

Accelerating OER and Services Prices to Keep Inflation High

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ECONOMIC POLICIES FOR THE 21ST CENTURY

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The rise in inflation has been driven by strong aggregate demand generated by excessive monetary and fiscal stimulus aggravated by supply constraints. Data show that while higher inflation to date has been pervasive across a broad array of goods and services, goods inflation has been more pronounced while services inflation has been more moderate. This reflects the robust demand to date for goods and the constrained recovery in the services sectors.

Underlying factors point to sustained inflation pressures in 2022-2023, in contrast with the Federal Reserve's forecast of sharp declines back toward the Fed's longer-run 2% average target. This will involve an acceleration of services inflation that will more than offset disinflation or even deflation in goods. This paper identifies the key factors that will drive services inflation and greatly reduce the probability of the Fed's low inflation forecast unfolding.

First, the existing pipeline of monetary and fiscal stimulus will continue to generate excess aggregate demand, even if supply constraints dissipate. Second, shelter costs that comprise owner-occupied equivalent rent (OER) and rental costs are forecast to accelerate and remain high. This forecast is based on a VAR model of OER and rental costs that measures their historical lagged responses to higher home prices. Third, services inflation will accelerate, driven by stronger demand as the economy normalizes and higher wages that reflect sustained tight labor markets and higher inflationary expectations.

This assessment suggests that even as the Fed raises rates and even if supply constraints dissipate, sustained high inflation will continue to pose a challenge to the Fed.

The Inflationary Environment

The aggressive fiscal and monetary policy stimuli that would generate excess aggregate demand and inflation unfolded quickly in response to the pandemic, and significant additional legislated deficit

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spending and Fed asset purchases added fuel to inflationary pressures well after the economy was recovering rapidly.

The interaction between fiscal stimulus and monetary easing was quite prominent and strikingly different than during the period following the great financial crisis (Levy 2020). The CARES Act enacted in March 2020 involved unprecedented deficit spending of \$2.3 trillion, most of which was government transfers to individuals, small businesses and state and local governments. This supported personal disposable income and consumption, but a sizable portion was saved and not spent. Along with cautionary saving, this generated a surge in personal savings and bank deposits, measured as M2 money supply. The surge in M2 contrasted sharply with the post-GFC period when the Fed's QE asset purchases boosted the monetary base (reserves plus currency), but remained as excess reserves in the banking system and was never put to work in the economy.

These early signals of the large role fiscal policy and the confluence of the Fed's aggressive monetary easing with zero rates and sizable asset purchases that included MBS despite the strong fundamentals of the mortgage and housing markets highlighted the pending inflation risks.² Significant further deficit spending legislation and Fed asset purchases compounded these inflation risks. The key issue was whether these policies would stimulate aggregate demand. They did.

As the economy and labor markets rebounded strongly and even as inflation rose sharply in 2021, the Fed made several critical errors in judgment that led it to extend its emergency policies. It presumed incorrectly that there would be a replay of the post-GFC period, when inflation remained subdued despite aggressive monetary ease. But that period was plagued with crippled banking and housing sectors and battered consumer finances, was the wrong frame of reference. Prior cyclical patterns of economic responses to monetary policy carried little weight. Strikingly, the Fed's economic and inflation forecasts were virtually unmoved by the unprecedented magnitude of deficit spending legislation, as if the fiscal multipliers were close to zero.

On the fiscal policy front, deficit legislation in the first 12 months following the pandemic outbreak in the U.S. exceeded \$5 trillion, over 25% of GDP, magnitudes larger than the 9% decline in real GDP in

² In July 2020, Levy (2020) stated: "The Fed's aggressive increase in base money accompanied by a surge in M2 and the unprecedented spike in Federal deficit spending have sown the seeds for a significant rise in inflation... the Fed's aggressive QE during the economic expansion [post-GFC] resulted in excess reserves in the banking system and did not generate a sustained acceleration in nominal GDP. This time may be different: the combination of reopening the economy and unprecedented expansive monetary and fiscal policies may be a formula for generating excess demand and high inflation ... the risks of inflation are material and should be closely monitored".

2020Q2. The CARES Act was followed by the Consolidated Appropriations Act of 2021 (\$900 billion, December 2020) and the American Rescue Plan Act of 2021 (\$1.9 trillion, March 2021).

In response, although a sizable portion of the government transfers were saved, aggregate demand rebounded strongly. Final sales to domestic purchasers (GDP minus inventories) surged in the second half of 2020 and by year-end had nearly regained its pandemic level, and by 2021Q4 was 11.3% above it. At the same time supply shortages and distribution bottlenecks added to production costs and prices. Inflation rose sharply.

Through most of 2021, the Fed mistakenly attributed the sharp rise in inflation entirely to supply shortages and asserted that inflation was transitory, virtually ignoring the strength in demand and the monetary and fiscal stimulus that drove it. In each succeeding Summary of Economic Projections, the Fed revised up its forecast for 2021 but forecast that it would fall back in 2022 close to its longer-run average target of 2%.

Inflation has been pervasive across a wide array of items, in contrast to the assertions by the Fed and the Biden Administration that it was due to large price increases of a few items. The broadening distribution of higher inflation across a majority of items continues (Charts 1 and 2).

Inflation of goods in the PCE price index has soared 8.8% yr/yr, while services inflation has increased to a more modest 4.3%. The excess demand, supply constraints and inflation of goods like automobiles and household durables have been widely documented. The more modest acceleration of services inflation reflects the constrained rebound in consumption of services and relatively modest increases in rent and shelter costs. The close relationship between demand and inflation in goods versus services is striking (Charts 3 and 4). Of note, before the pandemic the PCE price index was comprised of 64% services and 36% goods; following the post-pandemic surge in goods consumption, the shares are now 61% services and 39% goods.

The pipeline for monetary and fiscal stimulus. The pipeline of monetary and fiscal stimulus remains ample and pent up demand will continue to generate solid growth in economic activity. Even as the Fed begins to raise rates, the real Fed funds rate will remain deeply negative, and monetary policy will be accommodative. Negative real costs of consumer and business borrowing and mortgage rates will encourage spending and investment.

On the fiscal policy front, although the cyclically-adjusted budget deficit will be lower in 2022 than 2021, several factors suggest that fiscal policy will remain stimulative, and the notion that fiscal policy has

turned restrictive is incorrect. The unique characteristics of the pandemic and the government's policy responses are lengthening the stimulative lags. This will become apparent as the constraining impacts of the pandemic ebb and the economy fully reopens.

The sizable amounts of the government transfers that were saved by individuals and small businesses will be spent over time. Personal savings out of disposable income is estimated to exceed \$2 trillion above pre-pandemic levels. The largest portion of the Federal grants to state and local governments, which exceeded \$500 billion, were unspent. Benefiting from strong increases in tax receipts and the Federal government transfers, state and local government holdings of US Treasury securities increased \$533 billion, or 2.3% of GDP, from 2019Q4 to 2021Q2 (the last data point available). Presumably, most of this will either be spent or used to finance tax cuts. Either way, it is delayed stimulus.

Earlier estimates show that nearly \$1 trillion of the deficit spending authorized by legislation has not been spent (General Accounting Office 2021), and deficit spending continues to flow into the economy. The \$1 trillion Infrastructure Investment and Jobs Act (enacted November 2021) will add substantial fuel to the economy and jobs in coming years. While the Congressional Budget Office estimated the cost of the legislation over 10 years, the Biden Administration has political incentive to move forward large amounts of spending. Such government investment spending is calculated directly in GDP and history suggests will involve significantly higher fiscal multipliers than the prior fiscal legislation that was heavily income support.

OER, rental costs and the shelter component of inflation

The cost of consuming shelter, which is comprised primarily of owner-occupied equivalent rent (OER) and rental costs, is the largest component of services and the largest component of inflation. Shelter comprises 32% of the CPI (40% of its core measure) and 15% of the PCE price index (17% of its core). These differences in shares reflect the different market baskets measured by the CPI and PCE. The CPI measures households' out-of-pocket costs (it excludes health care expenses paid for by employer-paid insurance, Medicare and Medicaid) while the PCE price index includes the cost of all consumer items. As such, health care comprises a much larger share of the PCE price index than the CPI.

To date, OER and rental costs in the CPI have accelerated only modestly, from 2.0% yr/yr in early 2021 to 4.1% and 3.8%, respectively, in January 2022. These increases are small fractions of the 18.8% yr/yr surge in the Case Shiller home price index and the 15.7% rise in Zillow Observed Rental Cost Index (Chart

5). OER is calculated based on a survey of homeowners intended to capture the opportunity cost of homeownership; that is, what the owner-occupied home would rent for unfurnished and without utilities. These survey data are combined with rent data from the Bureau of Labor Statistics (BLS) housing sample and weights based on the proportions of renters versus homeowners across geographic areas to produce the aggregate OER index.

To control for quality and because leases turn over relatively infrequently, the BLS conducts the survey of the same house every six months and then calculates OER as the weighted average of these measured changes. This builds in a lag between the survey and the measure of OER. Also, many rental agreements extend for a year or longer so that in any given month, only a fraction of sampled rents will reflect current economic conditions, while some sampled rents will reflect conditions from the distant past. Consequently, the BLS's measure of OER lags housing, home prices and economic conditions.

The rental cost measure in the shelter component is based on a survey of existing and new renters. This is different than Zillow's Observed Rental Cost Index, which is skewed toward new rental agreements. This implies longer lags in the BLS's measure of rental costs. Of note, the Zillow survey data on observed rental costs began in 2014, and an analogous data series is not available during the housing bubble of 2002-2006.

Forecasting OER and Rental Costs

To forecast the future path of OER and rent inflation in the CPI, a vector auto regression (VAR) model is estimated that includes three variables: the Case Shiller Home Price Index, OER and the rental cost in the CPI. The model is estimated using monthly data from 1984 to November 2021, which includes the recent surge in home prices. This modeling effort is similar with research at the Federal Reserve Banks of Dallas (2014) and Cleveland (2021). Fannie Mae also estimated OER using multiple regression analysis and found vacancy rates to be statistically significant (2021).

A VAR models each variable as a function of its own lags and lagged values of the other variables, with lag length selection guided by statistical tests. The VAR empirical framework allows housing prices, OER, and rent inflation to all influence one another. Consistent with the hypothesis that rents change infrequently, OER and rent inflation tend to lag home prices and it is reasonable to expect that home price changes will determine rents and thus OER and rental inflation, while changes in OER and rent capture information on broad economic trends and developments (including employment, wages and personal income) that are likely to affect housing prices.

These VAR estimates reveal three important findings: 1) the optimal estimated lag between changes in home prices and changes in OER is 14-16 months, 2) historically changes in OER have momentum, suggesting it is poised to accelerate further and continue rising rapidly for over a year, and 3) the model forecasts that OER will accelerate to 5.5% later in 2022 and remain above 5% through year-end 2023 (Chart 6). The 95% confidence interval around the forecasted path is admittedly wide, but it is much narrower even with reasonably high confidence probabilities. Since the model does not reflect any information derived from private surveys of soaring rental costs like Zillow's Observed Rent Index, OER seems likely to rise close to the forecasted 5.5%.

Tight Labor Markets, Wages and Services Inflation

Services inflation will likely continue accelerating well above 5% through 2023. Services activities will recover and catch up to goods as the economy gets back to normal. Wage increases in the labor-intensive services industries will rise, reflecting tight labor markets and higher inflation built into wage contracts. The higher demand will give service providers flexibility to raise prices to offset higher operating costs.

The unemployment rate 4.0% in January 2022 and the BLS's JOLTS report for December 2021 shows an historically large gap between the demand for labor and supply (Charts 7). Job openings of 10.9 million are 4.4 million higher than the total 6.5 million unemployed in the civilian workforce, and only 1.5 million shy of the total unemployed plus 5.9 million persons not counted in the labor markets who currently say they want a job (Chart 8). These data strongly suggests that the unemployment rate will fall significantly further and labor markets will remain tight. Compounding business difficulties to maintain workforces, worker quits were 4.3 million. Amid labor shortages, workers have the upper hand and rising wages are necessary to attract them.

Service industries tend to be labor intensive. Of total 127 million employees on private payrolls, 106 million, or 83% are in service sectors including leisure and hospitality, transportation, retail and warehousing, personal and business services and education and health and medical services rely heavily on labor. Average hourly earnings for private sector production and nonsupervisory workers have risen 6.9% in the last year. They have soared 15.2% in the large leisure and hospitality sector that employs 15.2 million workers (16.9 million before the pandemic), and job quit rates are nearly double the average of all industries. In the transportation and warehousing sector, which employs 6.3 million, wages are rising 9.1% yr/yr, but very strong demand is overwhelming supply.

Although wage gains have picked up, they have not kept pace with CPI inflation (out of pocket costs). Wages are expected to catch up to the rise in inflation, and higher inflationary expectations are being reflected in wage contracts. This will occur with a lag, as wage contracts unfold over the next several years. Anecdotal evidence suggests a clear wage-inflation feedback loop.

Higher real wages are necessary to increase the supply of labor. The wage-inflation feedback loop will continue until inflation and inflationary expectations recede sufficiently to dampen nominal wage increases. Monetary tightening is required to slow product demand and lower inflationary expectations. The current labor supply shortages are expected to take a long time to ease. They will be exacerbated as the Biden Administration's infrastructure improvement initiatives ramp up and increase the demand for construction workers who are already in short supply. Upward pressure on wages are expected to persist.

The inflation outlook: adding up the situation

OER and services inflation are forecast to accelerate to at least 5.5% in 2022 and likely remain above 5% through 2023. With the services share of the PCE 61% and expected to rise back to its pre-pandemic share over 65%, CPI and PCE inflation are very likely to remain elevated even if there is disinflation or deflation in goods prices. If services inflation is 5.5%, then price stability—that is, zero inflation in goods—would result in inflation of 3.8%, far above the Fed's forecasts of 2.7% in 2022 (2.7% on core PCE) and 2.3% in 2023. Hitting those Fed forecasts would involve significant goods deflation—roughly 4%-5%. That scenario seems highly unlikely unless all supply shortages quickly dissipate and there is a material slump in aggregate demand.

The most likely scenario is inflation accelerates further in coming months and then recedes from very high levels, but nowhere close to the Fed's forecasts. The probability of inflation falling to the Fed's inflation forecast is low. The Fed can alter the inflation outcomes by tightening monetary policy. But raising rates along the path described by current Fed funds futures curve—1.4% by year-end 2022 and 2% by year-end 2023—would most likely leave rates deeply negative in real terms, insufficient to slow aggregate demand and lower inflation to the Fed's forecasts. History suggests raising rates enough to slow demand and inflation but not so much that would cause recession poses a challenge.

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Chart 1.

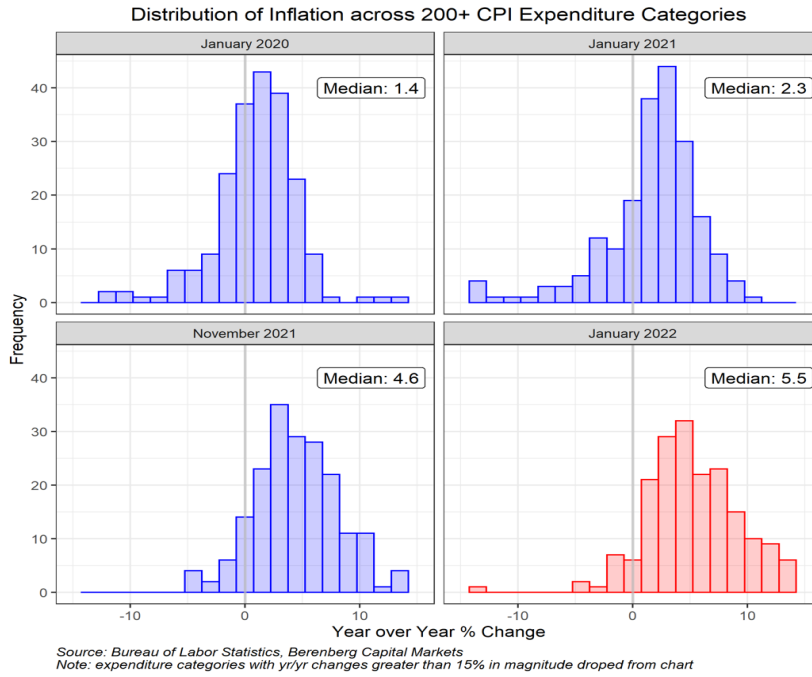


Chart 2. Distribution of CPI yr/yr % Changes

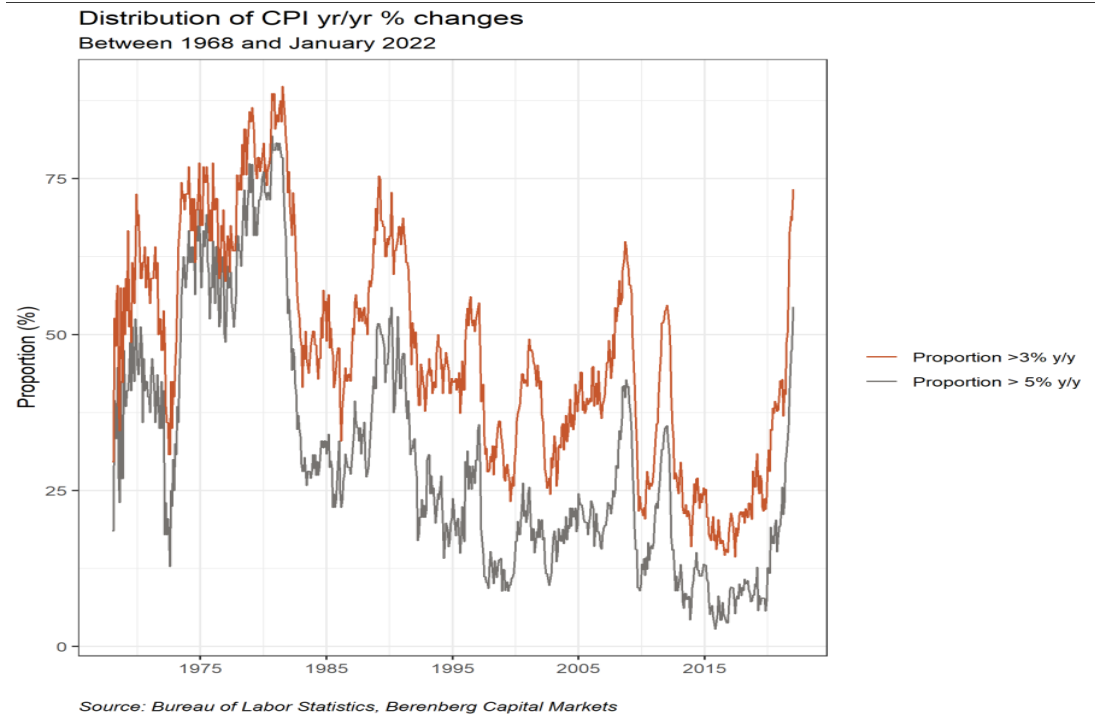


Chart 3. Nominal Consumption of goods and services, indexed to Dec 2019=100

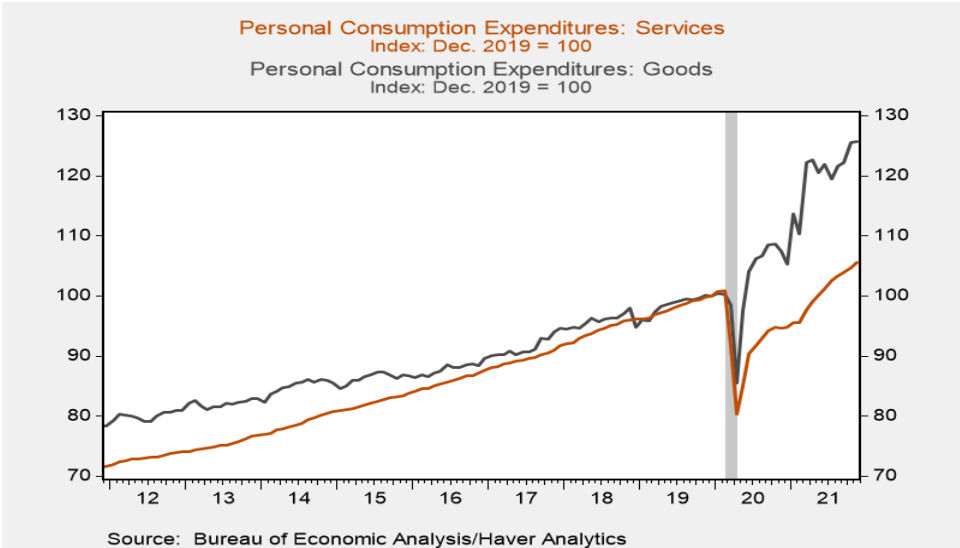


Chart 4. PCE Inflation of goods and inflation of services

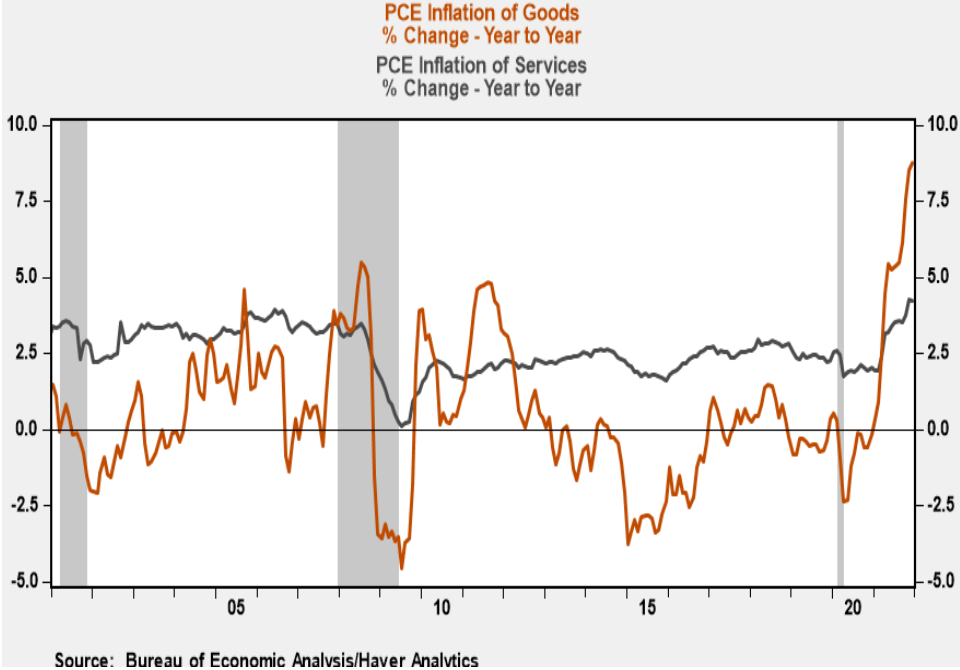


Chart 5. Home Prices, Zillow's Rental Cost Index and OER

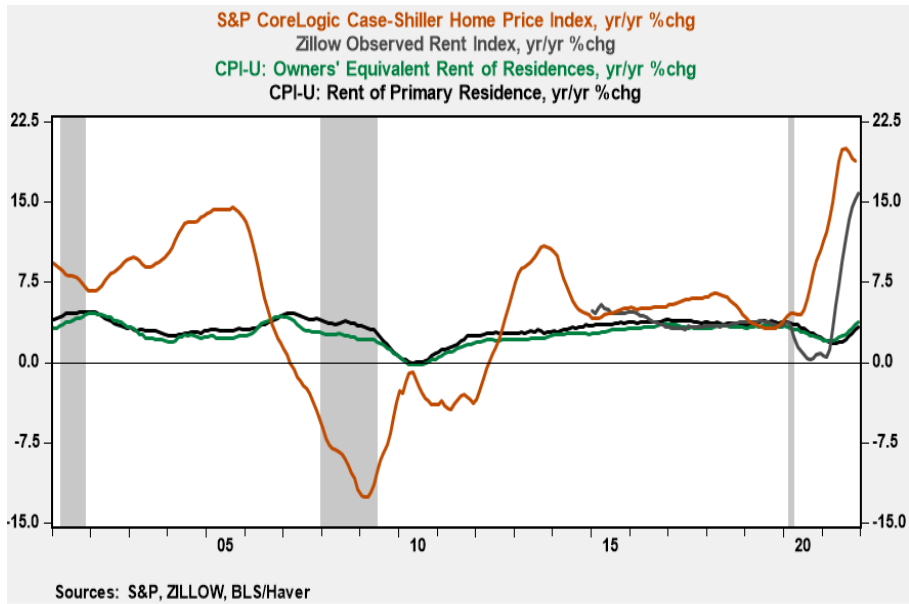


Chart 6. OER Forecast Based on VAR Model

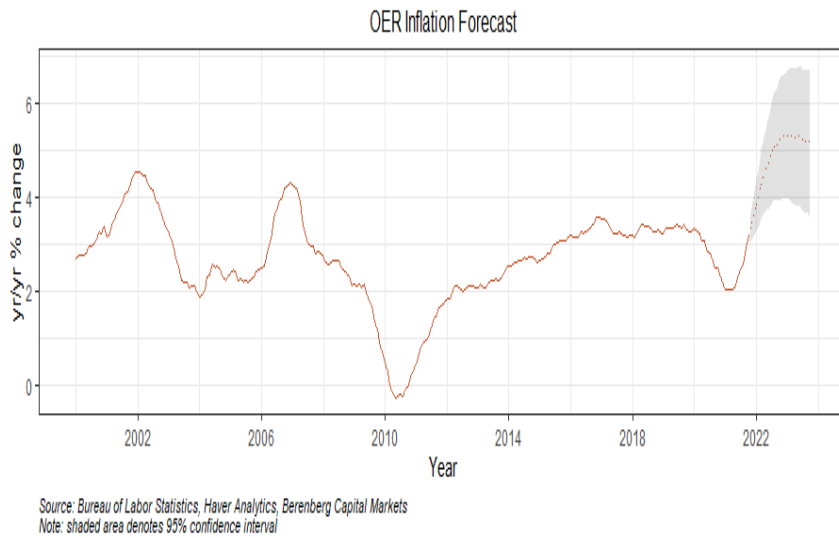


Chart 7. Job Openings, Hires and Worker Quits

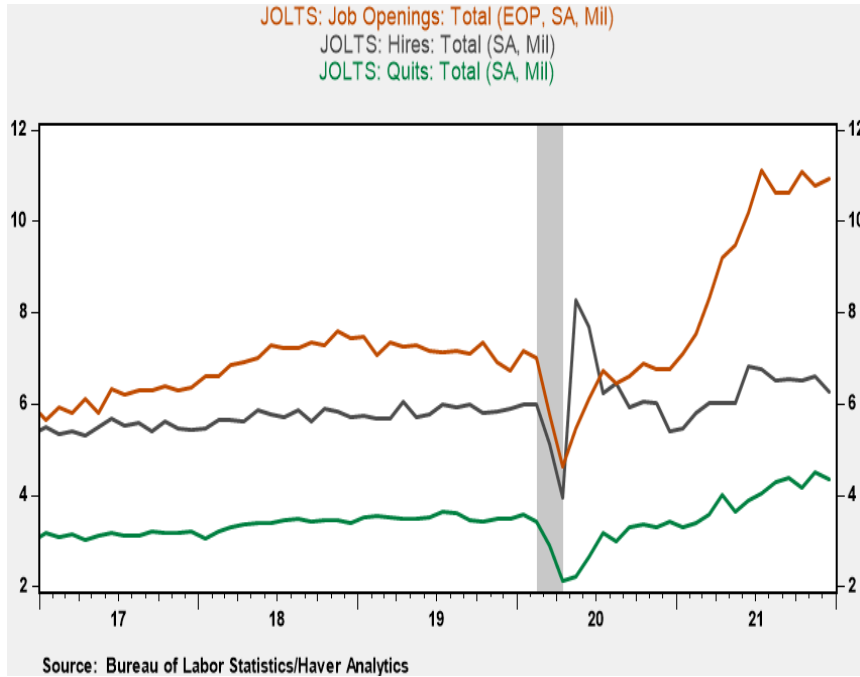


Chart 8. Job Openings Versus Total Unemployed Plus People Not in Labor Force Who Say They are Looking for Job

