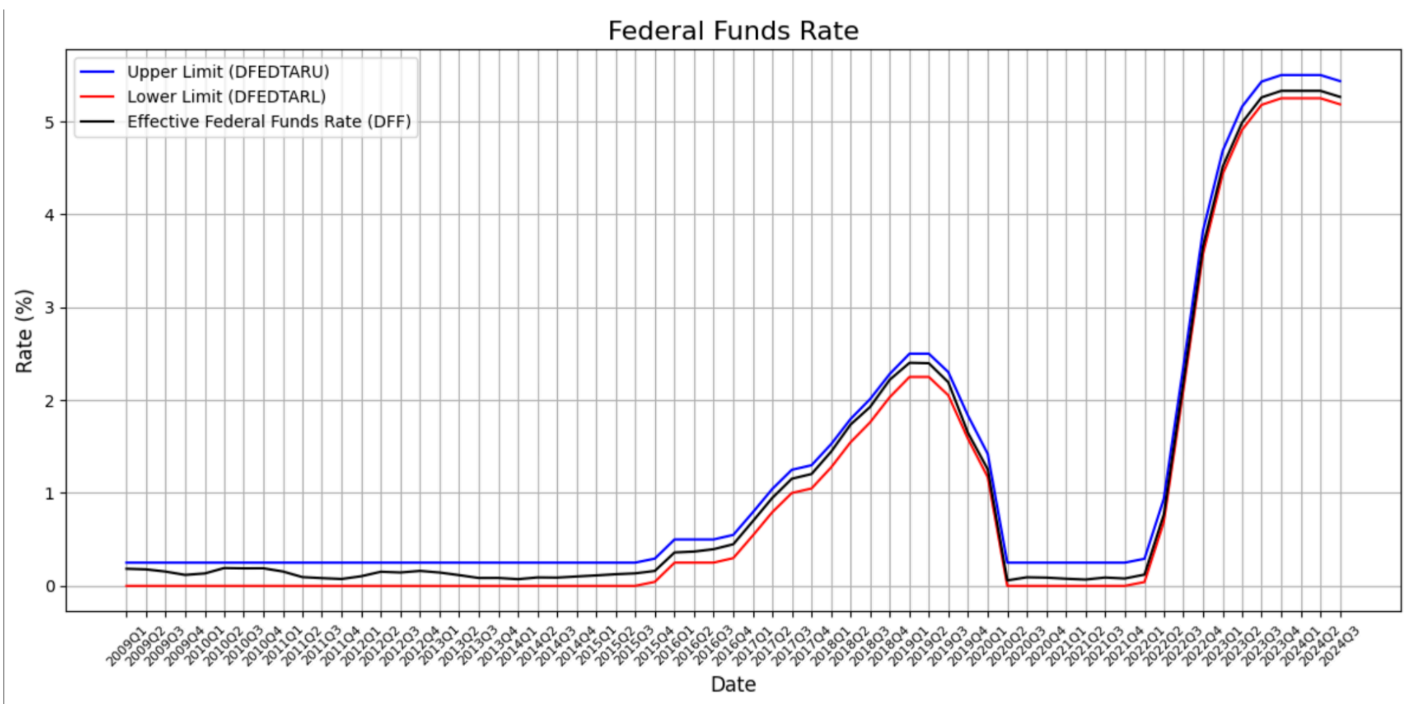
1) In December 2008, the Fed switched from a point federal funds target to a range target. What is the most recent federal funds target range, and how does it compare to the effective federal funds rate?

Answer: For quarter 3 of 2024 we have the federal fund target range with a lower limit of 5.18% to upper limit of 5.43%. The DFF or federal funds rate was 5.26 % which falls within this range but closer to the lower limit.

(2) Create a line graph for the federal funds rate lower and upper bounds, and effective federal funds rate from 2009Q1 to 2024Q3. For full credit, the graph needs to show dates for the x-axis, rates for the y-axis, titled as "Federal Funds Rate", 3 lines with distinct colors, and legends of lines.



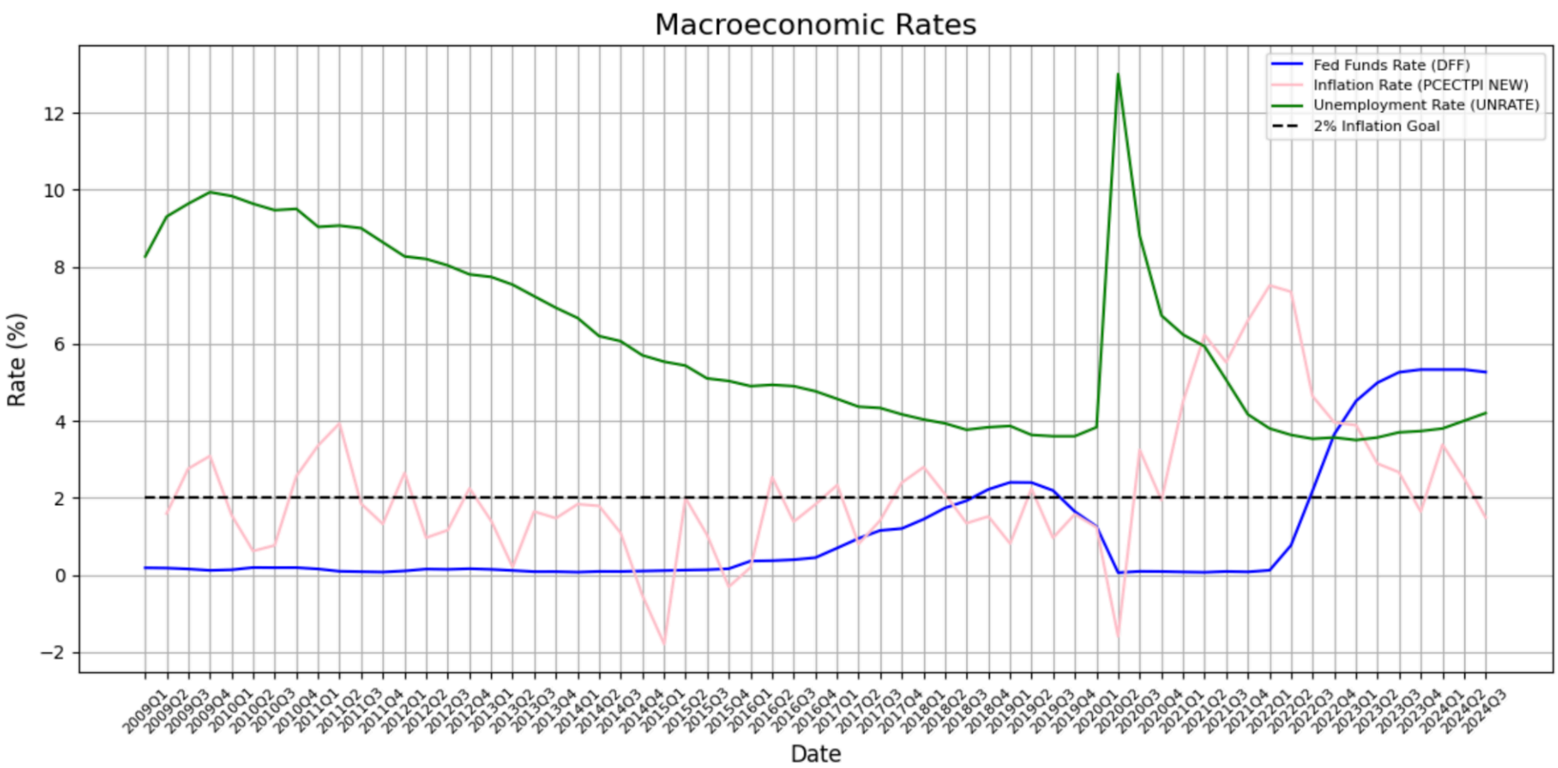
(3) Did the Fed ever miss its target or outside the target range? If so, by how much? (5 points)

Answer: From running a quick calculation for every quarter checking if the DFF was ever above or below these ranges there was never a time the fed missed being inside of the ranges. From the graph we can also see that the black line is always for most part in the middle of the other two lines. There are instances it comes close but never a time it fully breaks either upper or lower limit targets.

(4) Beginning in January 2012, the Fed formally announced a 2% inflation goal over the "longer-term". Calculate the average inflation rate over the last four and the last eight quarters of data available. How does it compare to the 2% inflation goal?

Answer: For the past four quarters calculated inflation rates average was about 2.255 and for the past 8 quarters was about 2.80. From this we can tell that on average most recently we have been getting closer to the 2% limit. The average from the past 8 quarters being higher suggest that in the recent past the inflation rates were higher increasing it from 2.255 to 2.8. The reason for this could be from the Fed's actions of decreasing interest rates more recently to reduce borrowing cost and bring inflation closer to 2%. If we look at Fed's actions throughout the past 8 quarters they were first doing a lot of increasing the interest rate ranges to combat inflation due to the pandemic.

(5) Create a line graph for the effective federal funds rate, inflation rate, unemployment rate, and the 2% inflation goal from 2009Q2 to 2024Q3. For full credit, the graph needs to show dates for the x-axis, rates for the y-axis, titled as "Macroeconomic Rates", 4 lines with distinct colors, and legends of lines (make sure legends are small).



(6) Federal Reserve's dual mandate is achieving price stability and maximum employment. Managing a near 2% inflation rate is price stability, and a near 4% unemployment rate is broadly perceived as maximum employment. Comment on the movements of federal funds rate, inflation rate, and unemployment rate during 2009Q2 to 2016Q1. What were the federal funds rates during this period, and what makes them particularly noteworthy? Considering U.S. economic conditions from 2009Q2 to 2016Q1, evaluate the Federal Reserve's effectiveness in achieving its dual mandate.

Answer: From this time frame we can see the dff (blue line) stays relatively consistent and close to zero. During this time frame the economy was still trying to recover from the great recession and as part of their expansionary monetary policy to get the economy back on its feet. In terms of the inflation rate it seemed like the majority of the time it was below the 2% Inflation goal a lot of spikes up and downs but never stabilized exactly on the goal. The unemployment rate had the most clear line consistently going down. There were small spikes but nothing too big as the pattern was clear of it decreasing. Unemployment experienced highs of almost 10% which went all the way down to around 5%. During this time the federal funds rate was really low and a thing to note was that the lower bounds limit was always 0. Due to the Fed's task of injecting liquidity into the economy after the great recession this was a good tool to allow for economic growth. So in terms of the dual mandate the Fed did good over the course of this time to effectively reduce unemployment coming closer to 4%. The fed could have done better in managing the inflation rate closer to 2% but at least it wasn't too high or ever any weird trends happening.

(7) Comment on the movements of federal funds rate, inflation rate, and unemployment rate during 2020Q1 to 2024Q3. What were the federal funds rates during this period, and what makes them particularly noteworthy? Considering U.S. economic conditions from 2020Q1 to 2024Q3, evaluate the Federal Reserve's effectiveness in achieving its dual mandate. (10 points)

From the time ranges of 2020 quarter one and 2024 quarter three the federal funds, inflation, and unemployment rates had different trends especially with all the challenges in our economy during this time. The fed funds rate began around 0% in the beginning quarters of 2020 to combat the pandemic. During 2023 it went up by a lot with ranges between 5.25 - 5.75 to counter inflation as we can also see in the graph. It went up a lot starting from 2021 to 2022 reaching as high as 7%. Due to the stimulus the amount of rise in energy cost and so on but the fed managed to drive it closer to target 2% towards the most recent quarters. For unemployment we see a massive jump to around 15% due to pandemic shutting down many jobs and people getting laid off. However unemployment soon went down and reached unemployment rates lower than their 4% goal which is good. The fed funds rate was noteworthy because it had way more movement than what we say in the previous time frame we saw. We see that the feds actions were meant to quickly mitigate inflation which was needed given the pandemics unique blend of high post covid demand and less supply challenges. In terms of their dual mandate promises given the problem of the pandemic they somehow ended up doing really good powering through and successfully bringing inflation closer to 2% and unemployment finally reached and stayed within the goal range of 4%.