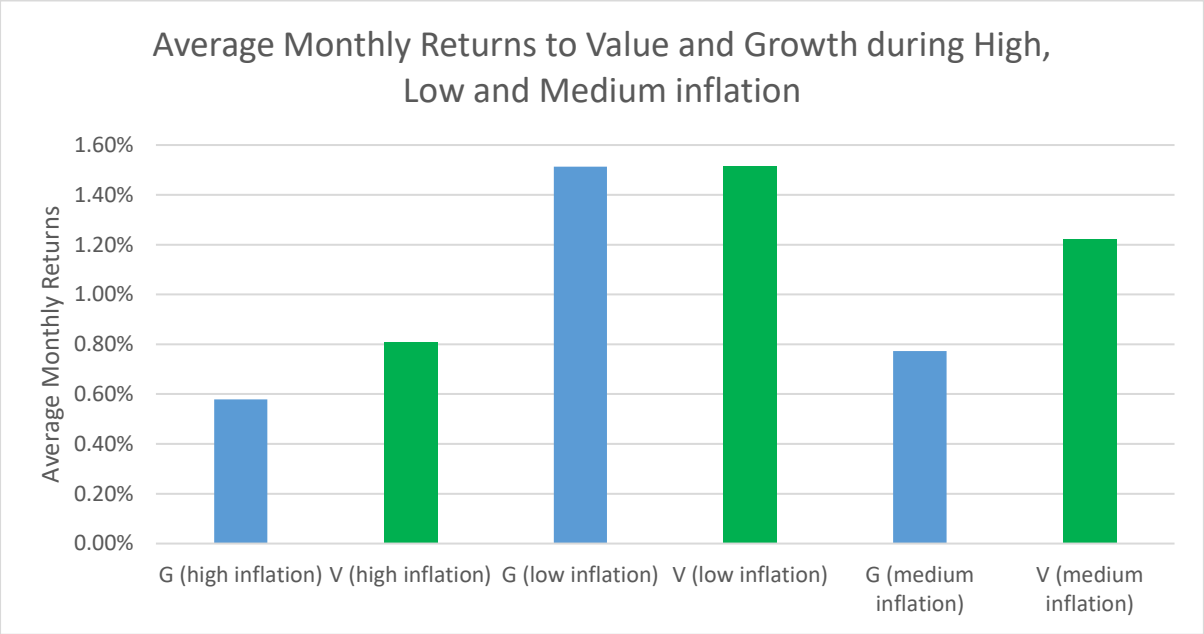


Source: HML data from https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, inflation data from https://data.oecd.org/price/inflation-cpi.htm

Next we look at the performance of V and G in high, low and medium inflation environments[14].

From the first chart below, using the full data sample, we see that value does indeed outperform in high and medium inflation periods. It only lags behind slightly when inflation is low.

[14] Recall that high inflation months are those in the top 30% of all months over the last 10 years. Low inflation is the bottom 30% of all months over the preceding 10 years. Medium inflation is all remaining months.

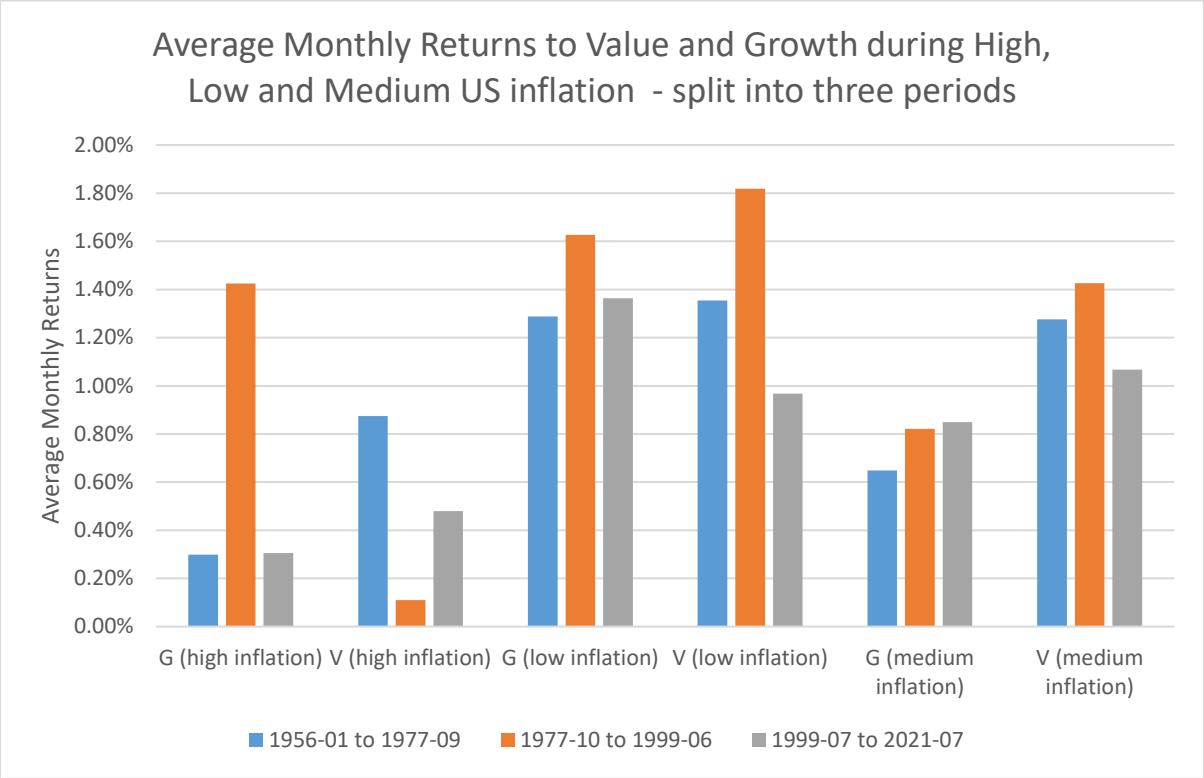


Source: HML data from https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, inflation data from https://data.oecd.org/price/inflation-cpi.htm

We then split the sample into three different time periods, and we see that the results are different in each period (see second chart):

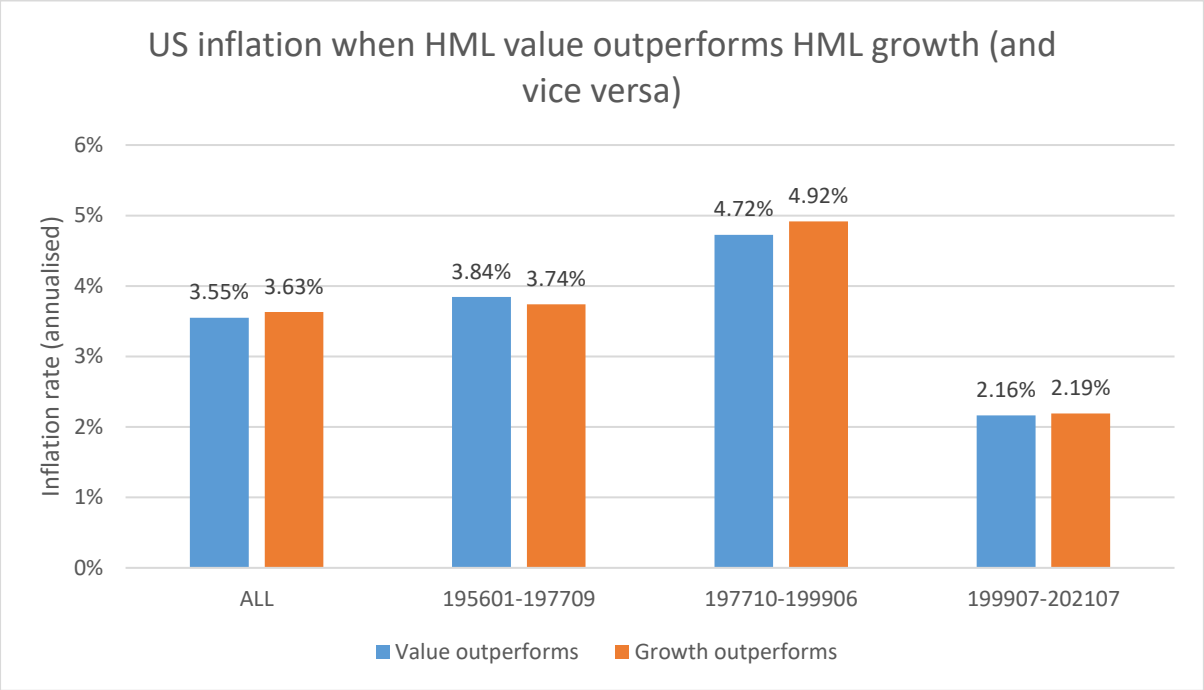
- In the first period, Value outperforms Growth during periods of high and medium inflation, and keeps up in low inflation.
- In the second period, Value outperforms Growth during periods of low and medium inflation but underperforms strongly during periods of high inflation[15].
- In the final period, Value outperforms Growth when inflation is high, is flat during medium inflation and underperforms during low inflation.

[15] This appears to be driven by a few months of high inflation when growth rebounded very strongly (e.g., July 1980, November 1980, July 1989, November 1990 to March 1991)



Source: HML data from https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, inflation data from https://data.oecd.org/price/inflation-cpi.htm

As our charts above have shown, summary measures like this mask a great deal of variation. Also, the above charts could be somewhat skewed as most high inflation occurs early in the sample. To apply another lens to the problem, we attack it from the opposite direction. That is, we now look at the level of inflation *when value outperforms growth* (and vice versa), rather than selecting high inflation periods in advance. Note that growth outperforms value in 47% of months in our sample.



Source: HML data from https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html, inflation data from https://data.oecd.org/price/inflation-cpi.htm

From this we can see that there is actually very little difference in inflation during periods when value or growth outperforms. This shows the impact of averaging over long windows.

Some Thoughts on Forecast and Unexpected Inflation

Is a surprise jump in inflation important? If we forecast low inflation, and there is a spike upwards, then the market will sell off to extract higher expected long term returns. And longer duration stocks will be harder hit, all else being equal.

Forecast inflation comes in many different flavours, and varies over time and from one domain to another. Four key types have emerged[16]:

- Econometric models based on the Phillips curve[17]
- Survey based, from households and professionals[18]
- Implied inflation from zero coupon inflation swaps

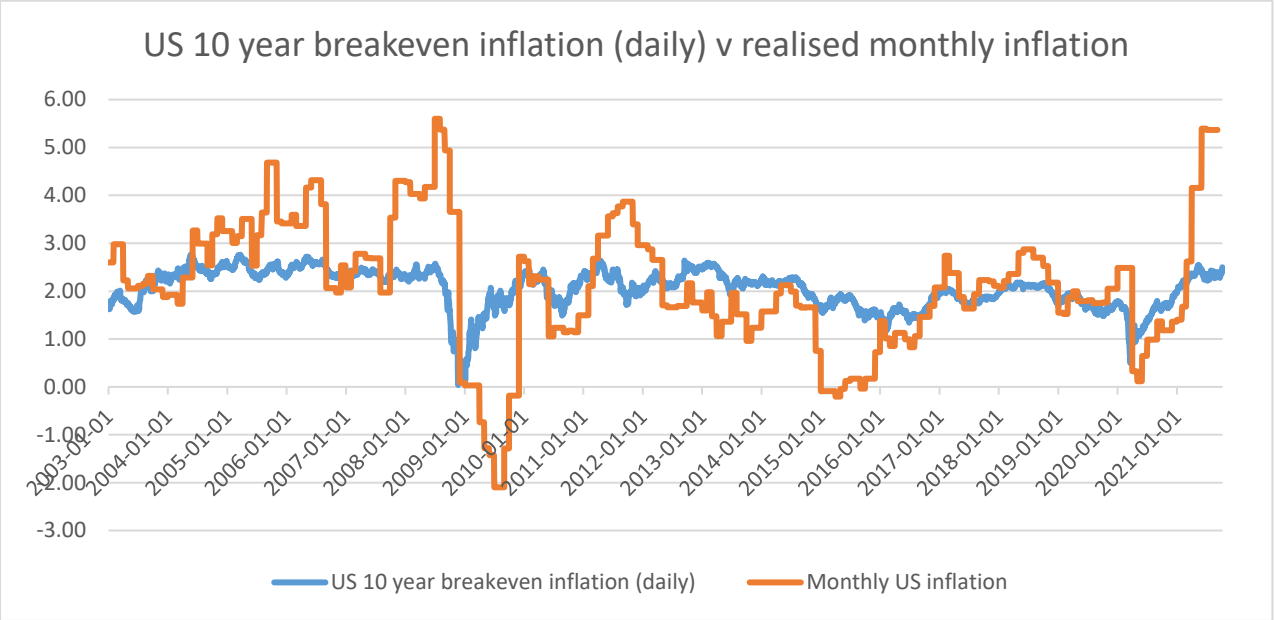
[16] See for example, Mathysen (2017) "Best estimates of expected inflation: a comparative assessment of four methods", ACCC/AER Working Paper #11

[17] See for example, Norman and Richards (2010), "Modelling Inflation in Australia", RBA Discussion Paper RDP 2010-03

[18] For example Berge (2017) "Understanding survey based inflation expectations", Federal Reserve Finance and Economics Discussion Series, #2017-046

- Bond breakeven inflation rate (BBIR), which is the difference between a nominal bond yield and an inflation linked bond yield of the same maturity[19]

The BBIR is a common markets-based approach and is usually preferred. The difference in yields is known as "breakeven inflation". The chart below shows a history of breakeven inflation in the US for a 10 year maturity.[20] (Data is only available for 5 and 10 year maturities.) The forecast represents the market's best guess of the average inflation over the next 10 years.



This chart shows the daily reported 10 year breakeven inflation with contemporaneous monthly inflation. While the 10 year breakeven inflation is intended as an average inflation over the following 10 years, it appears to be reasonably correlated with next month's realised inflation. Correlation is high at about 0.45.

Note that it does not exist as a data series prior to the 2000, so we can only draw conclusions from the previous two decades. As we see in the appendix, there is probably a good case for the relationship between breakeven inflation and Value, even if the data period is short.

The relationship is probably much more complex than just "high inflation => value does well"

Let's be clear - we are not saying that inflation does not matter as a potential driver of better returns to Value. What we are saying is that *there are many potential drivers*, and inflation probably only works through one or two channels.

[19] http://www.inflation-linked.com/breakeven.html
[20] https://fred.stlouisfed.org/series/T10YIE

Below we have listed some potential drivers of the Value premium. We also proceed to look closer at how important each of these might be. This is too much information for this note, so we have pushed to the Appendix for readers who would like to delve deeper.

The key drivers of the value premium include:

- **Duration** – growth stocks tend to be longer duration and so are more affected by changes in real interest rates and inflation. Higher inflation might – all else equal – devalue long duration (growth) stocks more than short duration (value) stocks.
- **Scarcity of growth** – if growth is plentiful then investors are less likely to pay a premium for it
- **Monopoly rent** – more monopolistic firms can pass through costs increases (like inflation) more easily than firms that are in competitive markets. Recent monopoly-like behaviour in IT, health care and consumer services has clustered in growth names (like the FAANG stocks, for example).
- **Preference for shorter term and less uncertainty** – increased risk or volatility decreases the demand for firms that take longer to pay off.
- **Inadequacy of Book Value in Fama-French High minus Low (HML)**[21] – the rise of intangibles has made measuring value using price to book, specifically using HML, much less relevant. We might expect that changes in intangibles, relative to book value, help to explain periods when value and growth do well.
- **Behavioural bias/limits to arbitrage** – academic evidence on the topic of investor sentiment (most notable Baker and Wurgler 2006) can lead to long term deviations from fair value that are not arbitraged away. [22]
- **Money supply** – core to macroeconomic policy is the relationship between money supply (for example, M2), its velocity or speed of transmission through the economy and inflation. If increases in this stimulate economic growth, as intended, then the leverage to undervalued firms would be greater, all else being equal. Corporate profits will be more plentiful, and so bidding up scarce growth is less likely.
- **Return dispersion** – higher dispersion suggests greater rewards to growth opportunities, so Value should underperform, perhaps with a lag. Certainly, we have anecdotal evidence that Value rebounds after a sell off, when all stocks tend to move together (e.g. tech wreck, GFC).

Many of the likely variables we can test here are what are known as "non-stationary", which means testing any relationship through regression requires special treatment that is beyond the scope of this note[23].

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[21] An academic measure of Value from two well-known academics: Fama and French - High Book to Price (value) minus Low Book to Price (expensive).

[22] Baker and Wurgler JF 2006. This model is very interesting but quite complex in its use of data and construction, so we have deferred its examination to a later date.

[23] Specifically, cointegration testing and Vector Error Correction modelling. The Appendix does include a regression analysis but caution is needed with the results.

Conclusion

From October 2020, Value returned strongly to favour. It has continued to perform well, but with some notable reversals (e.g. October 2021). By developing this work we hope to answer clients' questions on the sustainability and likely drivers of the value premium into the future. In particular, we wanted to point out that the inherited wisdom that high inflation alone is the driver of the value premium is too narrow, and too heavily based on results from a different era.

We have shown some interesting results, however, with the most notable being:

- High inflation alone was a driver of value outperformance in the past, but not exclusively. In fact, periods of medium inflation also show consistent performance of Value.
- The most recent jump in inflation is potentially transient but longer term prospects for Value are still good if inflation stays at the higher end of the policy range.
- Central bank policy changes make it difficult to interpret older results (before circa 1985) in the present context. This means periods of sustained high inflation are unlikely in the present day, and forecast or breakeven inflation may be a more likely driver.
- Other factors matter – corporate profit growth, velocity of money, return dispersion and even level of goodwill – especially if simple measures like price to book continue to be used as exclusive proxies for value.

How useful is this for Realindex?

The precision of this work is probably good enough for discussing likely drivers of V-M and G-M, but we do not judge it to be strong enough to properly predict Value's likely future performance. Nor will it yield a factor rotation model for our enhancement of alpha models. In fact, we remain true to label in our value exposure, so unless this type of model can be developed without adversely impacting the core exposure of the strategies, we would not seriously contemplate it.

That said, we can perhaps better inform our clients on likely outcomes of the performance of Value under certain scenarios. For example, we could ask the question: if expected inflation stays high but money velocity increases, what is more likely to happen? What impact will the upcoming demographic changes have?

We do not intend to enter the field of macroeconomic research for our process. However, being able to frame our thinking from a more macro perspective is potentially useful, and is somewhat new to Realindex. In this way it adds a dimension to our thinking, and to our understanding of the value factor and how it works in client portfolios. We also expect this to provide us with even further confidence that a transparent but rigorous exposure to the value factor - through the Realindex investment strategy – is a stable and consistent part of a diversified factor portfolio.

Appendix: Some More Results

In the body of the paper we listed a set of potential drivers for the Value premium. For all of these (except investor sentiment), we take a quick look at them. To do this, we look at the performance of growth (G) over value (V), but we also split it into two parts: the growth premium over the market (M), the value premium over M. This allows us to see if any of the drivers above impacts G-M more than V-M, for example.

Our data is all from the US, members of MSCI World from 2000 to 2021. The full set of measures we examined is below – we kept only the ones in **bold** as the others were either insignificant in this data set or too highly collinear with other variables. Most of the variables are non-stationary, so testing requires the use of VEC models. There may be some value in looking at this, but it is beyond the scope of this paper. The variables we looked at:

Duration
- **10 year trailing inflation**
- **12mth change in inflation**
- **10 year breakeven inflation**
- 10 year real Treasury bond yield
- **Real yield curve shape – 10 year v 3 month**

Scarcity of growth
- **12 month growth in aggregate corporate profits**

Monopoly rent
- Change in 12 month mean of Herfindhal index of market concentration[24]

Preference for shorter term and less uncertainty
- Equity market volatility (VIX)

Inadequacy of BV in HML
- One year average R&D expense to book value
- **One year average goodwill to book value**

Money supply
- 12 month in M2
- **12 month change in Velocity**

Return dispersion
- **One month change in standard deviation of returns (cross sectional)**

We look at whole sample correlations and regressions with G-M and V-M. We also include some scatter plots of some of the variables of interest.

[24] Herfindahl index is the sum of squared market shares across all firms. Higher number means greater concentration and so monopoly power

The table below shows the pairwise correlation between all of the dependent and explanatory variables we examine. Breakeven inflation and corporate profit growth are most correlated with G-M and V-M. The highest correlation between explanatory variables is between change in money velocity and breakeven inflation, which makes sense – lower velocity implies lower expected inflation.

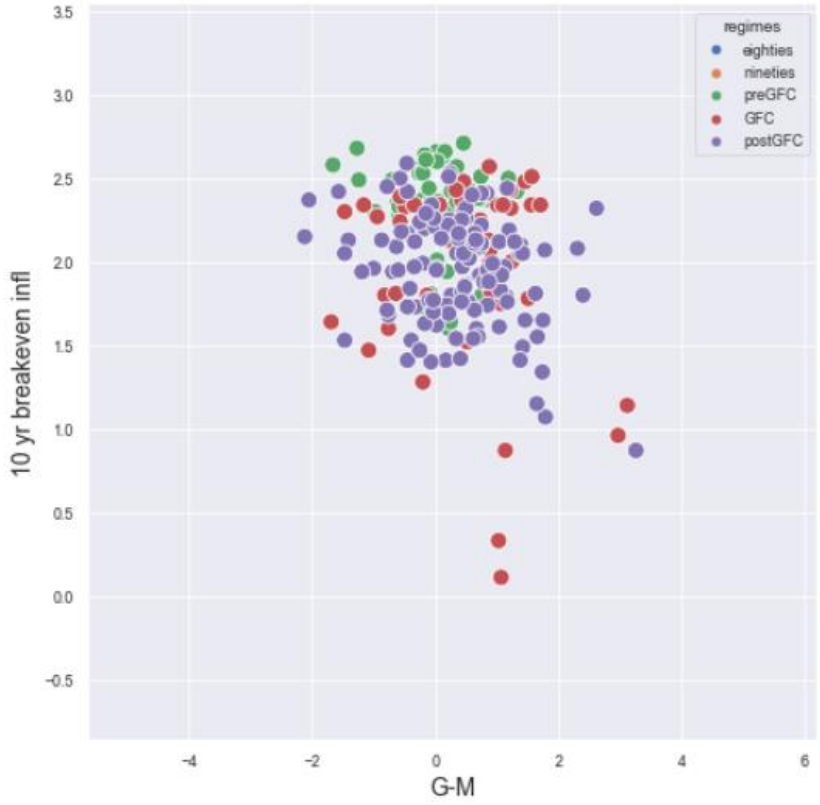
	G-M	V-M	10yr trailing infl	12mth chg infl	10 yr breakeven infl	10yr minus 3 mth	corp prof growth	chg in GW to book	chg in velocity	retdisp
G-M	1.00	-0.47	-0.01	0.01	-0.27	-0.06	-0.29	-0.01	-0.12	-0.07
V-M	-0.47	1.00	0.01	-0.03	0.24	0.03	0.17	-0.02	0.02	-0.09
10yr trailing infl	-0.01	0.01	1.00	-0.04	0.29	0.11	0.06	-0.02	0.28	-0.03
12mth chg infl	0.01	-0.03	-0.04	1.00	0.31	-0.09	0.19	-0.29	0.31	0.03
10 yr breakeven infl	-0.27	0.24	0.29	0.31	1.00	-0.01	0.42	-0.45	0.56	-0.00
10yr minus 3 mth	-0.06	0.03	0.11	-0.09	-0.01	1.00	0.29	0.00	0.06	-0.03
corp prof growth	-0.29	0.17	0.06	0.19	0.42	0.29	1.00	-0.21	0.40	-0.06
chg in GW to book	-0.01	-0.02	-0.02	-0.29	-0.45	0.00	-0.21	1.00	-0.13	0.01
chg in velocity	-0.12	0.02	0.28	0.31	0.56	0.06	0.40	-0.13	1.00	0.03
retdisp	-0.07	-0.09	-0.03	0.03	-0.00	-0.03	-0.06	0.01	0.03	1.00

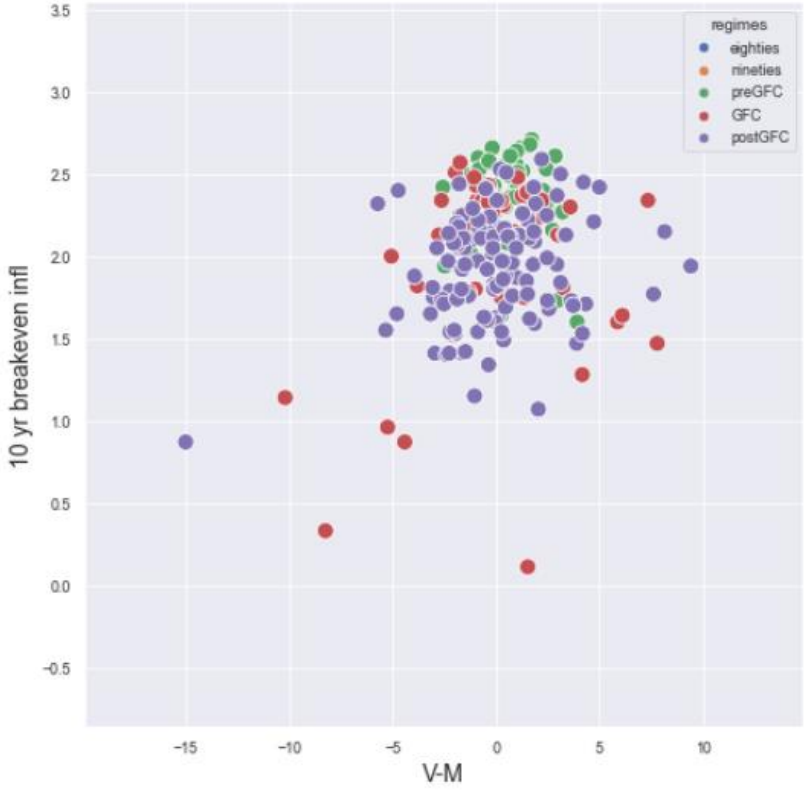
We run regressions of our key variables against V-M and G-M. *The individual variables are examined for stationarity and differenced if likely to induce econometric issues, although many still fail so these results need to be taken sceptically.* The economic intuition of each variable largely guides our choice. Newey West heteroscedasticity and autocorrelation consistent (HAC) standard errors are used. (HAC Z-stats are given in parentheses.) The regressions find significant relationships, with R squared of around 0.15 for each. Durbin-Watson test statistics (serial correlation of residuals) are not significant.

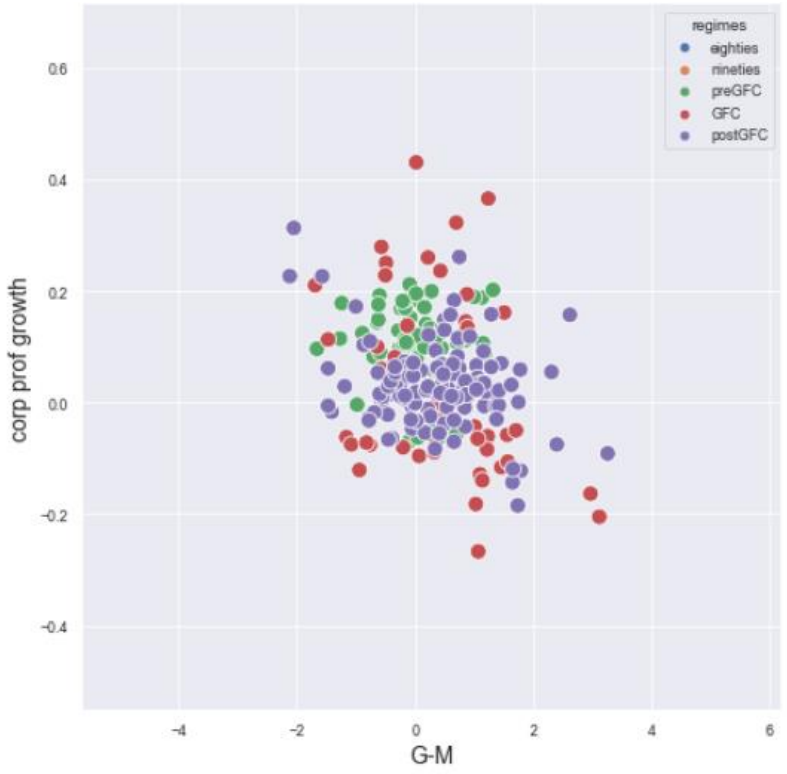
	V-M	*G-M*	*G-V*	*Comment*
Const	-6.59	1.73	8.32	G outperforms V
	(-4.70)	*(4.80)*	*(5.28)*	
10yr trailing infl	-0.62	0.02	0.64	Not significant
	(-1.31)	*(0.11)*	*(1.10)*	
12mth chg infl	-0.08	0.06	0.13	Only significant for G-M
	(-0.72)	*(2.33)*	*(1.04)*	
Corp prof growth	4.97	-1.97	-6.94	More significant for G-M
	(1.73)	*(-2.14)*	*(-1.85)*	
10 yr breakeven infl	2.69	-0.55	-3.25	Significant for both G and V
	(4.87)	*(-3.64)*	*(-5.23)*	
10yr minus 3 mth	0.04	-0.04	-0.08	Not significant
	(0.33)	*(-1.12)*	*(-0.55)*	
Chg in GW to book	25.08	-6.35	-31.42	Significant for both G and V
	(2.22)	*(-2.52)*	*(-2.42)*	
Chg in velocity	-8.73	-0.43	8.29	Only significant for V-M
	(-2.32)	*(-0.47)*	*(1.85)*	
Retdisp	-18.38	0.61	18.99	Only significant for V-M
	(-2.30)	*(0.20)*	*(1.87)*	
R squared	0.158	0.150	0.163	
F stat	5.74	4.10	6.22	
DW stat	1.97	1.91	1.92	

Although – given econometric issues - we need to take these results with a large grain of salt, our intuition regarding the impact of these variables seems to mostly follow. An interesting note is how V-M and G-M are affected differently, suggesting that the Growth v Value relationship may be different on each side.

Finally, we present a set of scatter plots of G-M and V- M vs breakeven inflation and corporate profit growth. While there might appear to be some relationships, there are a few outliers in each chart that may have an undue influence on the results. Caution must be applied again.



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nineties
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GFC
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corp prof growth
G-M
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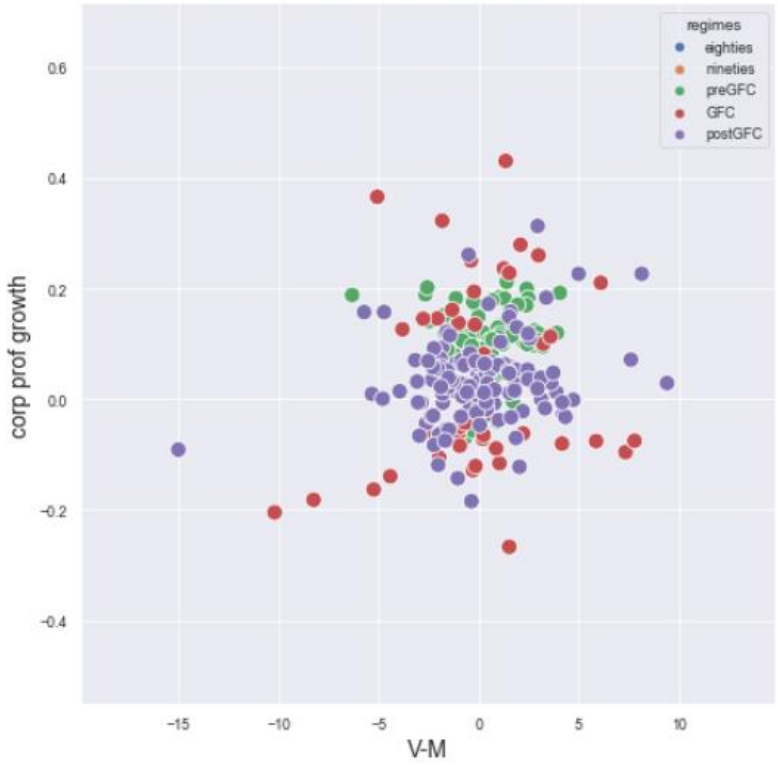
6


regimes
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corp prof growth
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10

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