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Before the House Financial Services Committee

"The Inflation Equation: Corporate Profiteering, Supply Chain Bottlenecks, and COVID-19"

March 8, 2022

Americans are feeling the financial pain of [higher inflation](#) acutely for the first time in two generations, and they are rightly unhappy.ⁱ The typical household, which makes [less than \\$70,000 a year](#), needs to spend about \$3,300 more a year, or \$275 a month, to purchase the same goods and services it did last year.ⁱⁱ Consider that the [typical family spends](#) about \$200 a month on eating out, \$150 a month on their cell phones, and \$100 a month on clothes. This is a frustrating dynamic that is undermining consumer, business and investor confidence and is a threat to the economic recovery, the fate of which hinges on whether the high inflation soon moderates.

The COVID-19 pandemic, which has badly disrupted supply chains and the labor market, has ignited the high inflation, and Russia's invasion of Ukraine, which is causing oil and other commodity prices to spike, is sure to exacerbate it. While highly uncertain, we expect the pandemic to fade in coming months, and despite the wrenching crisis in Ukraine, we expect Russian commodity exports to continue largely unimpeded. If so, inflation will moderate beginning this summer, and the economic recovery will evolve into a self-sustaining expansion.

However, if the high inflation persists, either because the pandemic intensifies, further disrupting supply chains and labor markets, or inflation expectations become unanchored and precipitate a negative, self-reinforcing wage-price spiral, perhaps due to the higher oil and other commodity prices due to Russia's invasion of Ukraine, then the Federal Reserve will have no choice but to tighten monetary policy more aggressively. The recovery may very well unravel into recession. The odds of this dark scenario are still low, but they are rising.

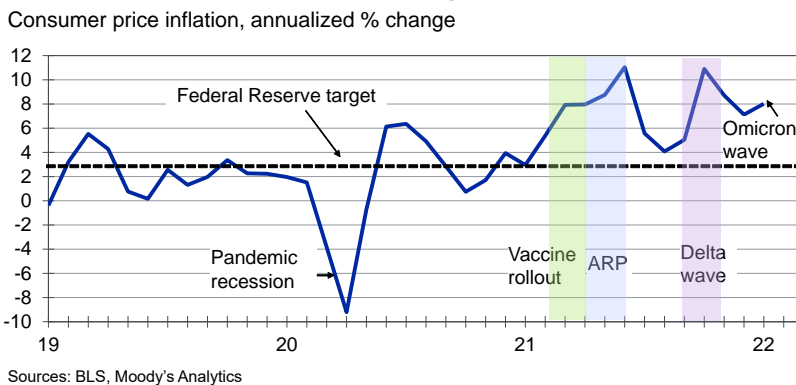
Some blame the high inflation on government fiscal policies that have shored up the finances of pandemic-stricken households during the pandemic and call for the government to stand down. This is a misdiagnosis, and lawmakers should work to lower the cost of living, especially for financially hard-pressed lower- and middle-income Americans. This includes addressing the current acute affordable housing shortage and resulting rapid rent growth.

Pandemic ignites inflation

To understand where inflation is headed, it is necessary to understand what is behind its dramatic acceleration over the past year. A year ago, consumer price inflation was very low at just over 1% on a year-over-year basis. Many businesses had slashed prices during the pandemic lockdowns in an effort to

shore up their sliding sales. This includes the airlines, rental car companies, hotels, restaurants, and other retailers. The price cutting quickly ended about this time last year with the rollout of the COVID-19 vaccines and the reopening of the economy. Consumer spending rebounded. Further supporting demand was the substantial financial support provided by the \$2 trillion [American Rescue Plan](#). Inflation picked up. The acceleration in inflation experienced last spring and early summer was largely the result of the rapid normalization of consumer demand (see Chart 1).

Chart 1: What's Behind the Higher Inflation



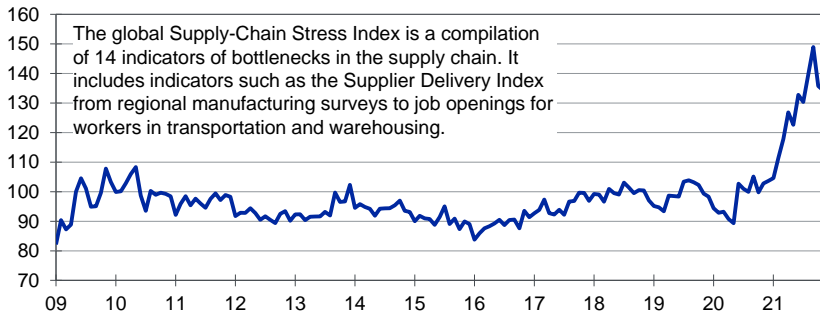
But this inflation was not worrisome, and was even viewed positively, as many businesses were simply re-establishing the prices they had previously cut. Moreover, inflation had been much too low for comfort since the global financial crisis more than a decade earlier. The Federal Reserve and other global central banks had been struggling to lift inflation to their targets.ⁱⁱⁱ Indeed, the higher inflation was consistent with the change the Fed had just made to its [monetary policy framework](#) in which, if inflation had been below its target for an extended period, the central bank would welcome a period of above-target inflation. This was necessary to ensure that inflation expectations—what consumers, businesses and investors believe inflation will be going forward—were stable and consistent with the target for actual inflation.

Inflation only became uncomfortably high when the Delta wave of the pandemic hit in late summer last year. This inflation was a surprise, but so too was the Delta variant, as it came immediately on the heels of the vaccine rollout and widespread optimism that the pandemic was more-or-less behind us. Remember [President Biden's July 4th speech](#) celebrating independence from COVID-19. Unfortunately, we were not free.

Delta slammed consumer demand as it prompted renewed self-quarantining, social distancing and border restrictions. By itself this would moderate inflation, but Delta also severely disrupted supply. Global supply chains were badly scrambled. This wave of the pandemic was especially hard on Southeast Asia, which was lightly vaccinated at the time, and where most supply chains begin. Just how hard is shown by our supply-chain stress index, which is a combination of various purchasing manager surveys, transportation costs, and job openings in the transportation and distribution industries. The index is set equal to 100 just prior to the pandemic. At the worst of the supply-chain disruptions last September, the stress index topped out at nearly 150 (see Chart 2).

Chart 2: Supply Chains Under Stress

Supply-chain stress, 2019Q4=100



Sources: Baltic Exchange, Federal Reserve, Census Bureau, Cass Info, Moody's Analytics

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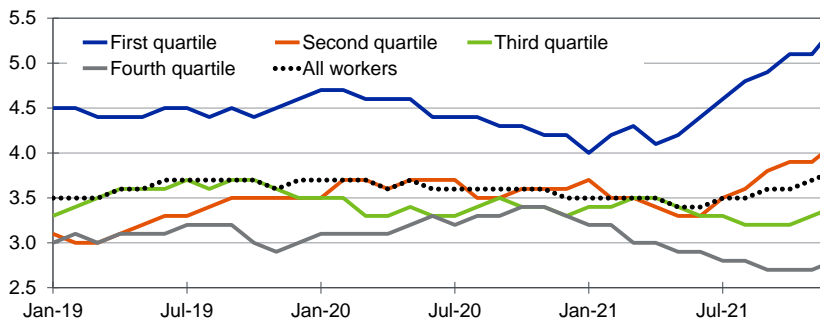
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The job market was also roiled by the Delta wave as some 8 million people told the [Bureau of Census' Pulse Survey](#) in September that they were not working because they were either sick, taking care of someone who was sick, or fearful of getting sick. This is largely why so many open positions have gone unfilled, particularly for lower-wage jobs in industries where workers are in close contact with their patrons, such as retail, restaurants, healthcare, and education and childcare services.

Wage growth has sharply accelerated, as employers struggle to keep their businesses staffed, especially for these types of jobs. Then came the Omicron wave. It further complicated efforts to get workers back on the job. In January at the peak of that wave, some 12 million people told Census they were not working because of the virus. It could have been worse, but the impact of Omicron on the job market likely was mitigated partially by the [Centers for Disease Control and Prevention's decision](#) to reduce from 10 to five the number of days someone testing positive with the virus needs to safely self-quarantine (see Chart 3).

Chart 3: Wages Accelerate, for Low-Wage Workers

12-mo MA of median wage growth, %



Sources: Atlanta Fed, Moody's Analytics

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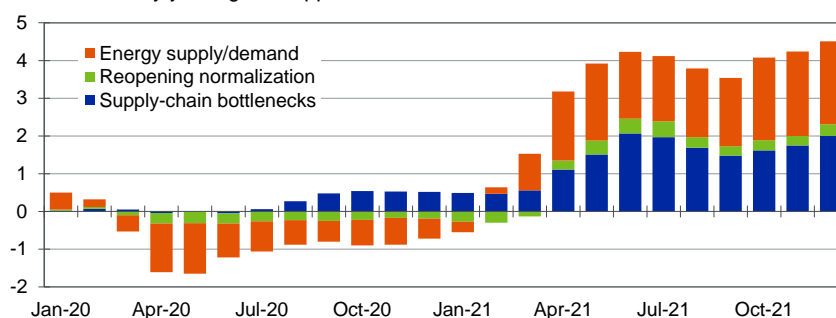
The pandemic has also jumbled demand and supply dynamics in energy and other commodity markets. It is typical for demand to pick up before supply in these markets coming out of global economic downturns, causing inventories to be depleted and prices to jump. Producers are slow to

respond to improving demand, unsure of whether the demand is sustainable. Given the substantial fixed costs involved in ramping production back up, getting wrong-footed on demand is particularly problematic. And the nature of the pandemic has made getting an accurate fix on global demand especially vexing. Energy markets have the added complication that supplies are determined by a few swing suppliers like OPEC and are heavily impacted by geopolitics like Russia’s invasion of Ukraine, which have an amplified effect on oil and natural gas prices when inventories are thin.

As of this January, year-over-year consumer price inflation is at a painful 40-year high of 7.5%. Of this inflation, 4.5 percentage points can be explained by a combination of the supply-chain bottlenecks, higher energy prices, and price normalization in industries that slashed prices in the worst of the pandemic. That is, CPI inflation would currently be near 3% if not for the direct fallout of the pandemic on prices. And it is not a stretch to think inflation would be very near the Fed’s implicit CPI inflation target of closer to 2.25% after accounting for the pandemic’s impact on wages and ultimately prices^{iv} (see Chart 4).

Chart 4: Pandemic Behind the High Inflation

Contribution to y/y CPI growth, ppt



Sources: BLS, Moody's Analytics

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Russian invasion of Ukraine

Russia's invasion of Ukraine complicates things measurably further, ensuring the pain of inflation is set to get worse and last even longer. [Global oil prices](#) have risen dramatically since the invasion began, to as high as \$115 per [barrel](#).^v Even though global supplies have not been significantly disrupted by the Russian invasion, there is a considerable threat that they will be. The higher prices we are seeing are a premium that oil traders have added to compensate for this risk. If supplies are in fact significantly disrupted, we could see oil prices rise to near the previous all-time high of \$150 per barrel and gasoline prices increase to well above \$5 per gallon.^{vi}

Even assuming there are no supply disruptions, and oil settles in near \$100 per barrel in coming months, American consumers will still soon be paying well over \$4 for a gallon of regular unleaded. If sustained, \$100-a-barrel oil would ultimately add as much as half a percentage point to year-over-year consumer price inflation, based on simulations of the Moody's Analytics model of the global economy, which accounts for the impact of higher oil prices on the production and transportation of goods. This would cost American households another \$50-plus per month in higher gasoline bills.

Also worrisome is that oil and gasoline prices play an outsize role in shaping the [inflation expectations](#) of global investors, businesses and consumers. Most of us purchase gas regularly and see the price each day as we go to and from work. Nothing influences people's thinking about future inflation more than what they are paying at the pump today. If inflation expectations start to rise, then the Federal Reserve will likely feel compelled to raise interest rates more aggressively. The Fed knows that a rise in inflation expectations may ignite a so-called wage-price spiral. That is, workers will demand their employers pay them more to compensate for the expected increase in their cost of living, businesses will agree to do so if they think they can pass the higher cost along to their customers, and so it goes. The last time this happened, in the 1970s and early 1980s, it ended very badly with a struggling economy that was suffering double-digit inflation at the same time—or [stagflation](#). The only way to break the wage-price spiral was for the Fed to dramatically increase [interest rates](#), pushing the economy into recession.

Policymakers have few tools to quickly stem the increase in oil prices. President Biden has ordered that oil from the nation's [Strategic Petroleum Reserve](#) be released to help quell higher oil prices. Allies in Europe and Asia are taking similar action, which will provide an additional 60 million barrels to global markets. While this is the right thing to do—the SPR is supposed to be used in crises like the current one—it is much too little to have an impact on prices. The world consumes about 100 million barrels of [oil](#) a day. However, criticism that the administration's efforts to address the threat posed by [climate change](#) is significantly contributing to the higher oil prices is specious. To be sure, the administration is working to make fossil fuel production less economically attractive and green energy investments more, but this will play out over years and decades.

Russia's invasion of Ukraine is wrenching to watch as it inflicts an enormous toll on the Ukrainian people. For their sake we hope there is a resolution soon. It is also critical to ensure that the high inflation we are suffering recedes and the economic recovery remains intact.

Inflation outlook

Given this diagnosis of what is driving inflation, it stands to reason that inflation will moderate as the pandemic winds down and there is some easing of the crisis in Ukraine. There is much uncertainty, but with regard to the pandemic, it should meaningfully abate in coming months, consistent with its recent path and the steady improvement in vaccines and therapies.^{vii} There will likely be new waves of the virus, but each new wave should be less disruptive to the healthcare system and economy than the previous wave. Omicron was less disruptive than Delta, which was less disruptive than the Alpha variant that plagued us a winter ago. We expect the pandemic to continue to recede in this way.

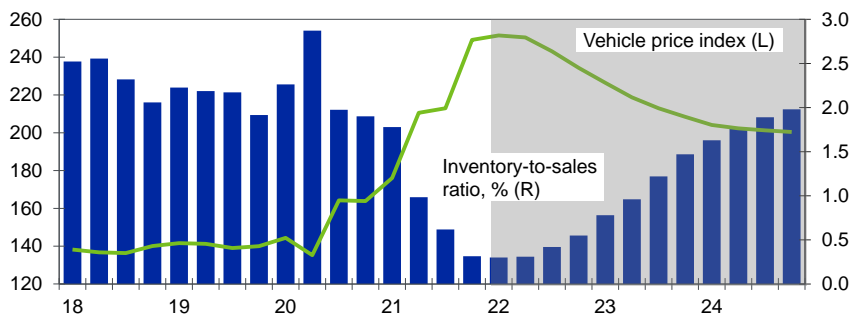
How the Russian invasion of Ukraine plays out is arguably even more uncertain, but in the most likely scenario Russian troops will not push outside of Ukraine into a NATO country, and there will not be prolonged disruptions to Russian energy and other commodity exports. While no scenario should be ruled out, it is difficult to imagine Russia doing otherwise, since that would almost surely result in a global military conflict and push the already-reeling Russian economy even deeper into the abyss.^{viii}

If the pandemic and the Ukrainian crisis more-or-less stick to this script, we expect consumer price inflation a year from now to be about half of what it is today, no more than 4%, and back near the Federal Reserve's inflation target of closer to 2.25% by year-end 2023.

This generally sanguine inflation outlook depends on goods prices, which have gone skyward in the pandemic, soon coming back to earth. Vehicle prices should lead the way. New- and used-vehicle prices spiked as global vehicle production shut down after the pandemic struck, and then when Asian semiconductor producers curtailed production during the Delta wave, cutting off critical supplies to vehicle producers. Asian chip production has since resumed, global vehicle production is ramping up, and vehicle inventories, while extraordinarily low, are off bottom. Vehicle prices are expected to begin falling this summer (see Chart 5).

Chart 5: Vehicle Prices Go Up, and Will Come Down

Vehicle prices will decline as inventories are replenished



Sources: BEA, Moody's Analytics

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There should also be a rebalancing of consumer demand from non-vehicle goods to services, and thus a rebalance of their relative prices. While total consumer spending is still not back to where it would have been if not for the pandemic, spending on goods is well above pre-pandemic trends and spending on services is well below. As the pandemic and the demand for goods fades, goods prices should quickly turn soft, more than offsetting, at least for a while, stronger service price inflation, most notable being stronger rent growth.

Monetary policy normalization

Optimism that inflation will soon moderate also depends on the Federal Reserve gracefully normalizing monetary policy. The complication is that even if inflation moderates with the fading pandemic and easing in the Ukrainian crisis, the economy is quickly approaching full employment.^{ix} The Fed thus needs to carefully calibrate monetary policy so that growth slows sufficiently as the year progresses and the economy does not blow past full employment. If it does, then inflation will remain problematic.

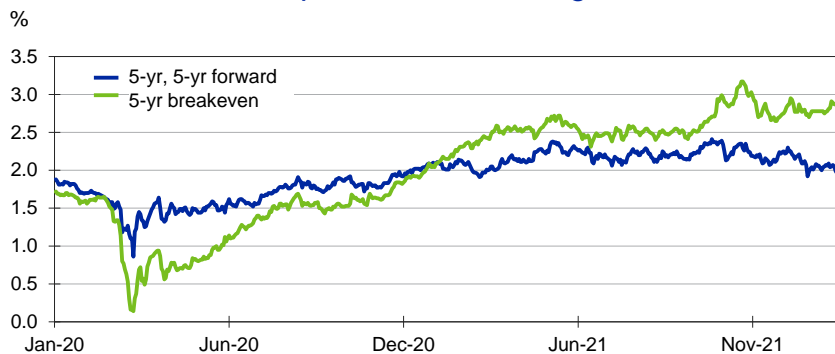
We anticipate this will require the Fed to increase the federal funds rate four times this year, a quarter percentage point each time, beginning at the mid-March meeting of the Federal Open Market

Committee and then at FOMC meetings in June, September and December. We expect more rate hikes in 2023 and early 2024 with the federal funds rate, the rate the Fed directly controls, to settle in at 2.5%. The Fed will also begin quantitative tightening in June by not replacing maturing Treasuries and mortgage securities that mature and prepay. The Fed's balance sheet will shrink by approximately \$100 billion per month. Financial conditions have tightened as global investors anticipate the Fed's actions. Ten-year Treasury yields are hovering just below a pandemic high of 2%, and the Standard & Poor's 500 stock price index is down about 10% from its all-time high at the beginning of the year.

But this may not be enough to sufficiently slow the economy, and even more monetary tightening could be needed. Despite the Russian invasion, global investors are anticipating that the Fed will [increase rates](#) as many as seven times this year in an effort to stem inflation. And even this may underestimate how the Fed will respond if inflation remains stubbornly high. If it does, the likely cause will be unanchored inflation expectations that set off a negative, self-reinforcing wage-price spiral.

So far, this does not appear to be happening. Inflation expectations, however measured, have moved higher over the past year but remain roughly consistent with the Fed's inflation target. But they appear fragile and bear close watching. And while it is difficult to disentangle the causality between wages and prices, it does not appear to be running in both directions, at least not to a significant degree, at least not yet (see Chart 6).^x

Chart 6: Inflation Expectations Are Fragile



Sources: Federal Reserve, Moody's Analytics

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However, if inflation does remain high for very much longer, for whatever reason, all this could quickly change. It is hard to see the Fed tolerating this for long, knowing based on the experience of the 1970s-1980s that the economic cost of waiting too long to short-circuit a wage-price spiral is extraordinarily high. The Fed would likely be willing to risk a modest recession sooner to ensure that inflation does not become an endemic problem.

Address the housing shortage

Lawmakers can help address the high inflation over time and the financial burden it puts on lower- and middle-income Americans. President Biden has provided a good place to start in his [Build Back](#)

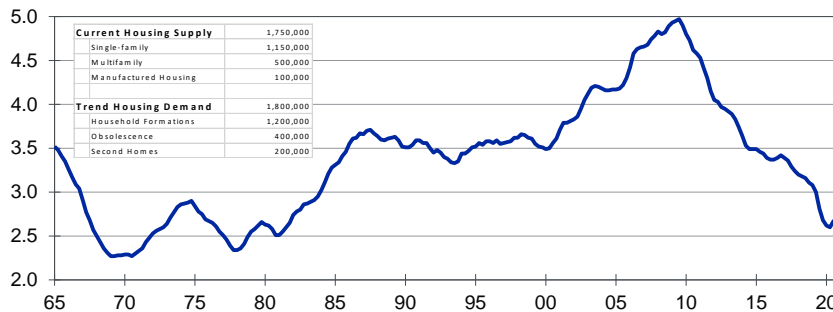
[Better legislation](#), which is specifically designed to ease this burden for these income groups by helping with the cost of childcare, eldercare, education, healthcare and housing.

Homebuilders have been unable to keep up with demand for well over a decade, held back by restrictive zoning requirements, high permitting costs, and often an inability to get affordable financing to buy land and build homes. The pandemic has made matters worse, with acute shortages of materials and labor, but the problems from prior to the pandemic show no signs of fading along with the effects of the virus.

The scale of this shortfall is unnerving. We estimate that homebuilders have built on average 150,000 fewer homes a year than we have needed, going all the way back to the financial crisis. The 1.7 million home shortfall amounts to an entire year of homebuilding at its current pace. Both rental units and single-family homes are in short supply (see Chart 7).

Chart 7: The Housing Supply Shortage Intensifies...

Vacancy rate for homes for sale and rent, 4-qtr MA, %



Sources: Census Bureau, Moody's Analytics

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The shortfall has sent the cost of housing through the roof. House prices have more than doubled over the last decade, rising close to 20% in the last year alone. And rents are up a record 13.5% nationwide over the past year, with increases of more than 20% in metropolitan areas such as Austin, Las Vegas, Phoenix and Tampa. All of this is draining the savings of renters, putting homeownership further and further out of reach.

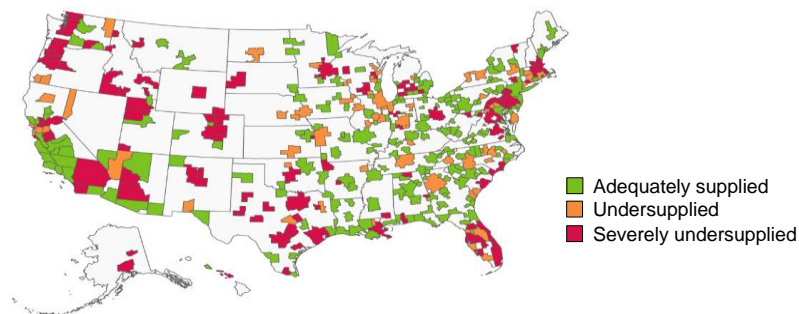
It is also putting enormous upward pressure on inflation. Housing alone counts for almost one-third of the typical household's budget, making it the single biggest component of the consumer price index, or CPI, the most popular measure of inflation. Food and energy together account for about one-fifth of the CPI, and all other goods, from clothing to vehicles, another one-fifth. No matter what happens to pricing across most goods, inflation will remain high as long as the cost of housing continues to rise so quickly.

So, if policymakers wish to rein in inflation, they have little choice but to take on the shortfall in housing supply. This means improving the economics of building enough to overcome the costs that have been holding builders back in recent years. This can be done in any number of ways, including tax breaks, grants, access to less expensive capital, and incentives to get local decisionmakers to ease zoning rules and restrictions on development.

[President Biden](#) has provided a good place to start in his Build Back Better legislation, which includes \$18 billion in tax incentives for new construction and renovation, \$30 billion in grants for new construction and renovation, and another \$5 billion in grants for communities committed to removing the impediments to building more affordable housing, all over a 10-year budget window.^{xi} Such a package would lead to the building of an estimated over half a million homes, meaningfully closing the gap between supply and demand that is driving the surge in house prices and rents.

There should be strong bipartisan support for a package along these lines. After all, the affordable housing shortage is a problem in every state and almost every congressional district. Whether Congress uses this bill as its starting point, policymakers need to step up, and those worried about inflation should be first in line. While the other drivers of inflation are set to ease in the coming months, the shortfall in housing is not going to be resolved anytime soon unless policymakers do something (see Chart 8).

Chart 8: ...In Much of the Country



Sources: Census Bureau, Moody's Analytics

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Conclusions

It may be hard to remember, but only a year ago our far-and-away biggest economic problem was jobs. The economy was still down 9 million jobs from its pre-pandemic peak and the unemployment rate was stuck at just over 6%. Inflation was not even on the radar screen. Policymakers were thus appropriately focused on ensuring the economy returned to full employment as quickly as possible. The Fed was firmly committed to keeping the federal funds rate at the zero lower bound and actively buying bonds to bring down long-term interest rates. Lawmakers passed the nearly \$2 trillion American Rescue Plan to provide additional financial support to lower- and middle-income households and small businesses.

[These policies, along with the vaccines, worked.](#) The economy created 6.5 million jobs last year and is on track to fully recover from the pandemic by late this year, fewer than three years after the pandemic struck. It took a decade for the economy to come all the way back from the financial crisis, and it has taken closer to six years on average for the economy to [recover from recessions](#) since WWII. But the supply disruptions created by the pandemic have ignited painfully high inflation that the Russian invasion of Ukraine is sure to exacerbate. Whether the recovery evolves into a self-sustaining economic

expansion depends on whether inflation soon moderates. We anticipate that it will. However, if not, the recovery will quickly be in jeopardy. Lawmakers have an important role to play in determining how the recovery will unfold.

ⁱ Consumer price inflation in January 2022 was 7.5% on a year-over-year basis, the highest since February 1982.

ⁱⁱ This is based on my calculation using the Bureau of Labor Statistics' [Consumer Expenditure Survey](#).

ⁱⁱⁱ Between the start of the global financial crisis in 2008 and when the pandemic hit in early 2020, inflation as measured by the personal consumption expenditure deflator, the Federal Reserve's preferred measure, averaged almost half a percentage point per annum below the Fed's 2% target.

^{iv} The Federal Reserve has an explicit 2% target for inflation as measured by the personal consumption expenditure deflator. Inflation as measured by the consumer price index is typically at least a quarter percentage point higher due to measurement and conceptual differences between these inflation measures. The difference is closer to half a percentage currently, as the cost of housing services is rising quickly, and the weight on the cost of housing services in the CPI is about double that in the PCE deflator.

^v Prices for other commodities exported by Russia and Ukraine have also risen sharply, including for aluminum, corn, neon, nickel, palladium and wheat.

^{vi} A good rule-of-thumb is that every \$10 per barrel increase in the price of oil, ultimately results in a 30-cent increase in the cost of a gallon of regular unleaded gasoline.

^{vii} Households and businesses also appear to be increasingly more adept at adjusting to and navigating around the problems created by the pandemic.

^{viii} We expect the Russian economy to contract by nearly 10% this year before stabilizing in 2023. The country's long-term growth potential has also been significantly diminished.

^{ix} Full employment is consistent with unemployment in the low 3% range, labor force participation near 63%, and an employment-to-population ratio for prime-age workers 25-54 of over 80%. The unemployment rate is 3.8% as of February 2022, labor force participation is 62.3%, and the prime-age EPOP is 79.5%.

^x Chart 6 shows global investors' inflation expectations as measured by five-year, five-year forwards, which is inflation five years from now over the subsequent five-year period, and five-year break-evens, which is the difference between five-year Treasury yields and five-year Treasury Inflation Protected Securities. Investor expectations are a more reliable gauge of inflation expectations than consumer or business expectations, as they reflect the views of people putting their money at risk.

^{xi} The tax incentives include additional funding for the popular and highly effective Low-Income Housing Tax Credit, and the Neighborhood Home Tax Credit, a new tax credit to help support the rehabilitation and renovation of old rundown housing stock. The grants include funds primarily for the Housing Trust Funds and HOME program.