ECON 511 Problem Set 9

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Problem 1

My code only needs the data file in the MATLAB path and the hpfilter function from spatial econometrics.

7 See the plots, figures 1-7.

8 The FF shock depresses output for ≈ 13 quarters. M1, PCOM, and TOTR decline significantly for a few quarters, and then recover. NBR drops immediately, but recovers. We also observe the price puzzle mentioned in lecture, the counterintuitive increase in inflation.

9 See figures 8-10. These show the impulse responses to GDP87 only using portions of the data. Comparing these to figure 1, we note that the shapes of the impulse responses are similar, but not identical. (Similar observations can be made looking at the impulse responses for the other variables). The VAR assumption is that the structure of the relation does not change over time. In a very general sense, this is reasonable; these impulse responses are similar enough in shape to the impulse response estimated on the entire dataset, but we have to be cautious about quantitative analysis, since the exact magnitudes and persistences of these responses are not identical; when using the first half, the persistence of the shock is around 9 quarters, but on the second half, the persistence is around 15 quarters. Similarly, dropping the first 10 and last 10 gives a persistence of around 12 quarters, slightly less than using the entire time series.

10 Yes. Compare figure 11 with figure 1, showing the impulse responses of GDP87 in the event of a larger shock. Note the trough is roughly 5 times (proportial to the size of the shock) lower than the original case, thus suggesting that output reacts proportionally to shocks. This is due to the fact that the VAR is a linear model.

11 See figures 12 and 13. In the normal ordering, USAPGDP takes one quarter to react to an FF shock, but reacts immediately in the swapped order. Similarly, FF reacts immediately to a price shock in the normal ordering, but takes one quarter to react in the swapped order.

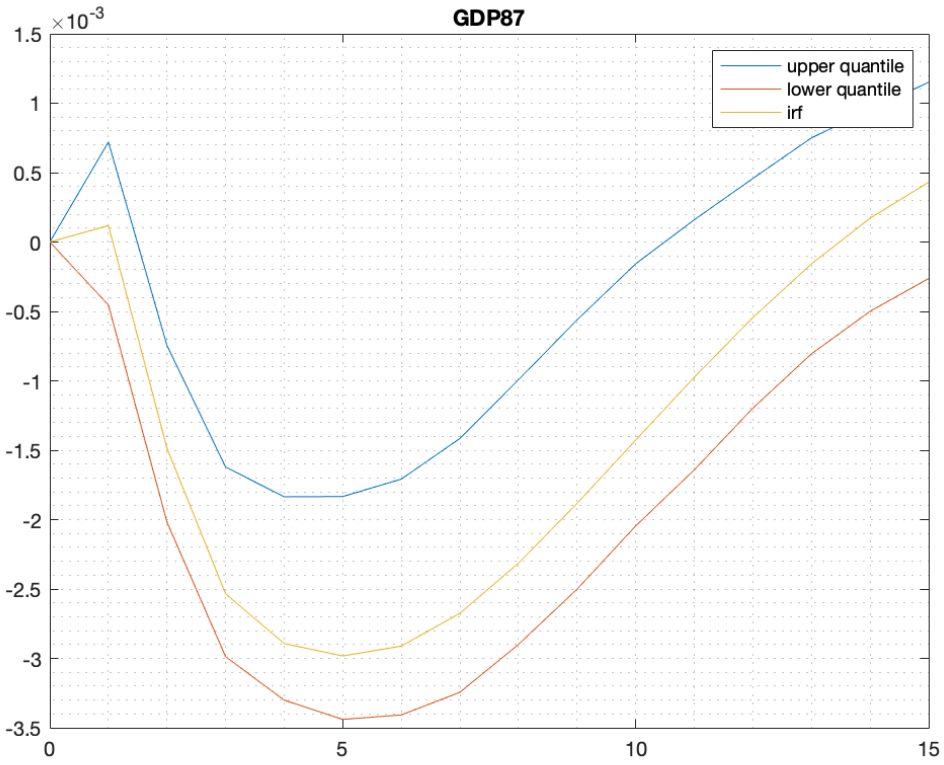


Figure 1: Part 7: IRF in GDP87

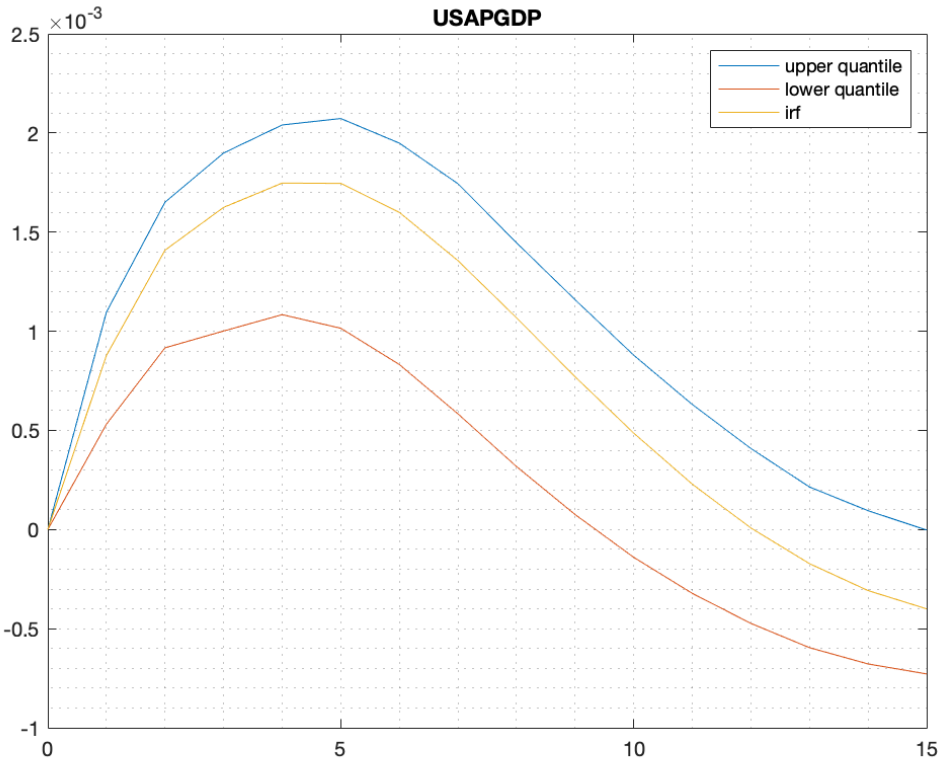


Figure 2: Part 7: IRF in USAPGDP

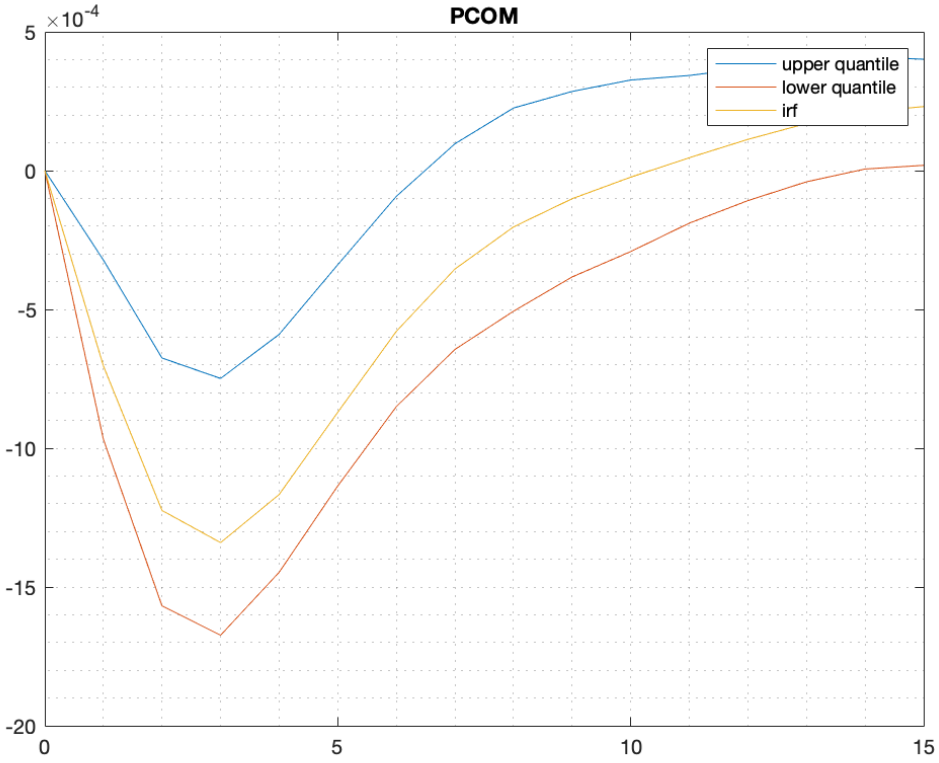


Figure 3: Part 7: IRF in PCOM

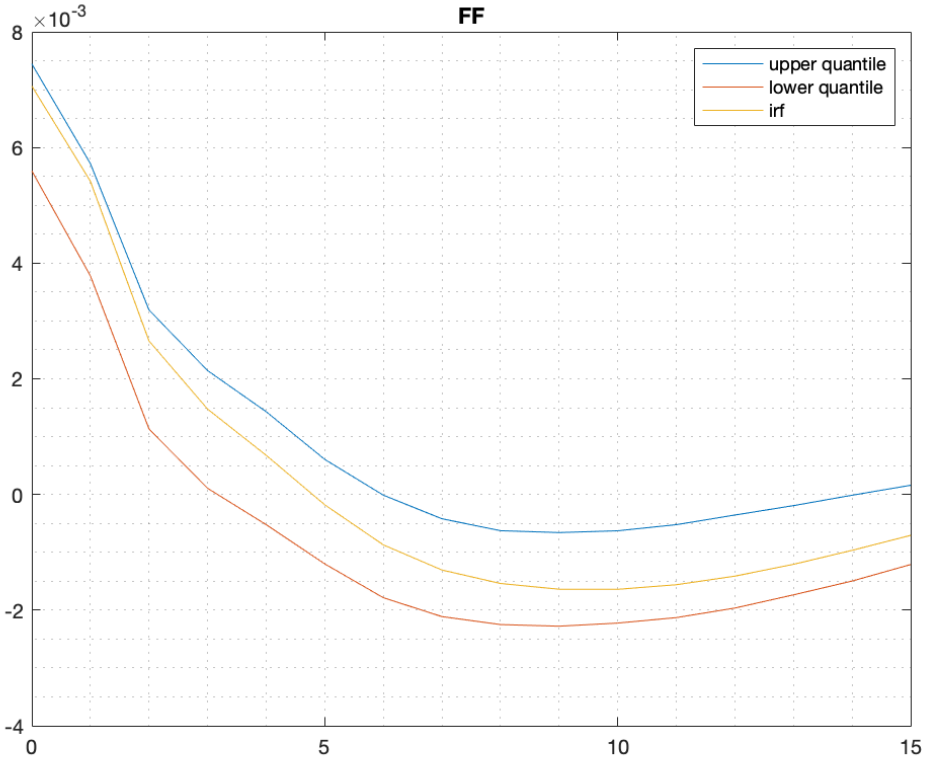


Figure 4: Part 7: IRF in FF

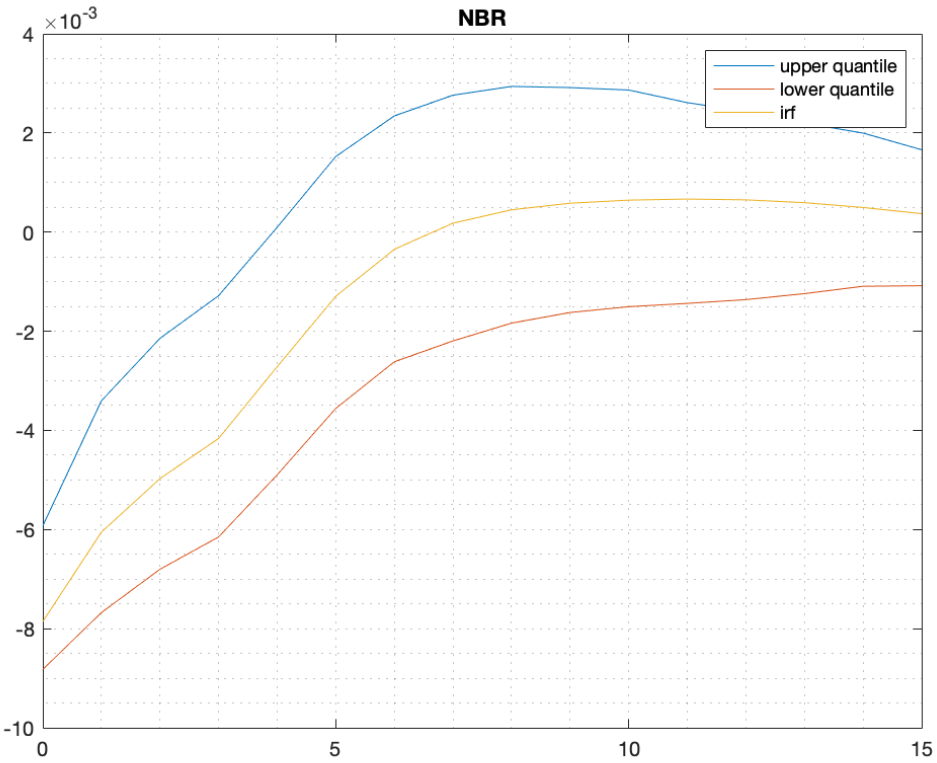


Figure 5: Part 7: IRF in NBR

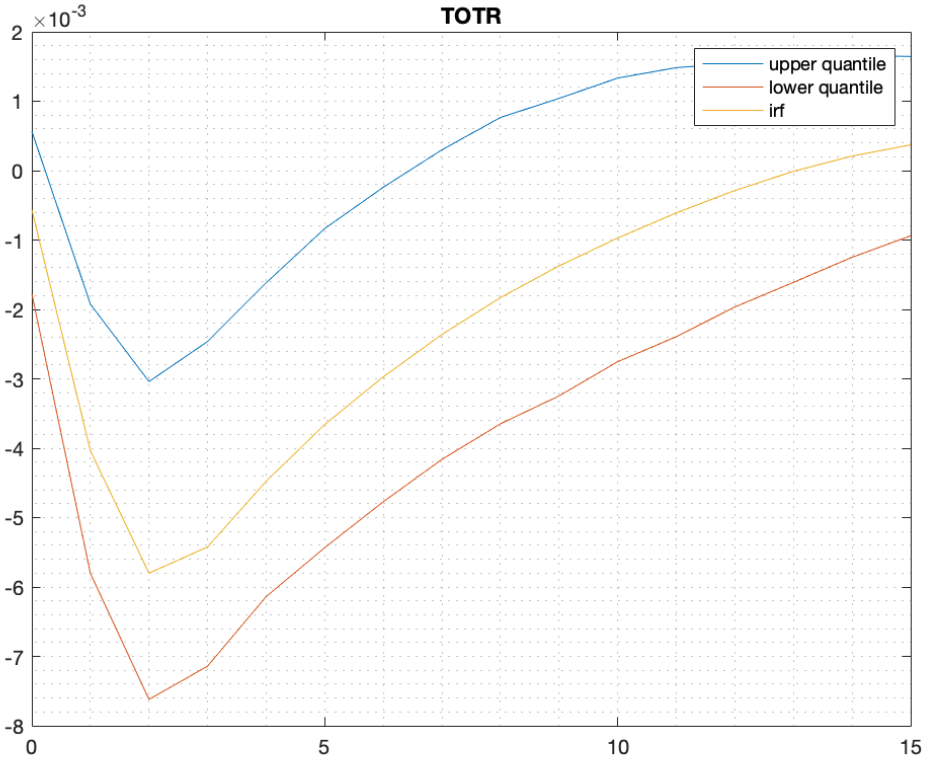


Figure 6: Part 7: IRF in TOTR

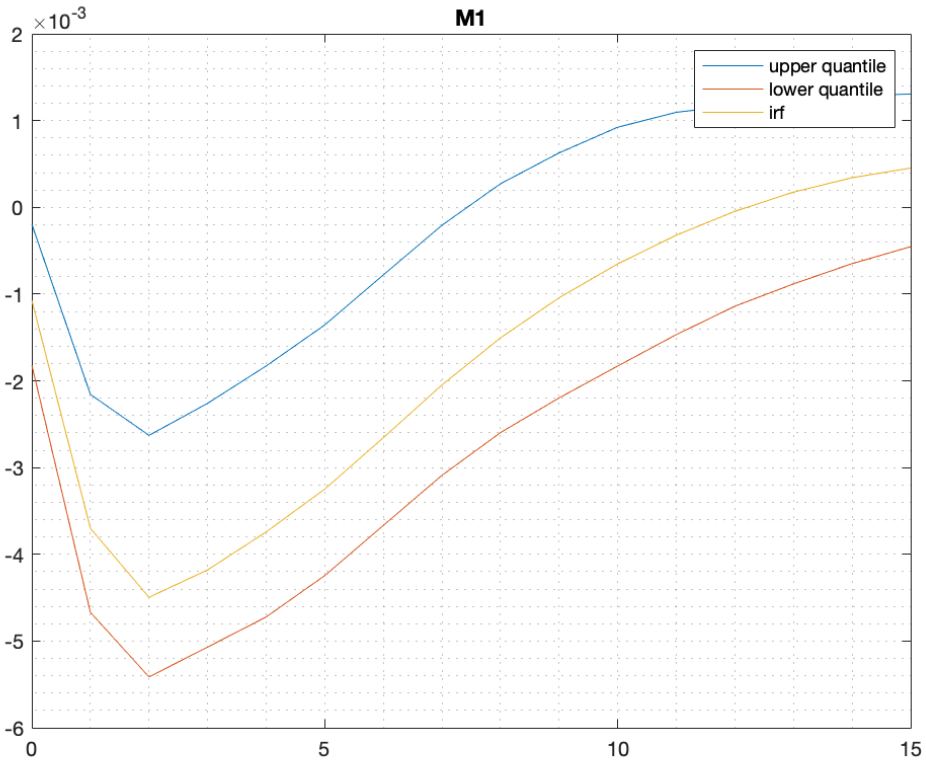


Figure 7: Part 7: IRF in M1

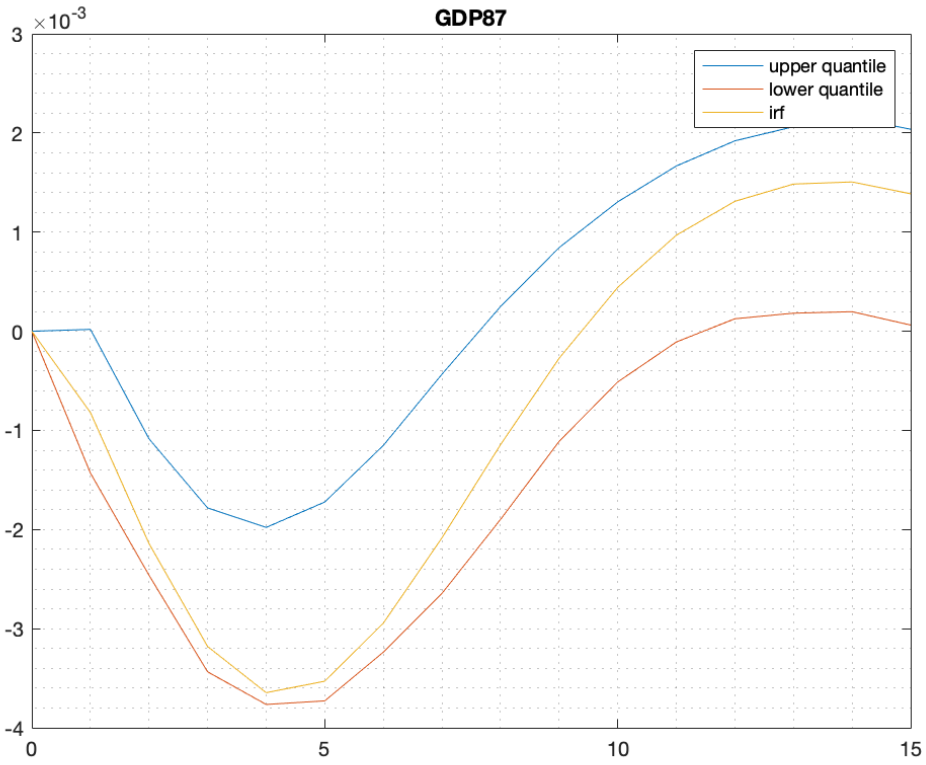


Figure 8: Part 9: IRF in GDP87, only using first half

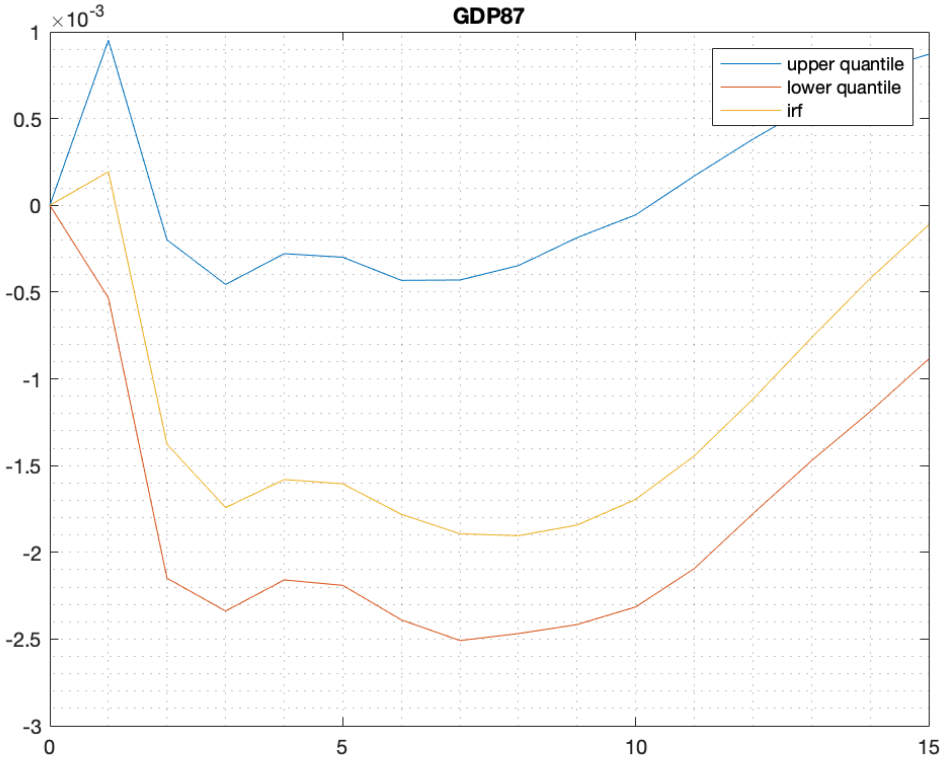


Figure 9: Part 9: IRF in GDP87, only using second half

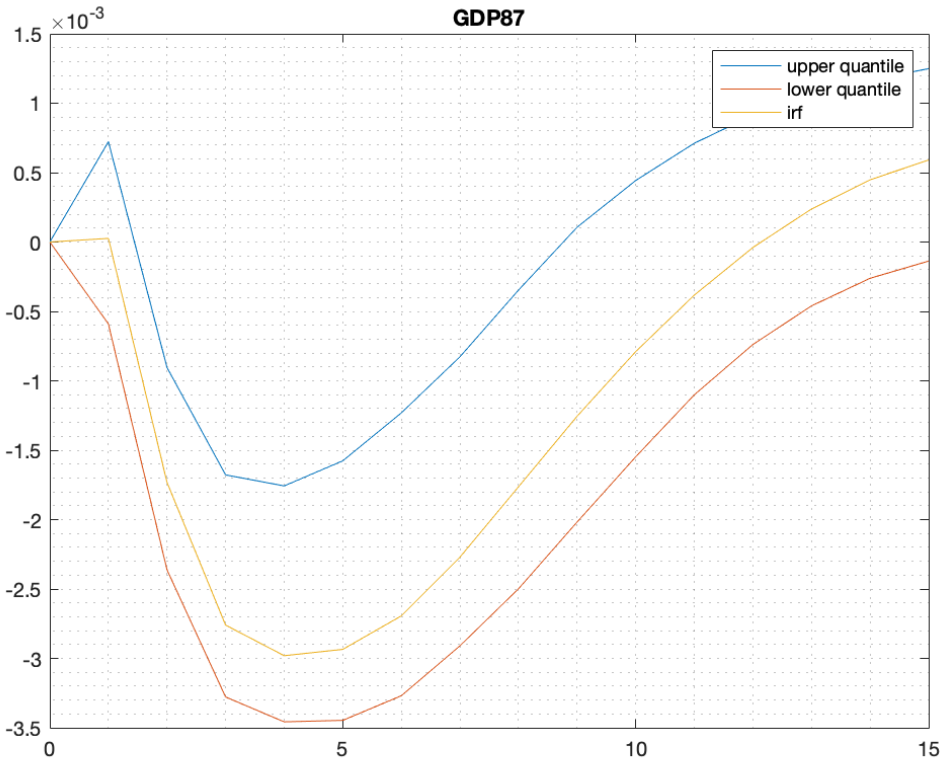


Figure 10: Part 9: IRF in GDP87, dropping first 10 and last 10

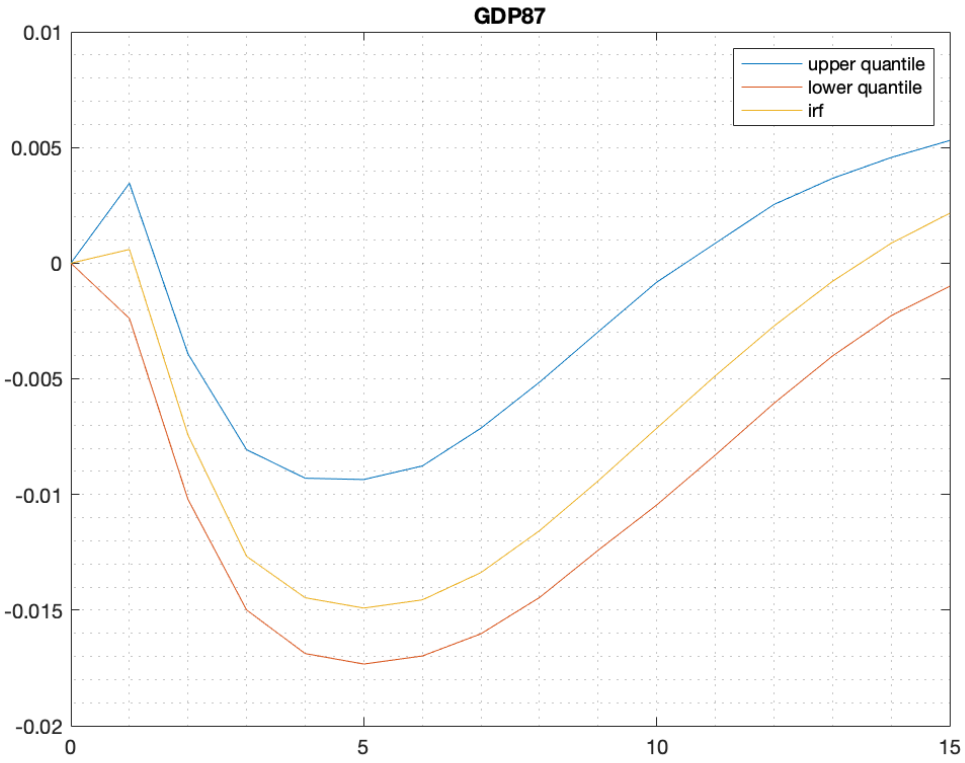
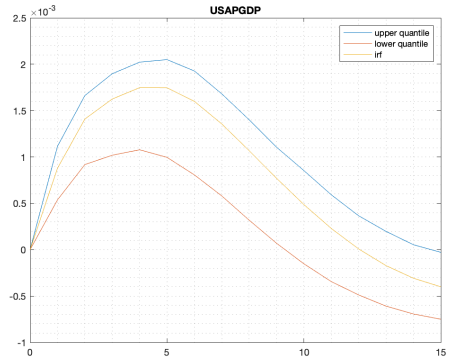
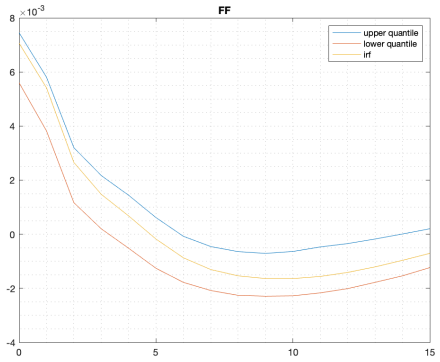


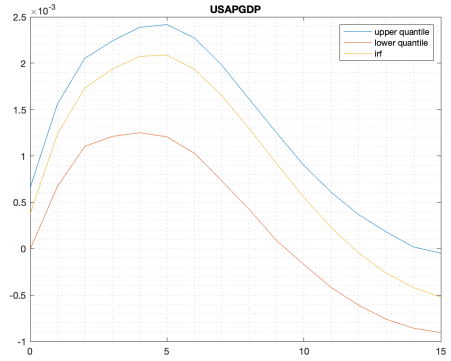
Figure 11: Part 10: IRF in GDP87, with a 0.05 shock rather than 0.01



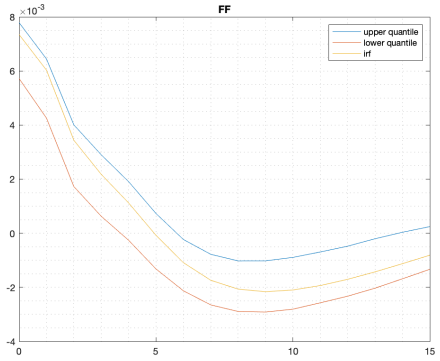
(a) IRF USAPGDP, Normal, FF shock



(b) IRF FF, Normal, FF shock

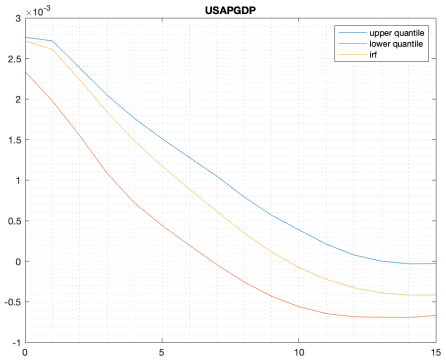


(c) IRF USAPGDP, Swapped, FF shock

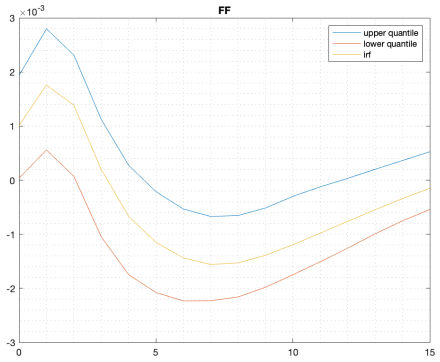


(d) IRF FF, Swapped, FF shock

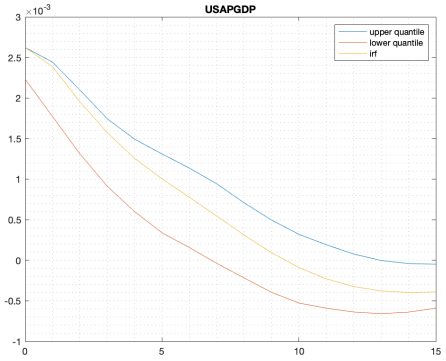
Figure 12: Part 11: FF shock, swapped and normal ordering.



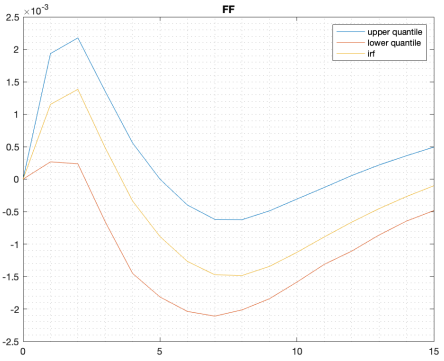
(a) IRF USAPGDP, Normal order



(b) IRF FF, Normal order



(c) IRF USAPGDP, Swapped order



(d) IRF FF, Swapped order

Figure 13: Part 11: Price shock, swapped and normal ordering.