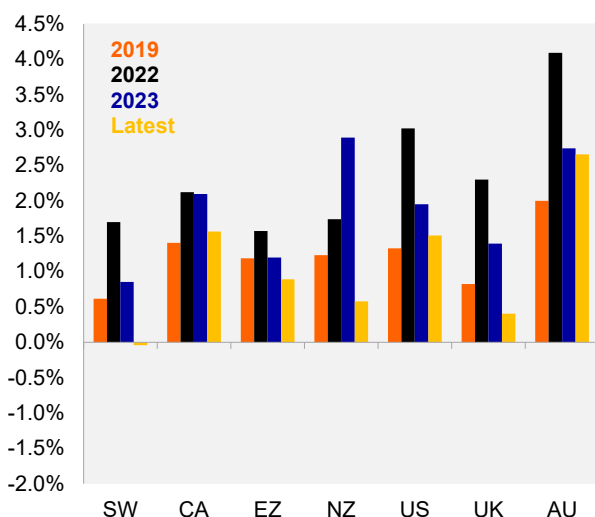


Global: Labor market and impact on inflation in DM countries

- ▶ The post-pandemic reopening and massive wave of fiscal and monetary stimuli have led to an overheated labor market and consequent increase in inflation in the main developed economies. After the initial synchrony between countries, differences have become more pronounced recently, with implications for the importance that each central bank may attribute to inflation and economic weakening risks and to monitoring unemployment and imbalances between labor demand and supply (measured by the vacancy-to-unemployment ratio). This paper analyzes job markets in developed economies and estimates the sensitivity of inflation to labor market conditions in each of them.
- ▶ The rebalancing of the labor market points to lower inflationary pressures down the road, creating room for greater monetary policy easing in developed economies, although not to the same extent in all of them. New Zealand and Canada are in the most advanced stages of labor market rebalancing, while Australia and the Eurozone are laggards in this adjustment. Furthermore, we estimated a modified Phillips curve for these economies, including the vacancy-to-unemployment ratio, and found that labor market tightness explains a larger share of recent inflation in the US, Australia, Canada, and New Zealand than in the Eurozone, UK and Sweden, where inertia and/or expectations components carry more relevance.

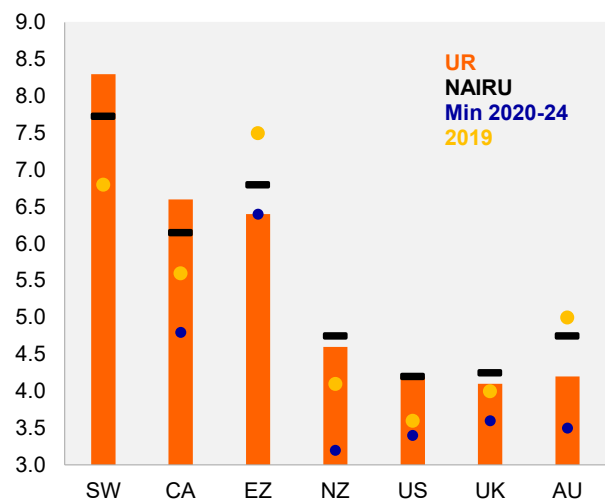
The post-pandemic reopening and massive wave of fiscal and monetary stimuli have created labor market imbalances and overheating in the largest developed economies. During the reopening, employment accelerated sharply, and the unemployment rate fell below pre-pandemic levels and below the Non-Accelerating Inflation Rate of Unemployment (NAIRU) estimated by each central bank. After slowing down in tandem in 2022 and 2023, countries are showing clear divergence recently. Australia and the Eurozone still show solid employment growth and unemployment below the NAIRU, while Sweden now has a weaker labor market.

DMs: Employment (YoY)



Source: Haver, Itaú

DMs: Unemployment rate

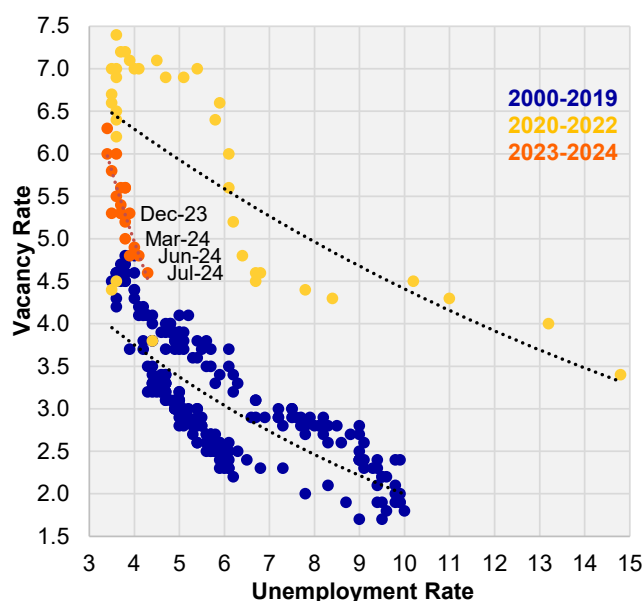


Source: Haver, Central Banks, Itaú

An alternative way of analyzing recent developments is through the imbalance between supply and demand for jobs, which was significant during the booming post-reopening period and is now cooling down. The Beveridge curve shows the relationship between the unemployment rate (proxy for labor supply) and the vacancy rate (proxy for labor demand). The vacancy-to-unemployment ratio (v/u) is a good indicator for how tight the labor market is, especially when it comes to its inflationary impact (discussed in the section below). In the US, for instance, the reopening followed by strong fiscal stimulus led to greater inefficiencies (mismatches) in employment allocation and imbalances between supply and demand (curve shift to the yellow points on the graph).

Until now, the rebalancing of the labor market has taken place mostly through a reduction in job openings (vertical drop in the Beveridge curve), with a small increase in the unemployment rate. The rapid economic rebound with restricted job supply dragged the unemployment rate down to historic lows and significantly increased the vacancy rate, pointing to a tighter labor market (high v/u). Subsequently, 2023 and 2024 were marked by a normalization in this imbalance, largely due to rising immigration (also discussed below) and a return to pre-pandemic levels recently.

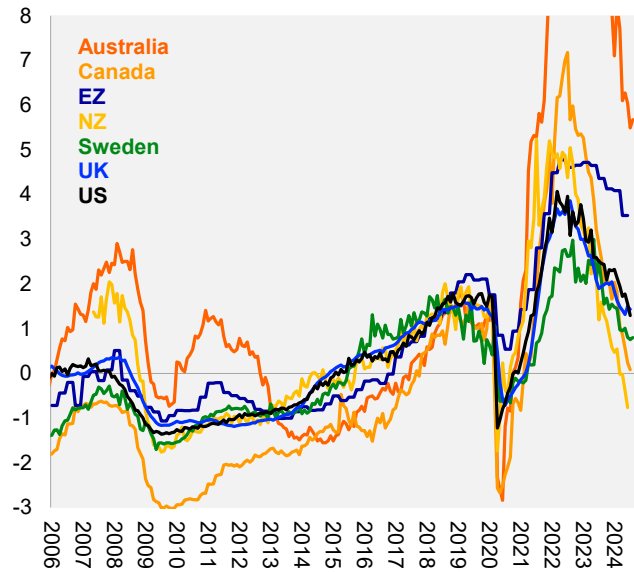
US: Beveridge Curve



Source: Haver, Itaú

This adjustment process has been mixed among major developed economies. Sweden, Canada and New Zealand stand out with a looser labor market. The US and UK have returned to pre-pandemic levels, while the labor market adjustment seems to be lagging in Australia and the Eurozone.

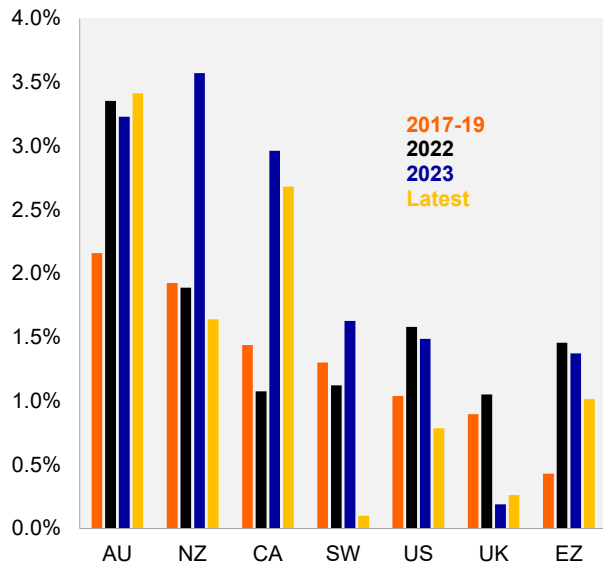
Vacancy to Unemployment ratio (z-score)



Source: Haver, itaú

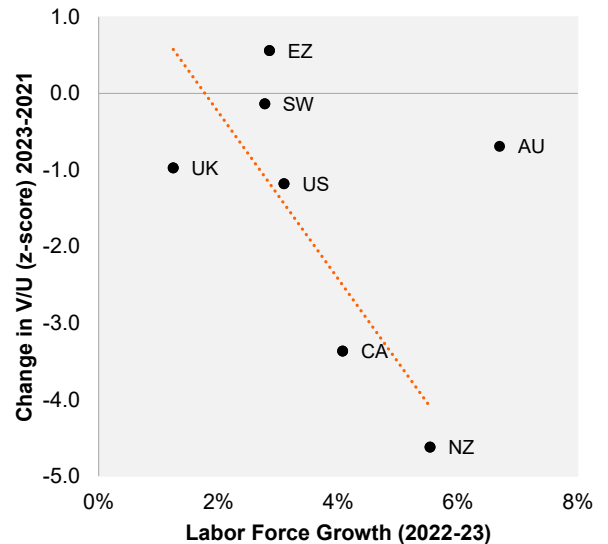
Labor force growth (see 1st graph), bolstered by immigration, has played a relevant role in achieving greater balance. Countries that experienced the sharpest labor force growth in 2022 and 2023, such as New Zealand and Canada, generally had a steeper decline in the v/u ratio in the same period (see 2nd graph). On the other hand, Australia had strong growth in the labor force but no greater rebalancing of the job market. In our view, different adjustment speeds may reflect structural characteristics of each country, such as the degree of labor market rigidity and openness to immigration, cyclical factors (such as the type of fiscal stimulus implemented during the pandemic, because the more measures were focused on supporting employment, the greater the friction through inefficient worker retention, labor hoarding, and delays in rebalancing) and idiosyncratic shocks (such as the energy shock in Europe).

Labor Force (YoY)



Source: Haver, Itaú

Change in V/U vs Labor Force Growth (2022-23)

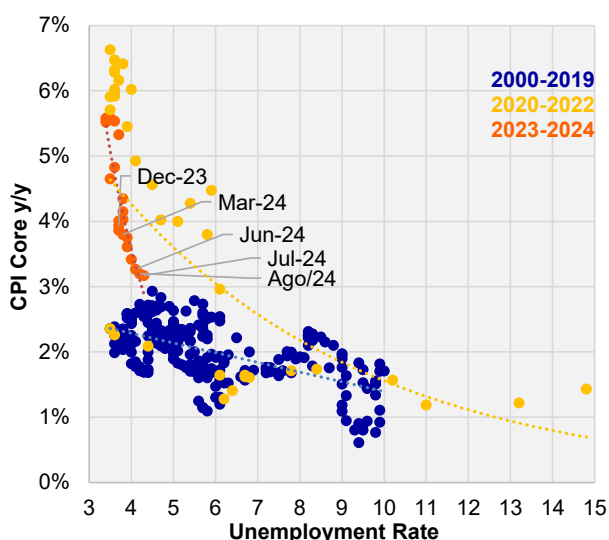


Source: Haver, Itaú

Labor market conditions have been quite relevant to inflation, fueling discussions about an alternative formula for the Phillips curve. Before the pandemic, several estimates indicated flattening of the Phillips curve, demonstrating lower correlation between the unemployment rate and inflation (1st graph). However, according to this analysis, the decline in the unemployment rate in the US towards 3.5% would have implied 2.5% inflation —not far from the 2% target, and much lower than the actual 6.5%. What could explain this error?

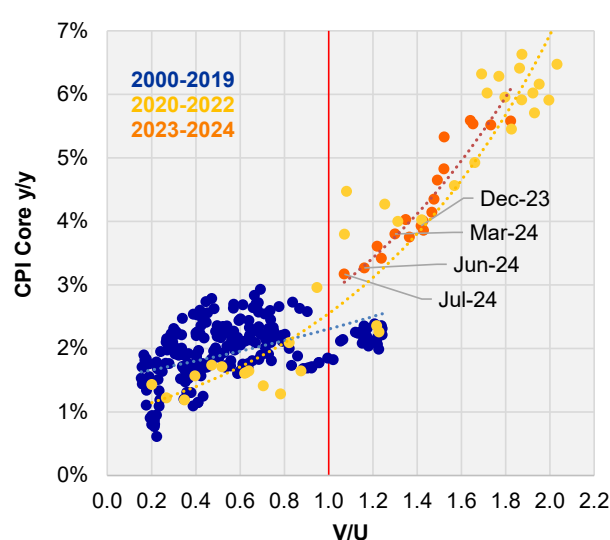
In articles recently published by the US Federal Reserve, Barnichon and Shapiro (2024)¹ show that the v/u ratio provides a better explanation of the inflation dynamics than the unemployment rate (graph on the right). Furthermore, according to Benigno and Eggertsson (2024)², after a certain threshold (v/u = 1 in the US, for instance), the Phillips curve becomes steeper, and inflation reacts more to the labor market. In the US, the labor market exerted intense inflationary pressure due to the abovementioned imbalances but is now closer to levels that are more balanced for inflation, so that the Fed's reaction function can attribute more weight to activity and the cooling labor market (graphs for other countries in the Annex).

US: Phillips Curve



Source: Haver, Itaú

US: Beveridge-Phillips Curve



Source: Haver, Itaú

To assess the sensitivity of inflation to the labor market in different countries, we used a methodology that is similar to the one used by Benigno and Shapiro (2024). We estimated this simplified Phillips curve for each developed country using data since 2000:

$$\pi_{it} = c_i + \alpha_i \pi_{i,12m,t-1} + (1 - \alpha_i) \pi_{i,t}^e + \beta_i \frac{v}{u}_{i,t} + \epsilon_{i,t}$$

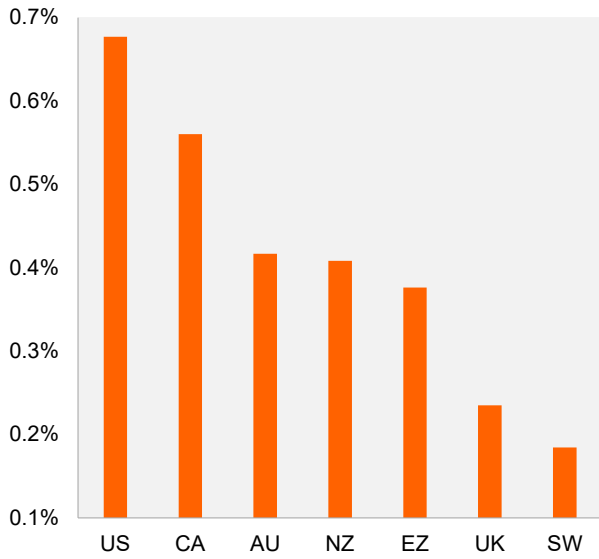
Where π_i is the annualized quarterly change in core inflation in the country i , $\pi_{i,12m}$ is year-on-year headline inflation, $\frac{v}{u}$ is the vacancy-to-unemployment ratio (in standard deviation to allow comparison between countries) and π_i^e is the inflation expectation in the long run.

The dispersion in the elasticity of inflation to the labor market is quite wide across countries, with the US standing out as the most sensitive and the Eurozone and Australia as the least sensitive. The graph on the left shows that a drop of 1 standard deviation in the v/u ratio is associated with a 0.68pp drop in core inflation in the US, compared to declines of only 0.23pp in the Eurozone and 0.18pp in Australia. Furthermore, in the US and Canada, inflation dynamics are more strongly associated with inflation expectations, while in European countries, inflation inertia is comparatively more relevant. Distinct levels of labor market flexibility, price regulation and indexation may explain the differences between countries.

¹ Barnichon, R. and Shapiro, A. (2024). Phillips meets Beveridge. FRBSF Working Paper 2024-22.

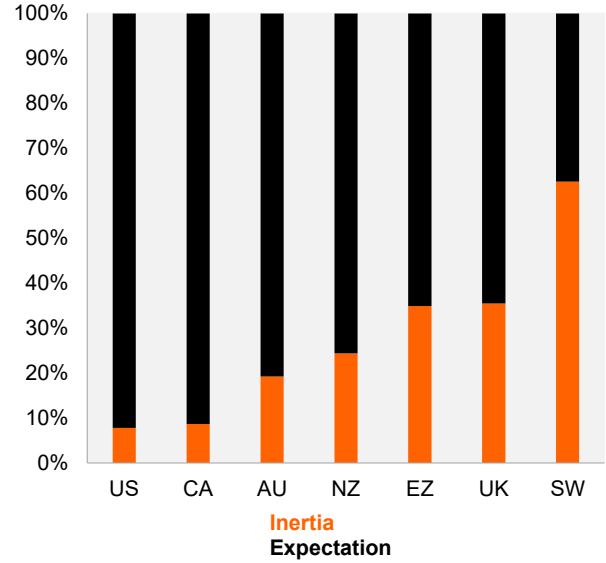
² Benigno, P. and Eggertsson, G. (2024). Revisiting the Phillips and Beveridge Curves: Insights from the 2020s Inflation Surge.

Phillips Curve: Beta V/U



Source: Itaú

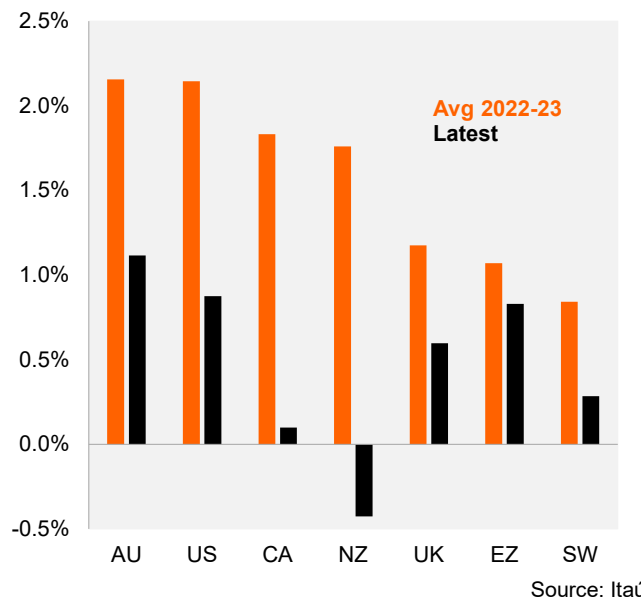
Phillips Curve: Beta (Inertia vs Expectations)



Source: Itaú

This breakdown explains the different drivers of inflationary dynamics among developed countries (the Annex shows the historical breakdown of core inflation in these countries between the components of the Phillips curve: inertia, expectations and degree of labor market tightening). The exercise shows that the labor market had a smaller weight in the recent dynamics of inflation in European countries (Eurozone, UK and Sweden) while inertia had a greater contribution (apparently related to the energy price shock in the region). On the other hand, in the US, Canada and New Zealand, labor market dynamics are key to explaining inflation dynamics. Thus, the slowing labor market in these countries explains the sharper drop in core inflation in these nations (the graph below shows the contribution over time). Australia is the exception, with a significant delay in the adjustment of its labor market that justifies greater pressure on core inflation.

Contribution of V/U to Core CPI QoQ saar

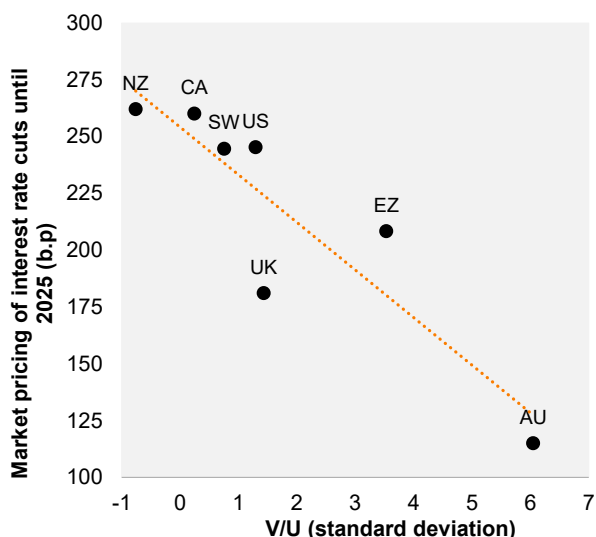


Source: Itaú

Importantly, our analysis assumes a linear relationship between the v/u ratio and inflation, for the sake of simplicity and to facilitate comparisons between countries. In the event of non-linearity above a certain threshold, as argued by Benigno and Eggertsson (2024), we could be underestimating the slope of the Phillips curve in tight labor markets (above the threshold) and overestimating it in looser situations (below the threshold).

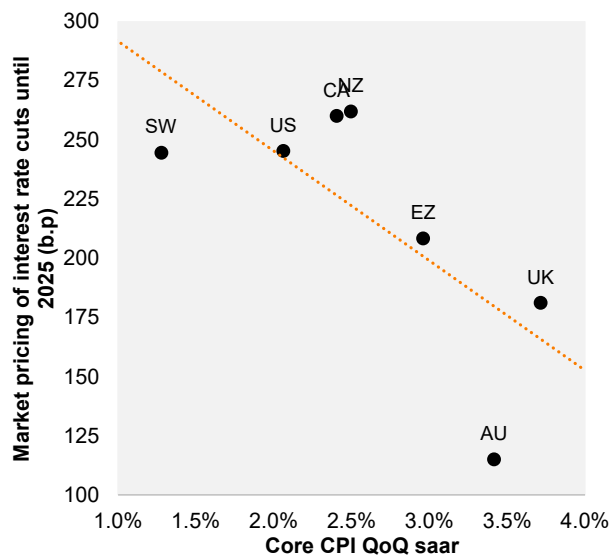
Finally, market is actually pricing in longer monetary easing cycles in countries with more balanced labor markets and, therefore, with less inflationary risks going forward. The graphs below show the correlation between interest rate cuts priced in countries with V/U and annualized core inflation at the margin.

V/U vs Rate Cuts Priced in until 2025



Source: Bloomberg, Haver, Itaú

Core CPI vs Rate Cuts Priced in until 2025

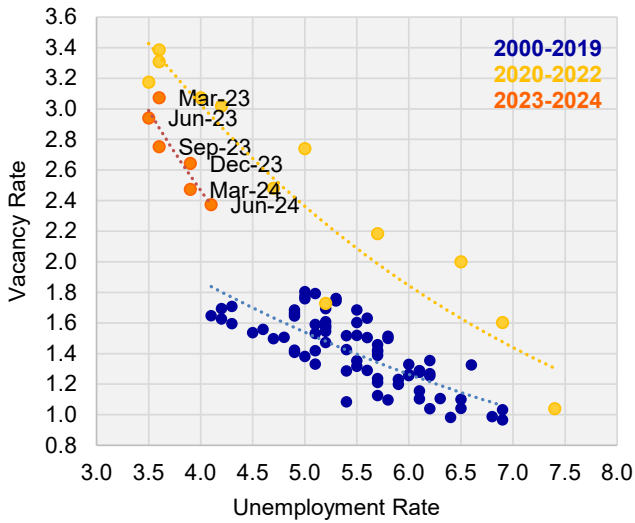


Source: Bloomberg, Haver, Itaú

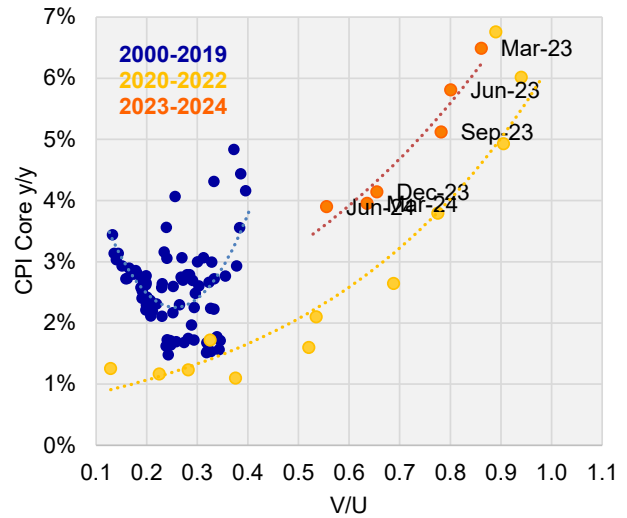
Thales Guimarães
Bernardo Dutra
Laura Pitta

ANNEX

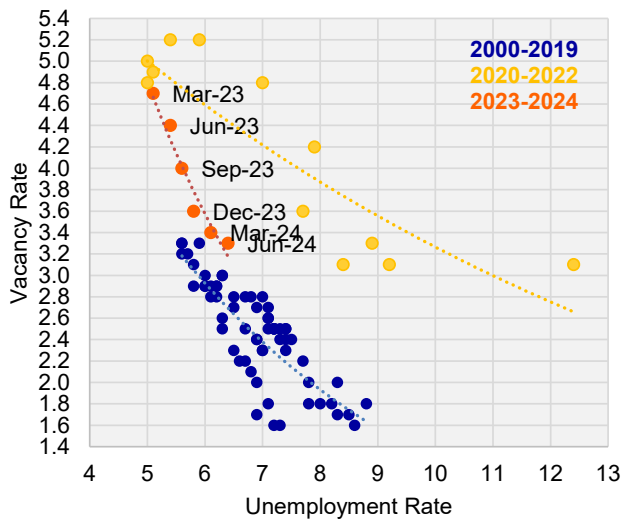
Australia: Beveridge Curve



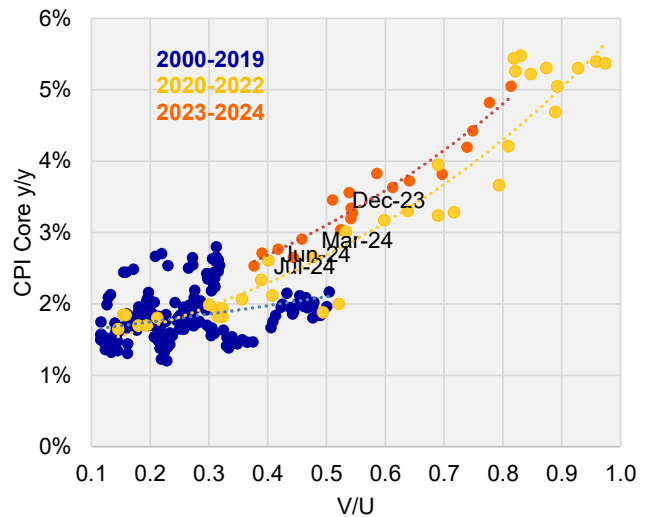
Australia: Beveridge-Phillips Curve



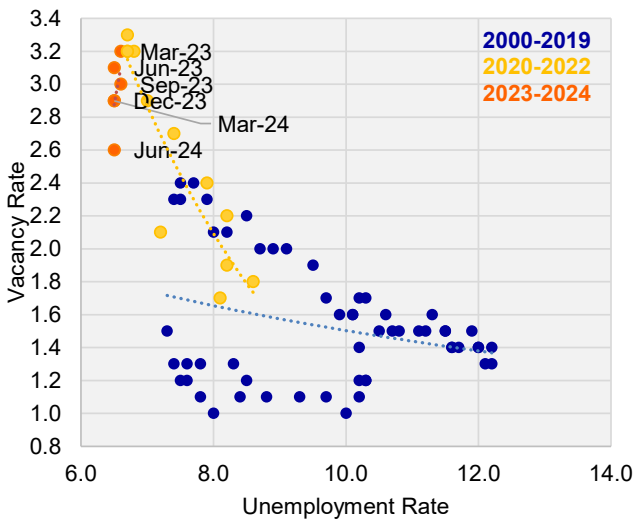
Canada: Beveridge Curve



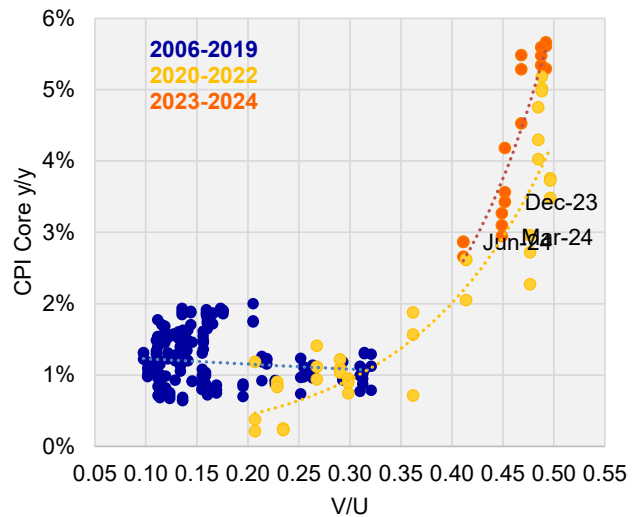
Canada: Beveridge-Phillips Curve



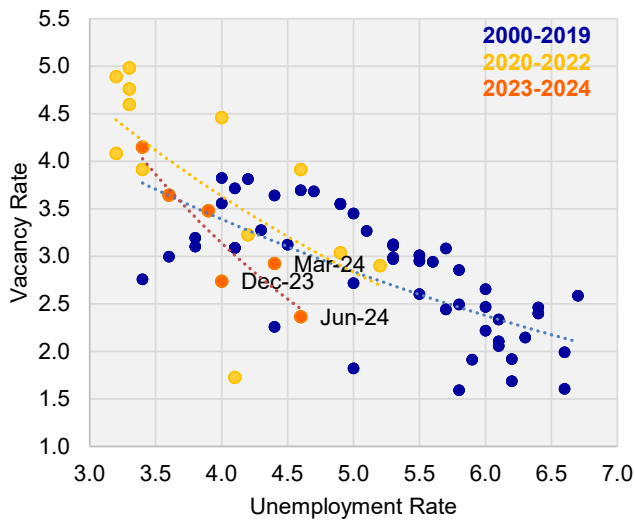
EZ: Beveridge Curve



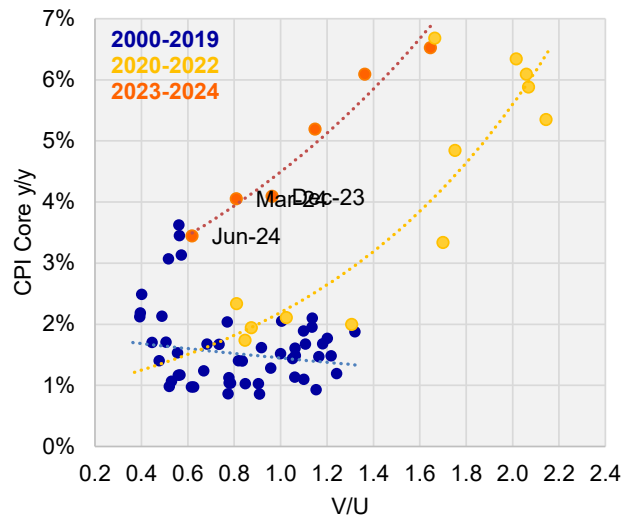
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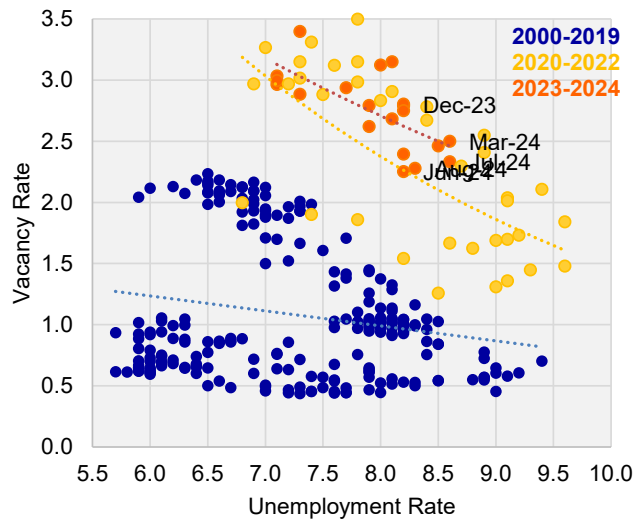
NZ: Beveridge Curve



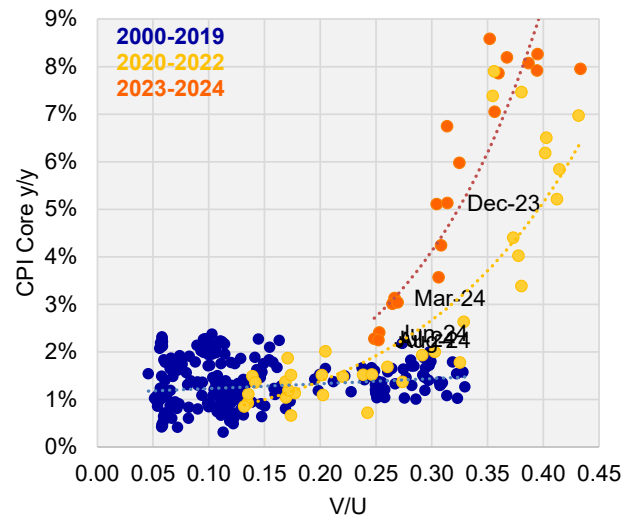
NZ: Beveridge-Phillips Curve



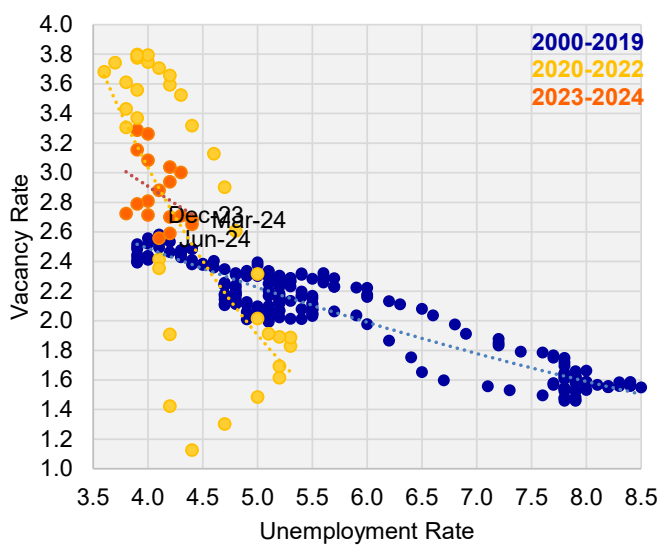
Sweden: Beveridge Curve



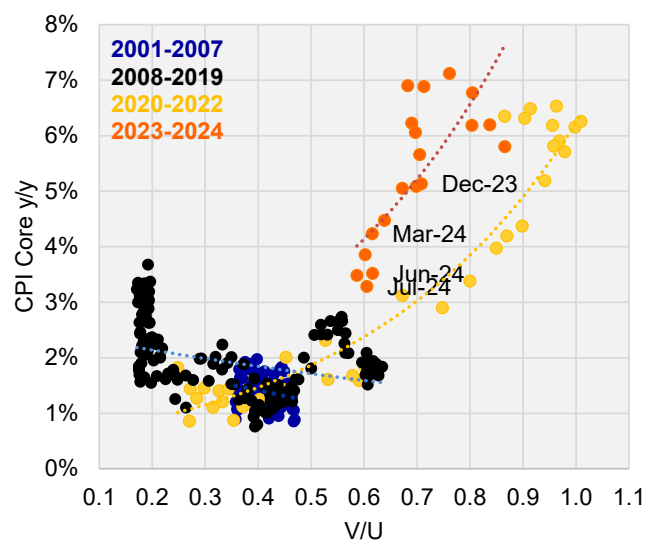
Sweden: Beveridge-Phillips Curve



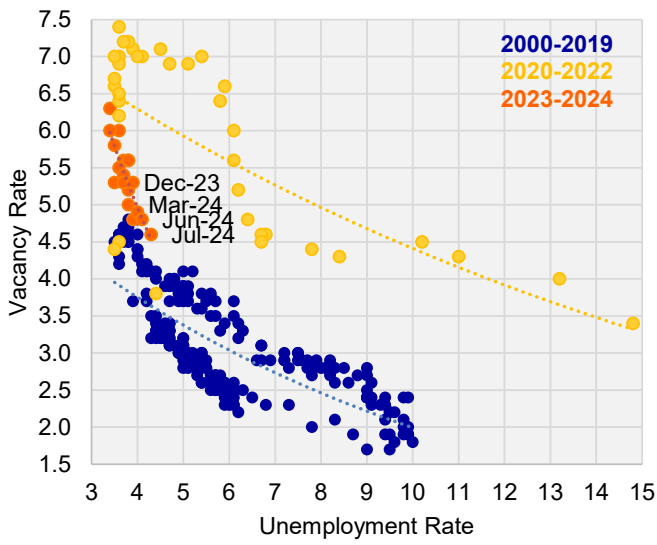
UK: Beveridge Curve



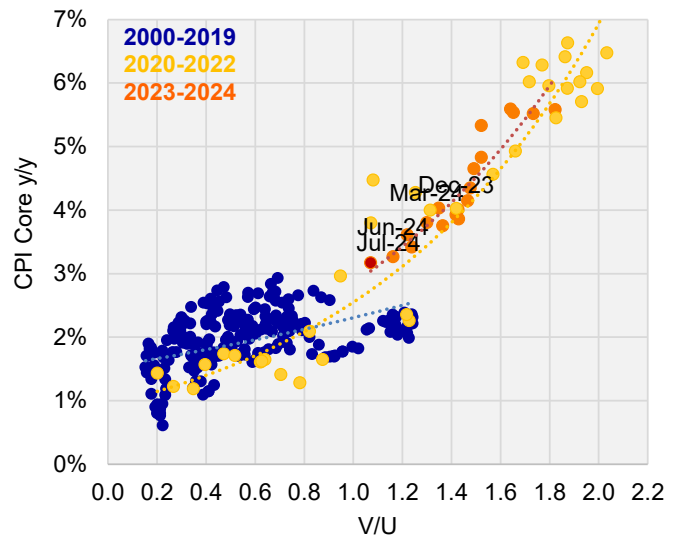
UK: Beveridge-Phillips Curve



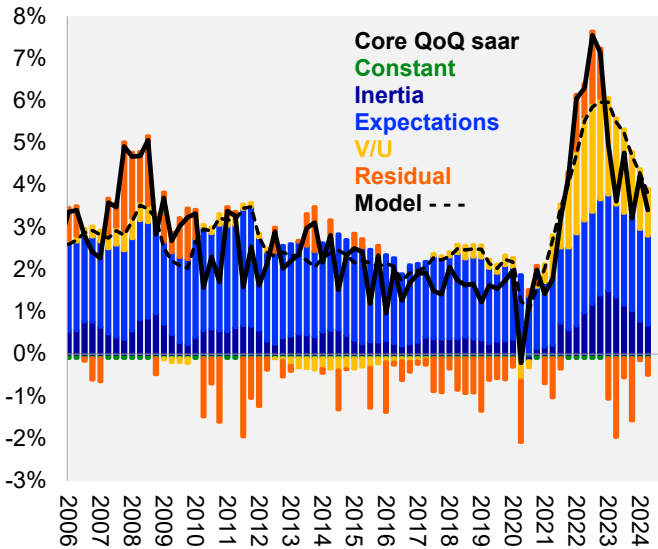
US: Beveridge Curve



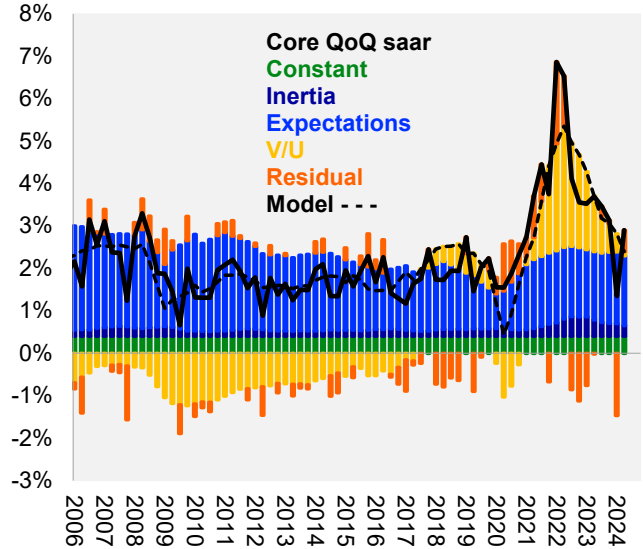
US: Beveridge-Phillips Curve



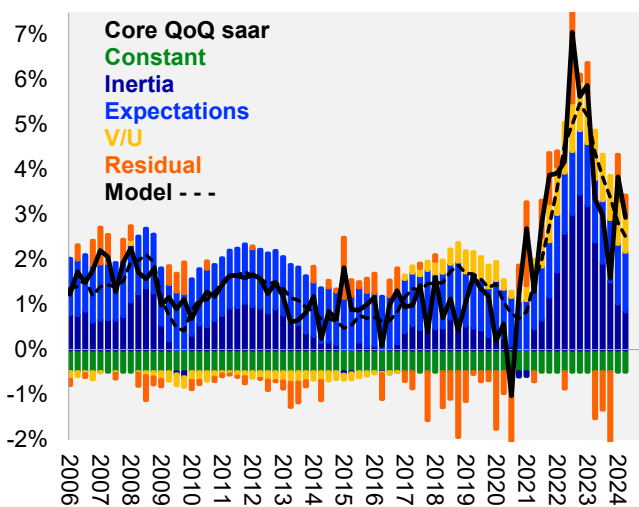
Australia: Core QoQ saar vs Phillips



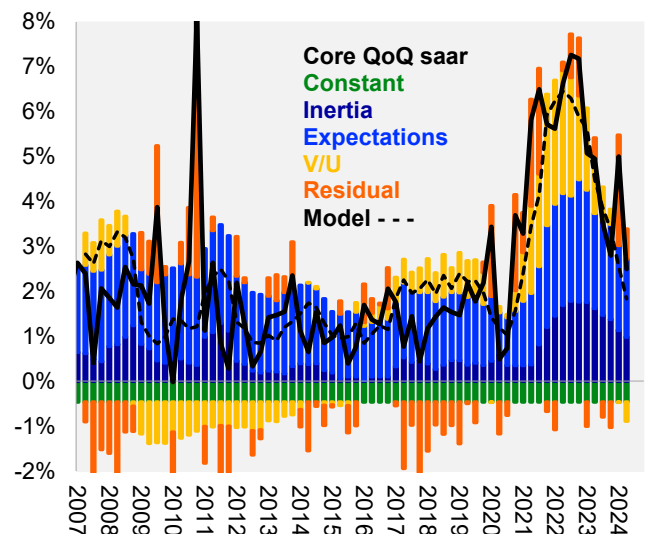
Canada: Core QoQ saar vs Phillips



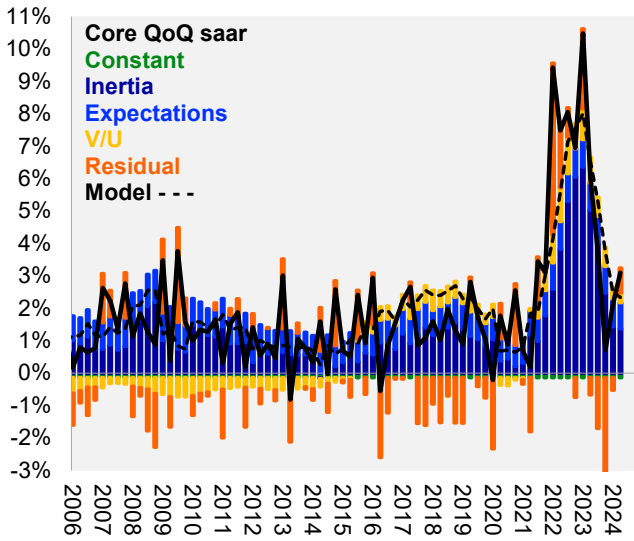
EZ: Core QoQ saar vs Phillips



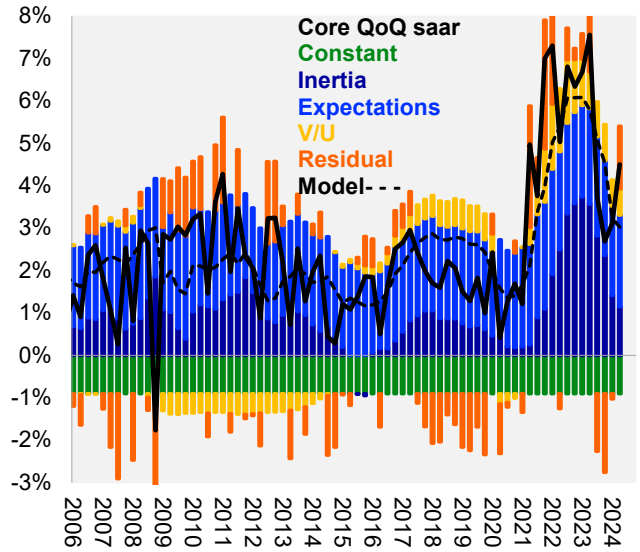
NZ: Core QoQ saar vs Phillips



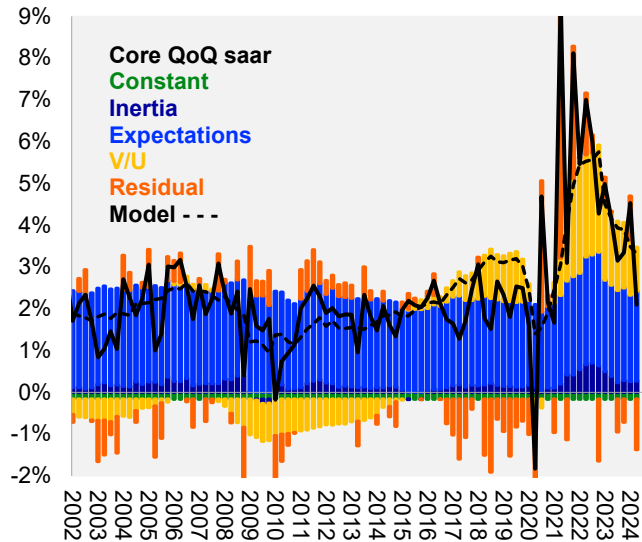
Sweden: Core QoQ saar vs Phillips



UK: Core QoQ saar vs Phillips



US: Core QoQ saar vs Phillips



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