

Appalachian Highlands Economic Update

SPECIAL FEATURE: HURRICANE HELENE

MACROECONOMICS

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Hurricane Helene: Navigating the Multi-Layered Impact on Appalachian Highlands Supply Chains

Matthew T. Jenkins, Ph.D. • Assistant Professor of Supply Chain Management

Hurricane Helene's effects are multi-layered, creating both long-term and short-term challenges. From a practical standpoint, there are two categories of these effects to consider: primary effects (direct results from the storm) and secondary effects (derived effects as a result of activities following the storm). The primary effects are related to significant damage to critical logistics infrastructure, including roads, bridges, manufacturing plants, distribution centers, and other facilities. For example, the current status is that I-26 is shut down from mile marker 37 in TN to mile marker 3 in North Carolina. Interstate 40, meanwhile, is shut down at mile marker 440 in Tennessee and mile marker 20 in North Carolina. Both corridors are essential for supplying goods to our region, especially from the ports of Charleston and Savannah. The stretch of I-26 carries more than 17,000 vehicles daily, while the stretch of I-40 averages nearly 24,000. In addition, the North Carolina Department of Transportation had indicated that the repairs to I-40 would take "months" at a minimum, while repairs to I-26 could take even longer.

As a result, shipments are being rerouted, and in some cases, it takes twice as long to journey from North Carolina to Tennessee. This affects bulk and retail shipping, including grocery stores, retail pharmacies, etc. As a result, delivery lead times to stores and consumers will increase, and consumer prices for everyday items are expected to increase by 20% in the short term. This will especially be a problem for individuals living in northeast Tennessee and western North Carolina, who are in dire need of supplies due to the devastation and recovery efforts. Looking further out, there are implications for the broader supply chain. For example, North Carolina facilities that mine and process quartz used in semi-conductor production, fiber-optic cables, and solar panels have been shut down. Few facilities worldwide can produce the ultra-high-quality quartz necessary to manufacture these devices. Two such sites are located in Spruce Pine, North Carolina, which was devastated by the floods. If the flow of quartz from these sites is not restored soon, it could disrupt the production of these products. This has far-reaching, international effects. China is a major manufacturing hub for solar panels, and those manufacturers heavily rely on high-quality quartz from Spruce Pine.

The secondary effects relate to shifting and unpredictable demand for essential items such as food, medical supplies, paper products, water, and other goods often purchased in high volumes immediately following a disaster. In addition to the areas directly affected by the floods, surrounding and adjacent regions will also experience shortages of these products, at least in the short term. This is because consumers in these areas purchase these materials to provide them to relief organizations working in North Carolina and places like Erwin, TN. However, grocery stores and other retail outlets may be left

unprepared for this sudden surge in demand and may quickly run out of supplies. Moreover, longer delivery times will exacerbate this issue, as road closures and other logistical challenges will impede the transportation of essential goods to the affected areas, further contributing to the shortage. While these shortages are not expected to last in the long term, the cascading effects will be felt far outside our region and may result in higher prices and empty shelves.

These secondary effects can be traced back to the specific challenges of humanitarian logistics operations. Humanitarian logistics (i.e., logistics that deal specifically with emergency and disaster response) is complex to manage. This logistics process is used to purchase, transport, track, trace, and deliver water, medical supplies, food, and other critical materials to alleviate individuals' suffering in and around a disaster area. This type of logistics is complicated and not as straightforward as normal distribution. This is due to the limited availability and dispersion of critical resources, high uncertainty in specific needs of those affected, lack of centralized inventory tracking and planning, infrastructure damage, and an urgency to help as many people as possible as quickly as possible. Additionally, dozens and sometimes hundreds of agencies, emergency response teams, and relief organizations are involved in the same effort – creating significant communication and coordination barriers. Often, this leads to imbalanced and misallocated availability, where there are too many supplies in one place and insufficient supplies in other locations. Here, the problem is not a shortage of supplies; the problem is that supplies are in the wrong place. As we move forward, the humanitarian logistics planning will become more centralized, the distribution of these materials will smooth out, and the availability of supplies will become more balanced. However, this will take time.

Overall, it will take significant planning, synchronization, and collaboration across the various manufacturers, logistics service providers, governmental agencies, municipalities, financiers, and other organizations within the Appalachian Highlands Supply Chain Ecosystem for the region to recover fully. The speed of this recovery will depend on the depth and breadth of these collaboration efforts. To assist in these collaboration efforts, ETSU is hosting a supply chain summit on November 15th focused on the Appalachian Highlands Supply Chain Ecosystem, which is free to attend. It includes presentations and workshops to assist our region's organizations with rebuilding and recovery efforts. This summit includes presentations from several high-level supply chain professionals on intelligent supply chain systems, AI, and the circular economy. In addition, there will be sessions on the impacts of Hurricane Helene on the region, including a path forward for recovery and a workshop on AI implementation ([click here for more information](#)).



Economic Ramifications for the Appalachian Highlands in the Wake of Hurricane Helene

Dr. Jon L. Smith, Ph.D. • Director, Bureau for Business & Economic Research

Hurricane Helene has had an enormous impact on thousands of the region's residents. The losses of loved ones, homes and belongings will impose months of mental and physical hardship on those affected by the storm. Please heed the calls for aid and support for those who have lost so much.

There have been varying degrees of damage in all of the eight counties within the Appalachian Highlands regions. Fortunately, the region's two MSAs, Kingsport-Bristol TN/VA and Johnson City, have been spared catastrophic damage.

There has been severe damage to the region's infrastructure. The Tennessee Department of Transportation reported that as of Monday September 30, five bridges have been destroyed, three in Washington County and two in Unicoi County. An additional 14 bridges and 27 sections of TDOT roadway have been closed. It will take months to fully evaluate the damage to the remaining bridges and dams that were affected by the storm and even longer to complete repairs and rebuilding.

The region's railroads are assessing their tracks and rights-of-way to evaluate the effects of the flooding. Interstates 26 and 40, important transport links to the South, have had significant damage and will be undergoing repairs for months to come. Businesses within the region will be scrambling to readjust existing supply chain configurations. We should expect delays in shipments as well as temporary price spikes for transportation services and intermediate products. Several communities have significant damage to their power distribution grids, water treatment facilities and cell phone towers. Five counties, Carter, Greene, Sullivan, Unicoi and Washington, have urged consumers to conserve water.

A number of health care providers, including the Unicoi Hospital and numerous urgent care facilities have been either taken out of service or severely affected. Many residents requiring

specialized medical equipment and medication are experiencing difficulties in locating support. Dozens of businesses and hundreds of residential structures have been severely damaged or destroyed. It will take months to evaluate possible environmental damage.

Three of the most heavily hit counties, Carter, Greene and Unicoi are home to about 27% of the eight-county's labor force and generate about 19% of the region's GDP. The table below, taken from the U.S. Census Bureau web site, shows the historic workforce flows among the eight counties. Although the numbers are dated, the table provides an indication of the portions of the intercounty commuting workforce that may be affected by the disaster. There will be disruptions in workforce attendance not only due to roadway damage but also due to the fact that many residents have lost their means of transportation.

There will be a significant reduction in the region's economic activity. Local sales, seasonal tourism related revenues and manufacturing output will be negatively impacted over the next several months. Local sales tax collections will also be negatively affected. Residents and businesses should expect to see transient price spikes for necessities and inputs and increased demand for rental housing with associated upward pressure on rental rates.

While there will be a decline in regional GDP for several months, a review of the impacts of similar events has paradoxically shown that the affected communities often experience long-term increases in GDP. State and federal disaster relief funds will be flowing into the region well into the next fiscal year. There will be a surge in construction activity which will result in extended indirect and induced economic impacts.

U.S. Census Bureau Estimates of Eight-County County-to-County Commuting Flows by Residence (5-Year American Community Survey: 2015-2020)

Residence County	Carter	Greene	Hancock	Hawkins	Johnson	Sullivan	Unicoi	Washington	Other	Total
Carter	9,794	62	0	35	219	2,919	0	7,904	1,809	22,742
Greene	36	21,328	31	430	0	832	54	2,335	2,326	27,372
Hancock	12	0	1,017	161	0	34	0	14	790	2,028
Hawkins	20	510	0	10,039	14	6,049	7	973	3,795	21,407
Johnson	174	0	0	0	3,638	0	15	297	1,507	5,631
Sullivan	518	323	0	1,732	3,638	45,679	259	9,398	4,191	65,738
Unicoi	504	32	0	24	12	373	3,242	2,799	357	7,343
Washington	1,346	1,972	0	287	118	9,255	1,302	42,347	2,231	58,858

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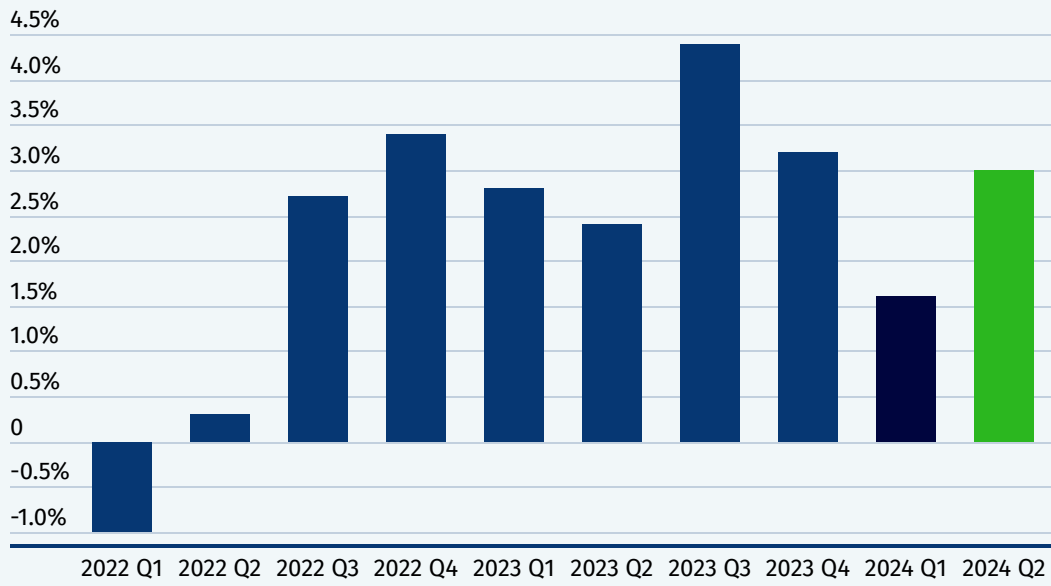
HOUSING

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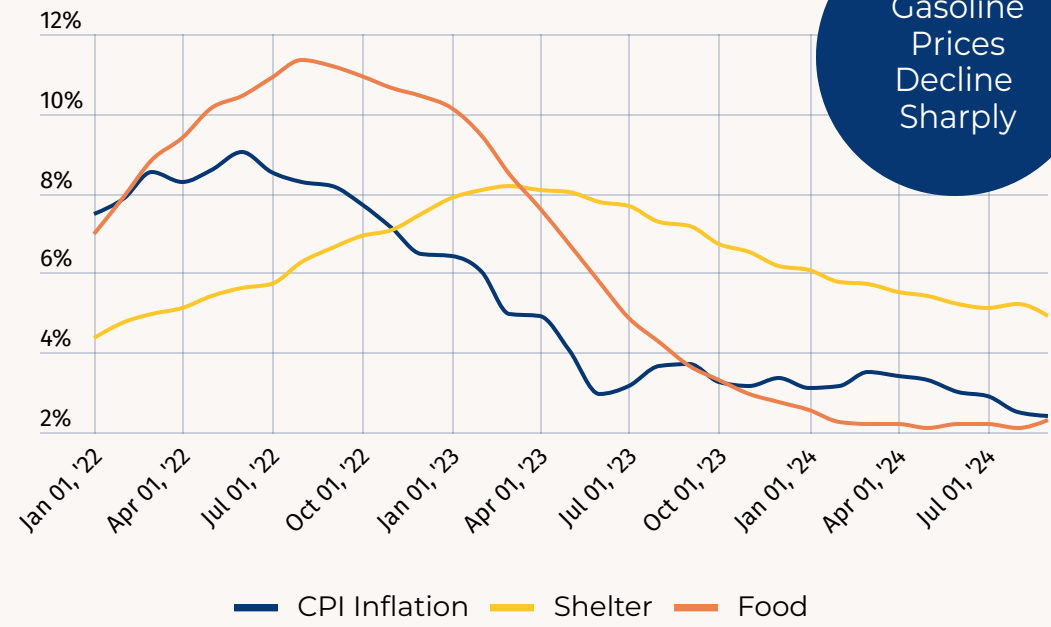
Macroeconomics

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GDP Growth Rate

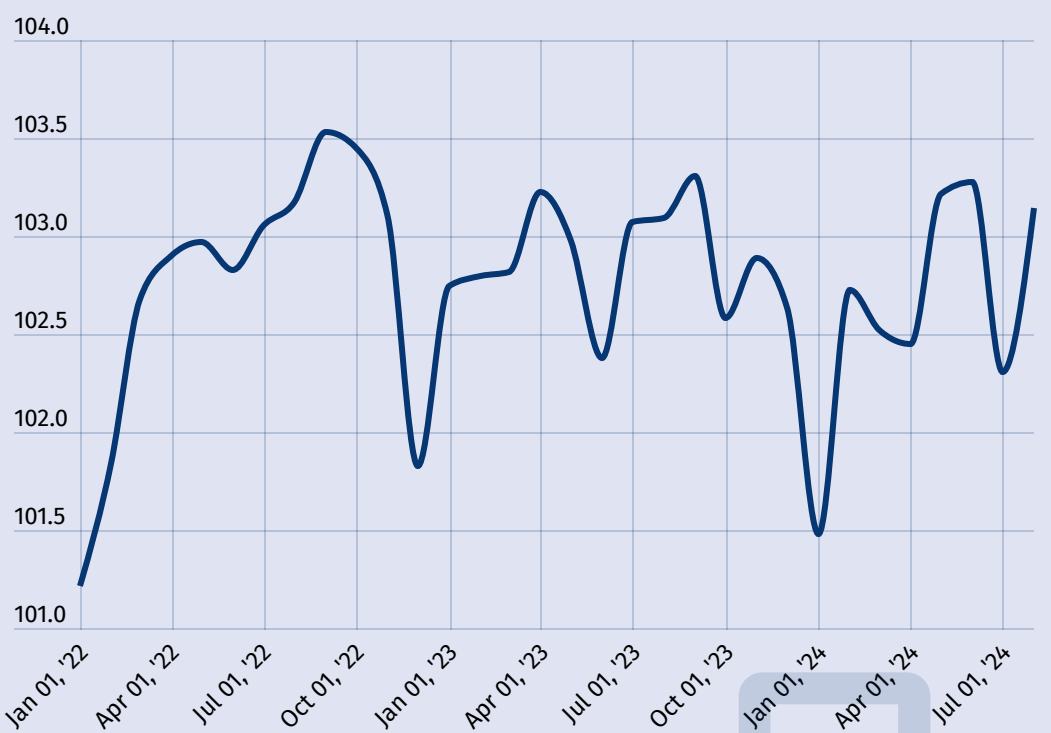
The U.S. economy grew at a robust 3% in the second quarter of 2024, compared to a sluggish first quarter (1.6%). The expansion was primarily due to a better-than-expected performance in consumption (2.8%) and investment (8.3%) spending. Government spending also rose by a solid 3.1% due to a number of new infrastructure and clean energy projects. Some of these gains were offset by a sharp increase in the trade deficit as imports surged by 7.6%, the fastest in two years. Additionally, residential activity decelerated by 2.8% after growing for four straight quarters.



Inflation

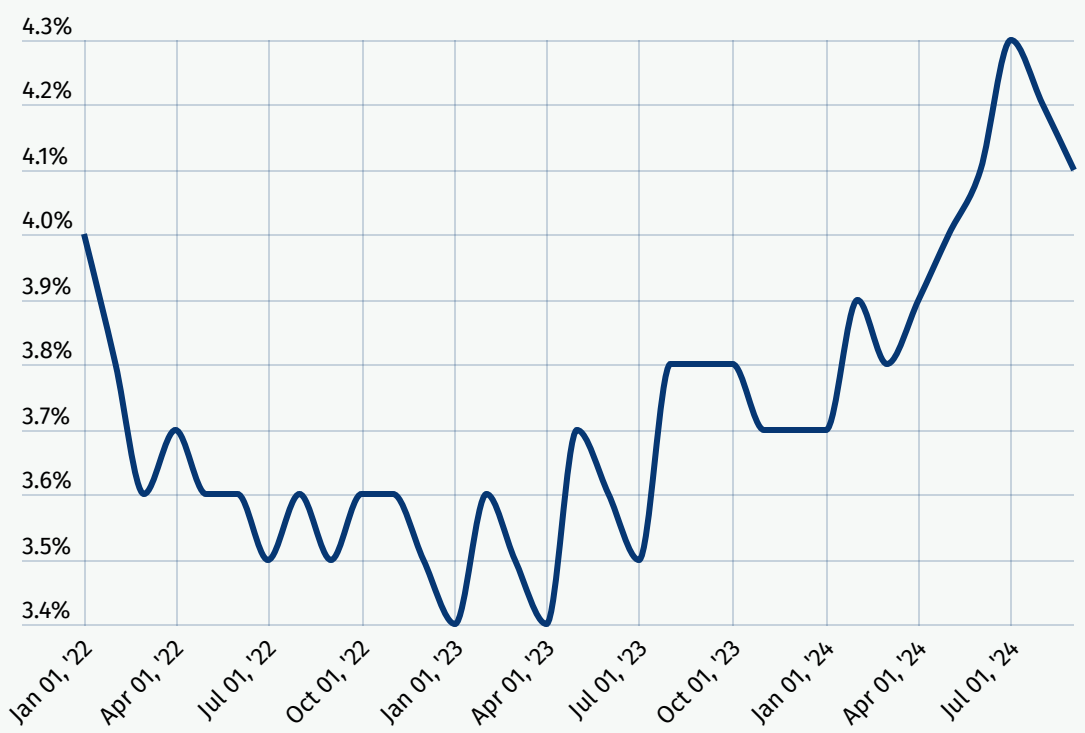
Inflation continued its downward trajectory and cooled down to 2.4% on a year-on-year basis in September 2024. This is now the seventh successive month where inflation has fallen since March 2024. Among the primary components, energy prices decelerated by 6.8%. Gasoline prices in particular declined sharply by 15.3% compared to last year, bringing relief to households. Shelter price inflation also cooled down to 4.9%, the lowest since February 2022. On the other hand, core inflation (which excludes food and energy prices) inched up higher to 3.3%, signaling that the underlying long term inflationary forces are still persisting.

Index 2017=100



Industrial Production

The industrial production index grew by 0.8% in August after dipping by 0.9% in the previous month. Both, manufacturing (0.9%) as well as mining (0.8%) recorded positive growth, while utilities remained unchanged. Within manufacturing, motor vehicles and parts grew the fastest at 9.8%, after a deceleration in the previous month. There was also a rebound in business equipment, consumer goods, and construction supplies. Overall capacity utilization inched up to 78%, which is still 1.7% below the long run average, suggesting room for expansion.



Unemployment Rate

The unemployment rate fell to 4.1% in September 2024, after peaking in the month of July (4.3%), once again highlighting an unusually robust and resilient labor market. Total nonfarm payroll employment increased by 254,000, the highest in six months. Among the major industries, healthcare, hospitality, government sector, and construction saw job gains, while employment fell in manufacturing, transportation, and warehousing. It is important to note that more recent weekly data suggests that the employment situation could potentially worsen in the near future. For instance, weekly initial claims for state unemployment benefits spiked to 258,000 for the week ended October 5. A big chunk of these jobless benefit applications came from states that were devastated by Hurricane Helene, including Florida, North Carolina, and Tennessee.

Summary



Most of the recent data suggests that we might be gradually moving towards a "Goldilocks economy", where the dual mandate of full employment and low and stable inflation could be achieved simultaneously. GDP growth has been consistently strong over the past year and labor markets have remained unusually tight and resilient. Furthermore, inflation has gradually but steadily inched closer towards the two percent target. However, a quick glance at higher frequency forward-looking data tells us that we must exercise caution. For one, the two major hurricanes in South Eastern United States would most likely have a negative impact on the economy. In addition to that, recent strikes and furloughs at companies such as Boeing could potentially hamper the progress made in the labor markets. Finally, the worsening geopolitical situation in the Middle East is expected to have an impact on energy prices. The data from the coming months will present a much clearer picture of the economy.

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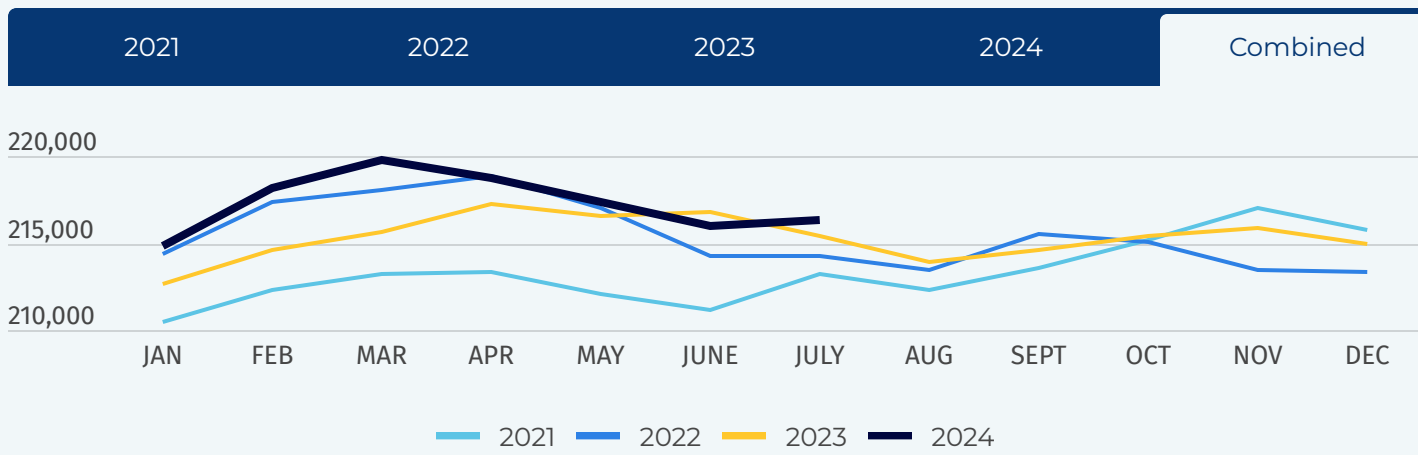
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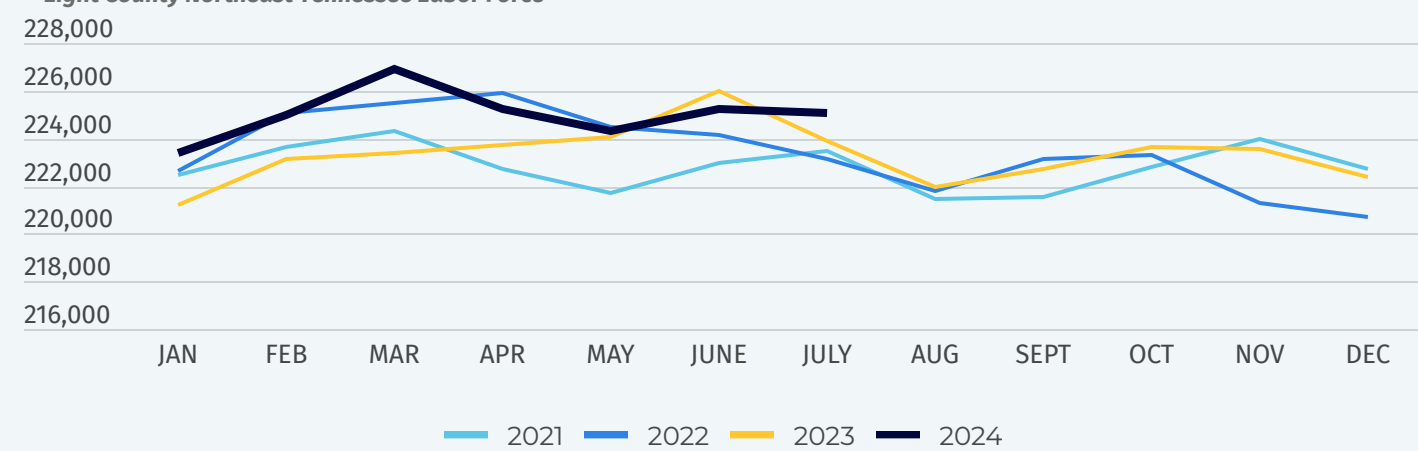
Labor & Unemployment

Dr. Jon L. Smith, Ph.D. • Director, Bureau for Business & Economic Research

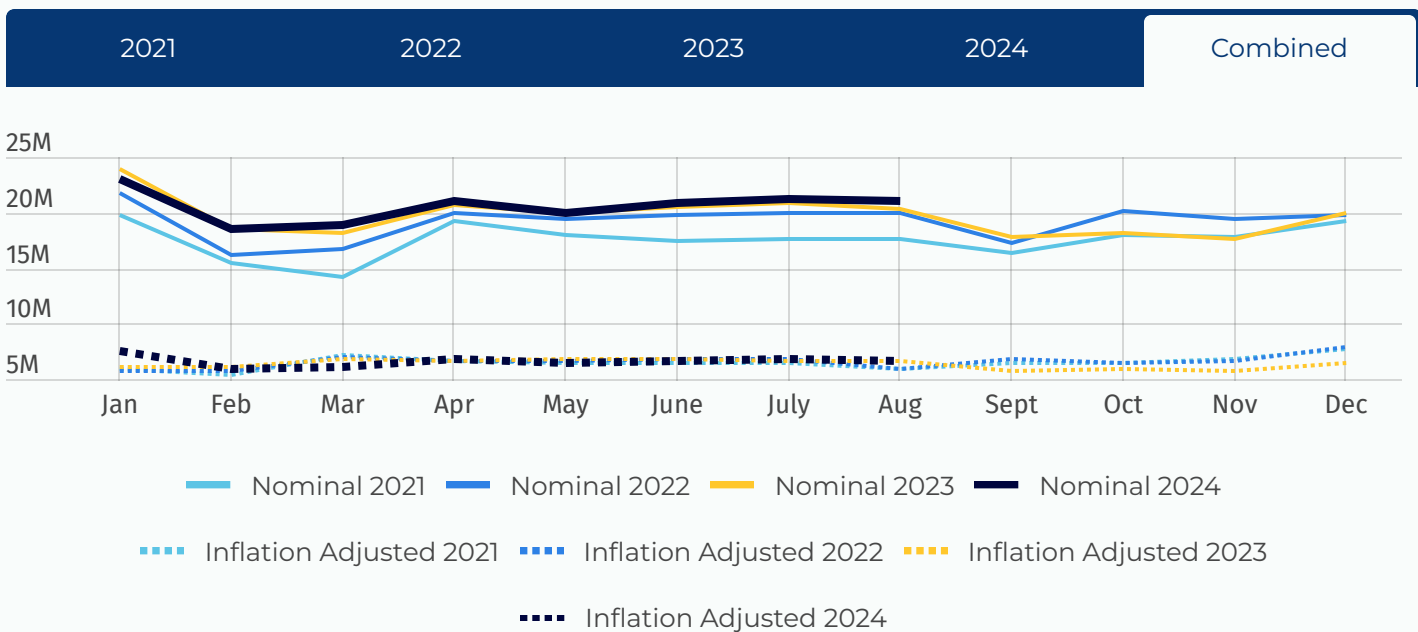
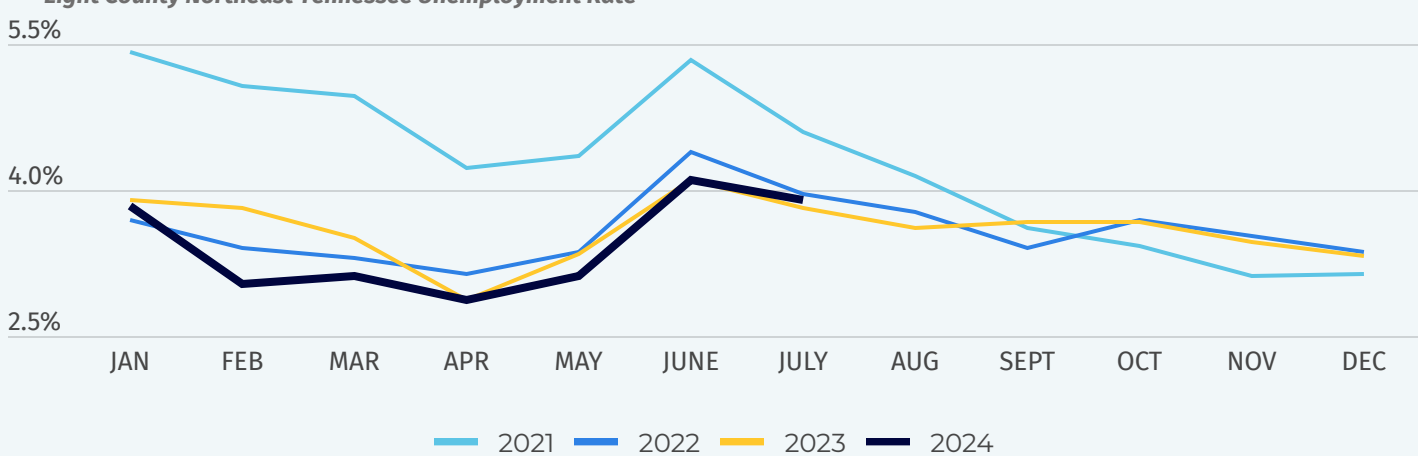
Eight County Northeast Tennessee Employed



Eight County Northeast Tennessee Labor Force



Eight County Northeast Tennessee Unemployment Rate



Employment & Labor Force

In the months prior to the Hurricane Helene, unadjusted employment levels within the eight-county region fell from 219,801 peak in March of 2024 to 216,302 in July, a decline of approximately 1.6%. However, the long term trend in employment remained stable as the twelve month moving average employment graph below demonstrates. Year over year, employment levels had risen an insignificant 0.6% within the eight-county region. As mentioned above, the region should expect a decline in employment over the next quarter. It is probable that site recovery activities, repair and construction activities will begin to show modest increases in employment thereafter.

Like the employment picture, the regional labor force showed movements similar to the eight-county employment levels, a decline from 226,884 in March to 225,080 in July. As with employment levels, the long-term twelve month moving average trend in labor force numbers remains stable, showing a negligible year over year increase of only 0.8% and a year-over-year increase of 0.5%. There may be a modest dip in the region's labor force as some residents may simply be unable to travel to their workplaces.

Sales Tax

The eight county region's local sales tax collections have also remained stable. Based on the Tennessee Department of Revenue reported county collections, 2024 fiscal year's nominal local sales tax collections for the eight county region ending in June were approximately 0.6% below those compared to the last fiscal year. Total inflation adjusted eight county local sales tax collections were 3.8% lower than for fiscal year 2023.



Summary

Prior to Hurricane Helene, the labor market for the eight-county region of Northeast Tennessee exhibited stability with respect to employment and labor force numbers. Until the extent of the storm's damage to the region's productive capacity is known, it is impossible to provide reasonable estimates of future employment and labor force moves. Generally speaking, one can expect negative movements in the short-run with long-run positive trends. The same holds true for forecasts of local sales taxes. Much depends upon the timing and amount of the availability of state and federal aid.

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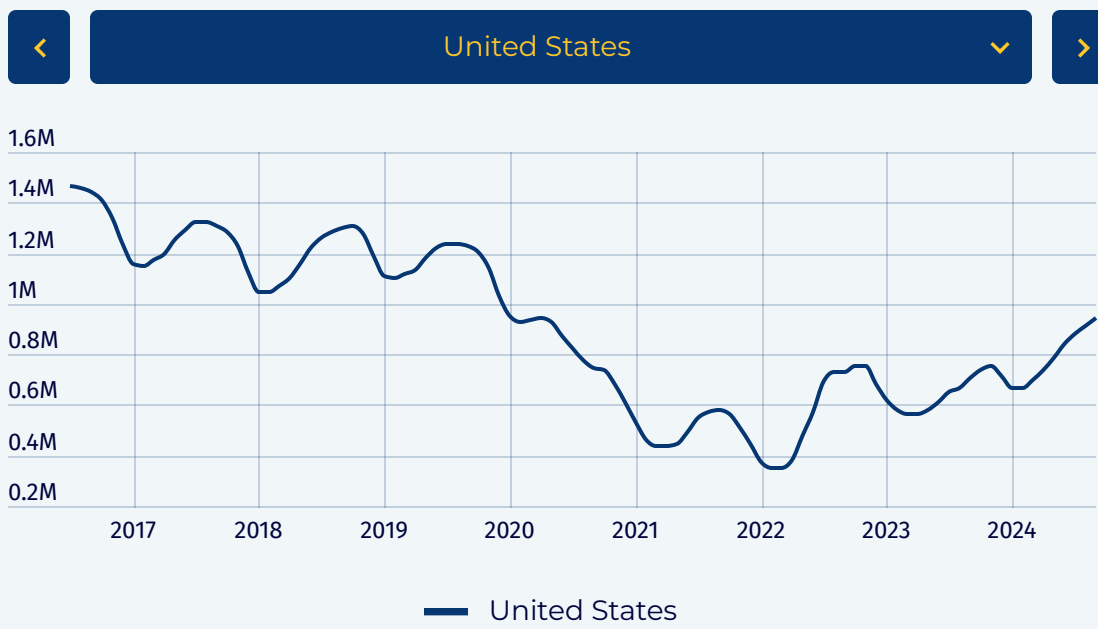
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Housing Market

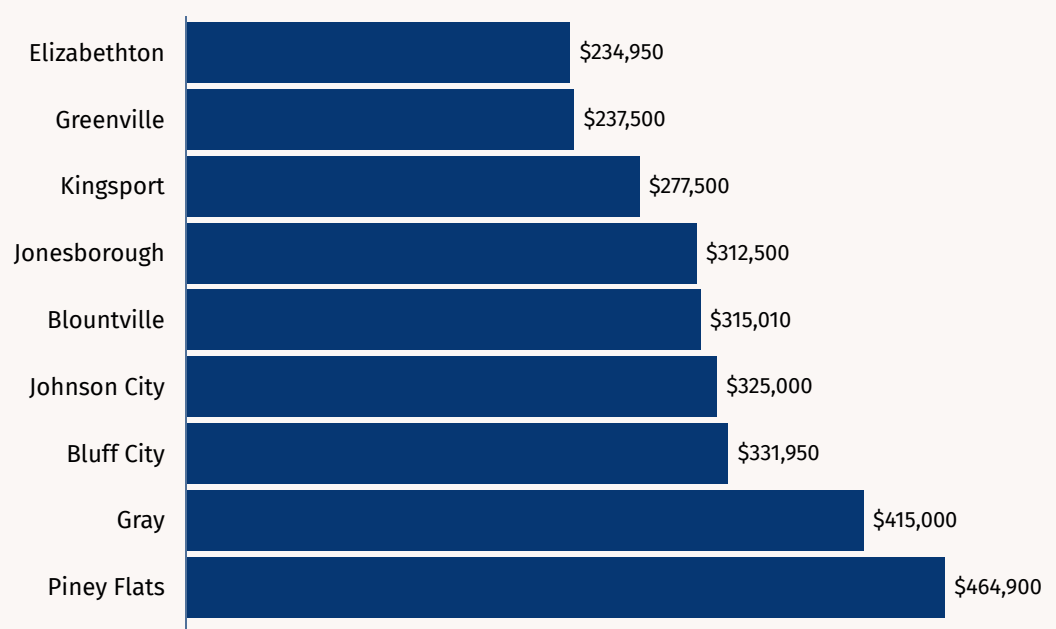
Dr. Joseph Newhard, Ph.D. • Associate Professor of Economics

Home Inventory



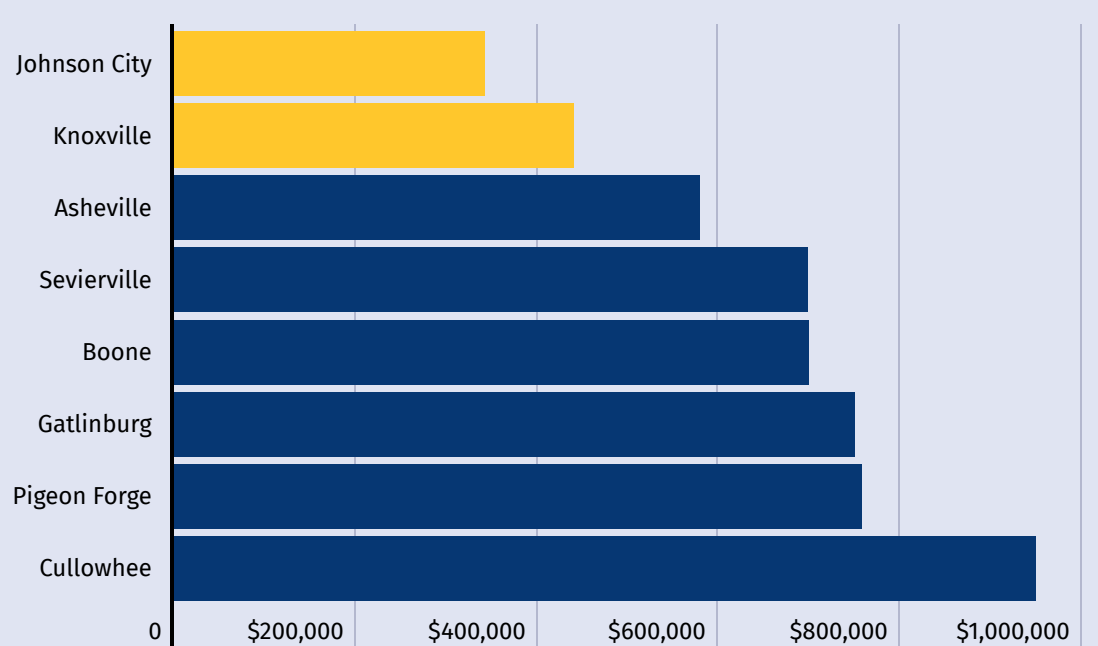
Home inventory is improving nationwide with the highest listing count since December 2019 though it is still 32% below October 2016. The median listing price of \$425k is \$24k below the all-time high of June 2022, showing that rising inventories and high mortgage rates are having little impact on prices. This is also true in Tennessee which is one of eight states where inventories have returned to pre-pandemic levels but at a median price of \$427k which is only \$31k below the June 2023 peak. Of large metro areas, Nashville ranks 4th in new housing unit permits in 2024, but listing counts are down about 50% from October 2016 in the Johnson City and Kingsport-Bristol metro areas, which respectively rank 69 and 131 in new housing permits out of 221 small metros.

Northeast Tennessee Median Home Sold Price by City, August 2024



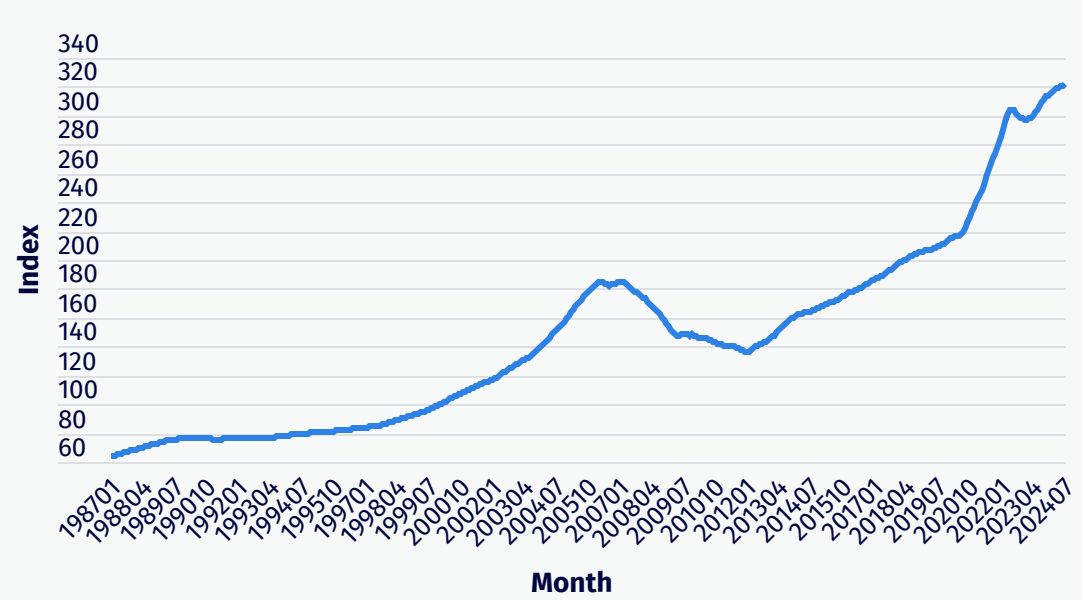
At the city level, Johnson City saw a record high median sold price of \$402,500 in July followed by a sharp decrease to \$325,000 in August and \$308,500 in September. Median listing price is less volatile, hovering around \$340,000. Median days on the market is up from 34 to 42 days in two months. Low rate lock-in continues to constrain used listings while new construction in the region abandons starter homes in favor of apartments and move-up homes. The data trend does not foreshadow the significant rise in local inventory that must precipitate a price correction. Some workers who otherwise prefer to live in Johnson City will opt to commute from where home prices are lower including Kingsport (\$269,900), Elizabethton (\$210,000), Greenville (\$275,000), and Bristol (\$305,000). Others will rent long-term. Population growth may slow as relatively higher prices deter some in-migration and provoke some out-migration, compounded by the ongoing reversal in remote work.

Median Home Sold Price by City: June 2024



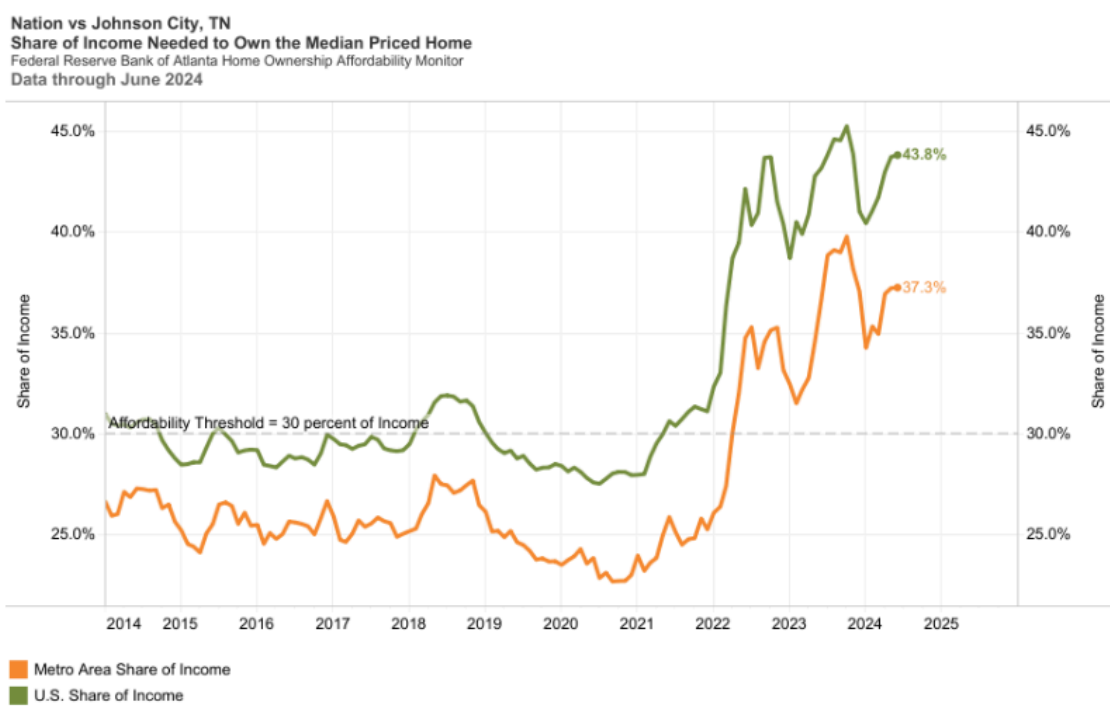
Johnson City's median listing price of \$329k seems high when considering local incomes and amenities but compares favorably to Boone (\$699k), Asheville (\$590k), Cullowhee (\$899k), Gatlinburg (\$769k), Sevierville (\$700k), Pigeon Forge (\$755), or Knoxville (\$430) for buyers who insist on Appalachia. In July, USA Today named Johnson City and Kingsport the #1 and #2 best places to live in Tennessee. However, in the spring Johnson City was dropped from the WSJ/Realtor.com Housing Market Top 20 after consistently making the quarterly list for several years. Kingsport-Bristol ranked #7 in the summer, up from #9 in spring. After years of population growth and rising prices, the South has largely been supplanted in the rankings by the Midwest which is now the most affordable region.

S&P CoreLogic Case - Shiller U.S. National Home Price Index 1987 - 2024



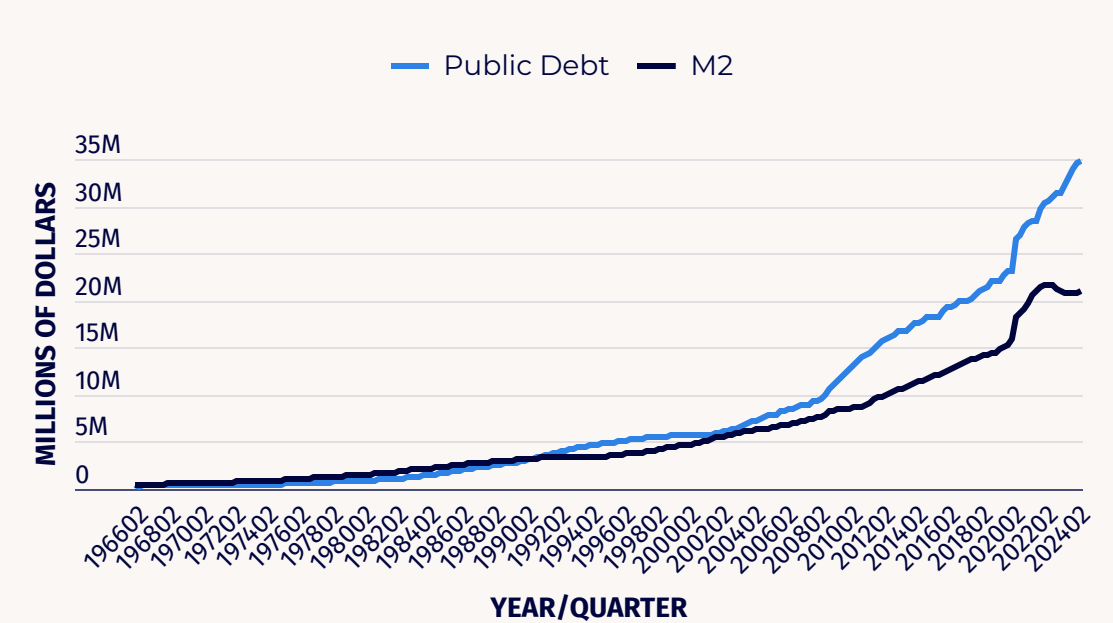
With home prices rising so high so quickly, many observers question whether the housing market is in a bubble. The efficient market hypothesis asserts that there is no such thing as an asset bubble. By this account, calling the housing market a bubble is to claim that the price of housing is "wrong," but this is not an economically meaningful assertion. Current prices reflect all available information in the market and we don't know whether tomorrow's price will be higher or lower because that will depend on uncertain future developments. We can conjecture about scenarios where home prices continue rising and others where they fall, but only time will tell. As a baseline we might expect nominal prices to keep pace with inflation. Thus, a home that cost \$200k in 2019 would cost \$246k in 2024; a \$300k house in 2019 would now cost \$369k.

Home Ownership Affordability Monitor (HOAM)
Center for Real Estate Excellence at the Federal Reserve Bank of Atlanta



One source of downside risk is the high degree of fraud in residential mortgage originations where investors misrepresent themselves as owner-occupiers to borrow at lower rates. As noted in a 2023 working paper from the Federal Reserve Bank of Philadelphia, these borrowers make up one-third of investors and default at a 75% higher rate than declared investors. They are also more likely to engage in strategic default, abandoning their properties in the face of declining home values. Other sources of downside risk include rising inventories due to a diminishing low-rate lock-in effect and the construction of millions of housing units; the Fed's continued unwinding of its balance sheet; a low U.S. population growth rate of 0.57%; regression to the mean in the gap between the cost of buying and renting; regression to the mean in affordability; the crowding out of investor home purchases by Treasury holdings; and the phenomenon that mortgage-rate buydowns by homebuilders are artificially elevating reported home selling prices and comps in the short run.

Money Supply and Total Public Debt of the United States 1966 - 2024



In the long run, nominal home prices will trend up if for no other reason than the Federal Reserve's targeted devaluation of the U.S. dollar by 2% per annum. An emerging national debt crisis presents hyperinflation risk in the coming decades and soon the Fed will resume purchasing Treasuries. This currency debasement will further drive up prices of homes and other assets via the Cantillon Effect by which inflation benefits the wealthy at the expense of the poor. The inflating costs of land and new construction also elevate the long-run equilibrium price for both new and existing homes. Additionally, home values have capitalized the increased rent-generating potential made possible by the widespread adoption of Airbnb and Vrbo. Assuming a modest annual appreciation rate of 4%, the median listing price of homes nationwide will reach \$1,000,000 by 2046 and the Johnson City metro will hit it three years later.

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FEATURED OPINION: Silicon Valley Bank – Could It Happen Again?

Kevin Kilgore • Professor of Practice/Associate Director

Upon studying the failure of Silicon Valley Bank, a student asked: “Could this happen again?” It is a pertinent and insightful question. But what exactly happened?

In March of 2023 Silicon Valley Bank (SVB) failed, attaining the dubious distinction of being the second largest bank failure in U.S. history. At the end of 2022, Silicon Valley Bank had an inordinate amount of HTM (hold-to-maturity) securities, but until the run on the bank, it had sufficient Tier 1 capital ratio (operating liquidity). In fact, many banks had higher than normal HTM securities - owing in a large part to the massive amount of dollars pumped into the economy by politicians. (See the graph below.) This, combined with a rapid, large increase in interest rates created a circumstance wherein bank debt securities fell in value.

There has been much debate about HTM bonds in bank portfolios and the validity of AOCI (accumulated other comprehensive income) accounting, which allows banks to realize losses only when securities are sold. Banks are not required to recognize unrealized losses on their bond portfolios, thus preserving stable profitability and equity. (I have a definite opinion on this issue, but that is a separate debate.) The SVB failure highlighted this condition and reignited the arguments on both sides.

In reality, several things happened that led to the demise of SVB. It goes without saying that it failed to manage its bond portfolio maturity risk, in anticipation of rising interest rates. It had an inadvisable customer concentration in one particular industry, especially in the area of commercial deposits. Tech startups, funded by venture capitalists and private equity groups provided for massive deposits, but also withdrew those deposits when the stock market began to disfavor their business segment. (From the end of 2020 through the end of 2022, the bank had doubled in asset size – from about \$100 billion to over \$200 billion.) In early 2023 analysts began to take notice that the bank may become short of operating cash. From there, the resulting publicity helped to accelerate a run on the bank's deposits.

Silicon Valley Bank was woefully mismanaged. The board of directors had little or no financial experience, let alone banking acumen. The company defied almost every tenant of management with respect to banking. In banking, we talk about things like interest rate risk, concentration risk, market risk, operational risk,

reputation risk – well, you know – risk. Except, we normally try to manage said risk. In fact, SVB had no chief risk officer for over eight months, until January of 2023.

Three weeks after the SVB failure the U. S. Senate held a hearing wherein Michael S. Barr (Vice Chair for Supervision - San Francisco Federal Reserve) “testified.” When asked about the SVB response to several MRAs and MRIAs (Matters Requiring Attention or Immediate Attention, respectively) he deferred, saying he would need more time to gather the relevant information – even though it was the San Francisco Fed that issued these memos. Really? Representative James Comer (Chairman of the House Oversight Committee) sent a letter to Mr. Barr asking, essentially, the same question. As of now, there is no record of a direct response.

In the week following the failure Mr. Barr stated that it was a “textbook case of mismanagement.” He has since suggested that more regulations are necessary. But, wasn't the Federal Reserve Bank of San Francisco (along with the OCC) already in charge of overseeing Silicon Valley Bank's liquidity and solvency? Since the start of the Great Depression, Congress passed the Glass-Steagall Act, FIRREA (the Federal Institutions Reform, Recovery Enforcement Act) the Dodd-Frank Act and many others. These solved all the problems regarding banking in America. Just kidding. They did not. In response to the SVB debacle, the Federal reserve created the Term Loan Funding Program, which loaned money to banks, secured by their bond portfolios. It was a reasonable and workable solution to ensure operating liquidity. So far, it has worked, but it is important to note that it is a loan program and not a regulatory requirement. Congress and our regulatory agencies seem to be experts at putting an ambulance in the canyon, instead of a fence around the cliff.

The fact of the matter is that most banks are run responsibly, with foresight and in a spirit of cooperation with the regulators. Silicon Valley Bank was mismanaged, by anyone's judgement. What is more disturbing is that it seemed to be a surprise – one which jolted the markets and nearly caused a widespread banking crisis. Could this happen again? It most certainly could. Especially if nobody is watching!

Breakdown of Total Securities Held by US Banks (In \$ Trillions)

