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Inflation report: Short-term energy model

Forecasting short-term changes to CPI

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Contents

1 Inflation context.

The Covid-19 pandemic led to the inflation genie escaping the bottle, after 30 years of subdued inflation. During 2020 and until mid-2021, inflation seemed to be under control but since then it has exploded due to the unprecedented expansion of money that was a coordinated economic response to the government lockdowns enacted in March/April 2020 was bound to set loose the inflation genie.

In the second edition of my book[1], I argued that the inflation that started mid-2021 was not a temporary phenomenon originating from problems in global supply chains, but instead was clearly a monetary phenomenon through the expansion of the central banks' balance sheets (quantitative easing), and also a result of the pent-up demand from the pandemic lockdowns that led to record savings by households. Like a coiled spring, the economy rebounded sharply with supply chains struggling to keep up.

To control inflation "at any cost", the Fed embarked in a policy of quantitative tightening (by reducing its balance sheet) as well as an aggressive series of rate rises from 0.25% to 0.5% in March 2022, to 5.25% to 5.50% in July 2023. The result of the policy actions by the Fed led to an unprecedented drop in the money supply, as measured by the M2 aggregate. As a consequence, inflation subsequently dropped from its peak of close to 9% in mid-2022 to close to 2.5% in 2025. Since then, inflation has been hovering stubbornly just below 3%, which is too high for comfort for Fed policymakers.

By February of 2026, core CPI stood at 2.46% while overall CPI was running at 2.41%, which were close to the Fed's 2% target inflation rate. This inflation-disinflation cycle from 2022 to 2025 is illustrated in the B area marked by the dashed circle in Figure 1.

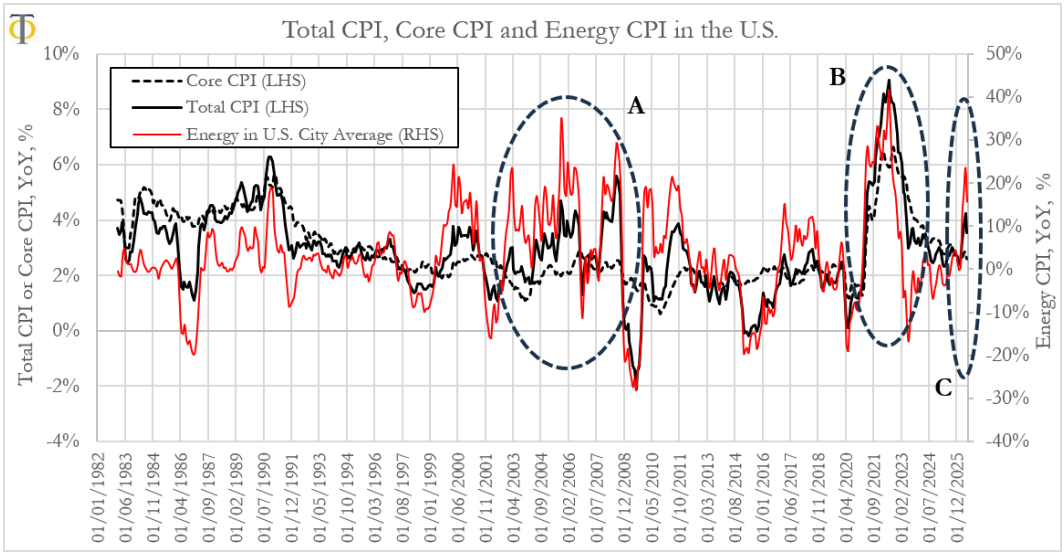

Figure 1 - Evolution of US CPI, core CPI and energy CPI from 1982 to June of 2026.

[1] C Alegria, "Economic Cycles, Debt and Demographics". Link: https://a.co/d/0ebmfpLC

The chart also shows changes in energy CPI, which are plotted on the right-hand scale. We can notice that both core CPI and overall CPI rose during the period, together with a large rise in energy CPI reaching above 40% YoY at its peak in June of 2022. The rise in both overall CPI and core CPI was due to the underlying phenomenon being driven by an expansion in the money supply and not an energy shock.

The period defined by the dashed circle A in Figure 1, illustrates another time period where energy inflation spiked, reaching close to 40% YoY changes in 2006. We can notice that in this instance, even though overall CPI rose together with energy inflation, core CPI remained stable and subdued during the period. This was due to the rise in energy CPI not being accompanied by a large expansion in the M2 money supply.

Additionally, it should also be noted that the energy component typically accounts for approximately 6% to 8.5% of the total Consumer Price Index (CPI) basket in the US (including motor fuel, electricity, and home heating). While it represents a relatively small component, its high variability and seasonality lead to energy often having a disproportionate impact on overall inflation, which could easily reach 20% or more of monthly changes in the CPI. As shown in Figure 1 YoY changes in energy CPI are about 5x larger than YoY changes in overall CPI. This is the main reason why central bankers tend to look over temporary spikes (up or down) in energy and focus on core CPI or inflation expectations.

The period defined by the dashed circle C in Figure 1, corresponds to the recent spike in inflation resultant from the ongoing oil shock caused by the closure of the strait of Hormuz, due to the Israel/Iran/Us conflict that started in late February of 2026. This period is a clear energy shock that is not (as of yet) accompanied by a monetary expansion (no rise in core CPI).

While the 2022-2023 inflation burst was a monetary phenomenon, the ongoing 2026 spike is a temporary phenomenon driven by a oil shock caused by a geopolitical event. These two cases emphasise the importance of understanding the drivers of inflation and building tools for ongoing monitoring.

The main purpose of providing the short-term estimates of CPI are motivated by the need to monitor and anticipate temporary shocks, such as energy shocks as the oil shock due to the Hormuz strait closure, that started in March of 2026.

2 Relationship between oil prices and energy CPI.

As previously mentioned, energy CPI accounts for about 6%-8.5% of overall CPI. However, how are oil prices related to energy CPI? To answer this question, in Figure 2 the relationship between energy CPI and changes in WTI oil prices is plotted.

The chart shows how monthly (logarithmic) changes in average oil prices during the current month are related to changes in energy CPI. The relationship is very strong, as would be expected. It shows, through a simple linear model how energy market variables such as oil price changes provide very powerful explanatory variables for energy CPI.

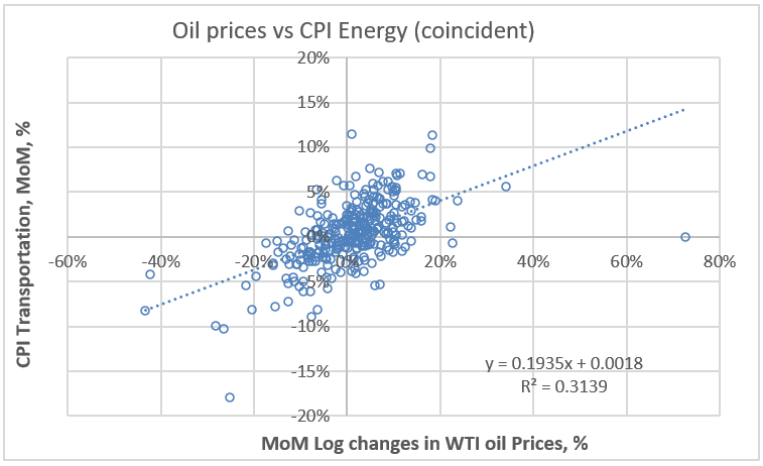

Figure 2 - Relationship between monthly (MoM) changes in WTI oil prices and energy CPI.

Our short-term energy model is designed to anticipate short-term inflation changes, in particular driven by energy shocks. Our model explores the relationship shown in Figure 2, albeit it uses a different approach to the one shown in the chart[2].

3 Evaluation of the short-term energy model.

In this section we evaluate the performance of the short-term model for forecasting next months' CPI. Figure 3 shows the time series of model forecasts and actual CPI from 5/2024 to 6/2026. The dashed line refers to the start of the Hormuz oil shock. From that date onwards, the model was run out-of-sample.

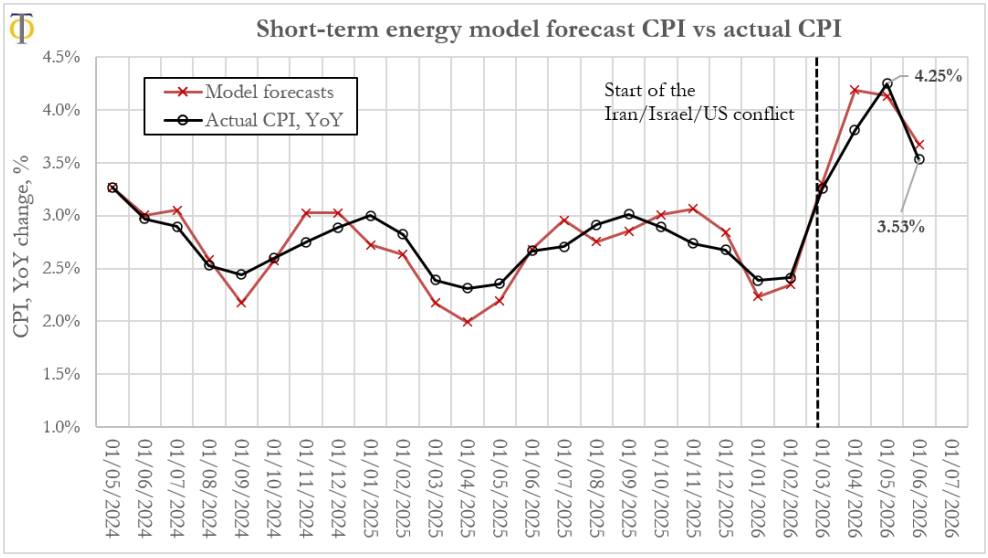

Figure 3 – Comparison of the short-term energy model estimates for next month CPI versus actual CPI.

[2] The exact details of our model are proprietary.

The inflation forecasts for the following month are updated at the start of each month, once the market prices for energy variables are available. The CPI release with the actual inflation value typically occurs a week later, around the 12th of the month.

We observe from Figure 3 that the model tracks actual inflation releases quite closely. This is valid even during the inflation spike originated from the Iran/US/Israel conflict from late February 2026. To have a closer look at the deviation between model estimates and actual CPI releases, in Figure 4 we plot the difference between model forecast and actual CPI, over the period.

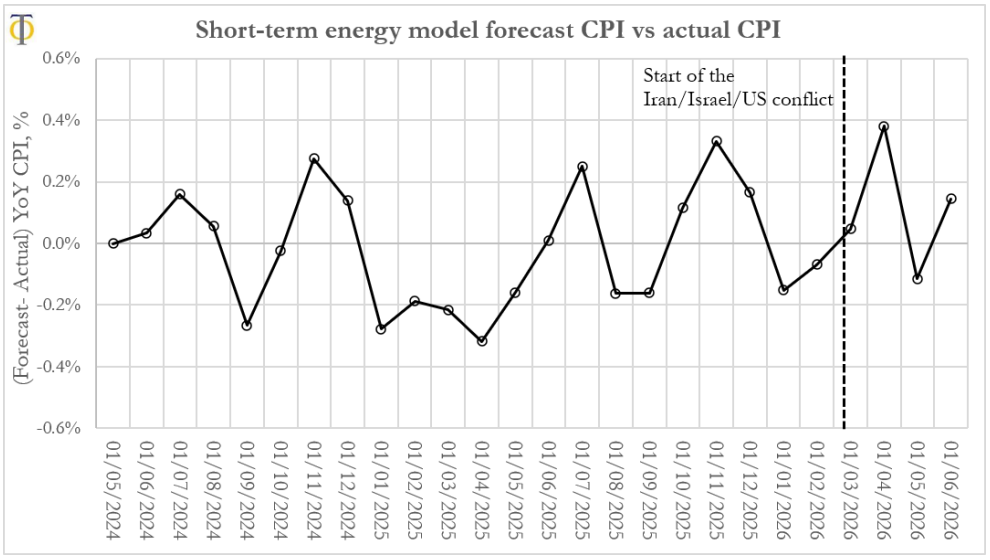

Figure 4 – Difference between the short-term energy model estimates for next month CPI and actual CPI.

We can observe that in most cases the model estimates are within +- 0.3% of actual CPI estimates. This is a reasonable margin of error for a simple model that only targets the energy component of CPI, through a relatively simple model. Figure 5 shows the scatter plot between model forecasts and actual CPI, reiterating the close relationship.

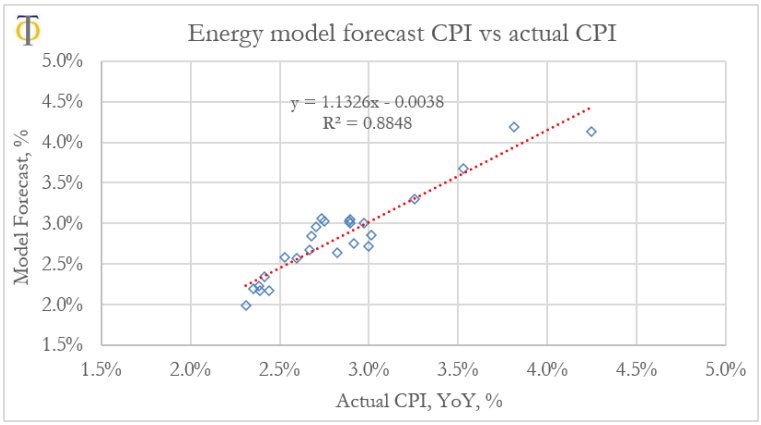

Figure 5 – Scatter plot between the short-term energy model estimates for next month CPI versus actual CPI.

4 Summary

This short report evaluates the performance of our short-term inflation model. The model focuses on energy variables to forecast future CPI inflation, 1 month ahead, this is, the next CPI reading.

We show that the model performs surprisingly well at anticipating future changes in CPI, driven by changes in oil prices. When comparing model estimates with actual values for CPI, we observe that the forecasts typically lie between +-0.2% of actual values.

The energy model can also be used to delineate different scenarios for oil prices to estimate its impact on different inflation measures, including overall CPI. With the start of the Hormuz oil crisis, we published several posts that use our energy model to estimate the impact of different oil prices scenarios on CPI. These posts are listed below.

Examples of the application of the CPI energy model:

- ➔ Post #22 (2026-04-03) - Inflation: Impact of the Hormuz oil crisis - part 1.
- ➔ Post #23 (2026-05-05) - Inflation: Impact of the Hormuz oil crisis - part2.
- ➔ Post #25 (2026-06-08) - Inflation: Impact of the Hormuz oil crisis - part3.
- ➔ Post #26 (2026-07-08) - Inflation: Impact of the Hormuz oil crisis - part4.

The most immediate use of the energy model is to estimate next month's changes in overall CPI, for which we provide a dashboard with our latest model estimates, before the next CPI release. The inflation forecasts for the following month are updated at the beginning of each month, once the market prices for energy variables become available. The CPI release with the actual inflation value typically occurs a week later, around the 12th of the month.

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