II.
Real money demand was extremely responsive to interest rates when interest rates were close to zero. As shown in Figure 1, the slope of real money demand is relatively gentle for the period between 1980 and 1996. The estimated slope \(-\alpha\) is -2.27 for the period when interest rates were far above zero. As shown in Figure 2, on the other hand, the slope is quite steep, and \(-\alpha\) is estimated to be -108.63 for the period between 1996 and 2005 in which interest rates were below 0.5% per year.

**Figure 1:**

![Figure 1: Real money demand between 1980 and 1996](image1)

**Figure 2:**

![Figure 2: Real money demand between 1996 and 2005](image2)
The response of current nominal prices to current and future money supply depends on the slope of real money demand, or the magnitude of $-\alpha$. As shown in equation (3), the elasticity of current nominal prices with respect to current and future money supply is given by \[ \frac{1}{\alpha+1} \left( \frac{\alpha}{\alpha+1} \right)^\tau. \]

For example, the price response to current money supply is \[ \frac{1}{\alpha+1} \] at \( \tau = 0 \). That is, given fairly steep money demand, current nominal prices are irresponsive to current money supply.

Figure 3 depicts how current nominal prices are responsive to the stream of future money supply when \( -\alpha \) is either -2.27 or -108.63. In the case of gentle slope \( (-\alpha = -2.27) \), current nominal prices are heavily influenced by up to ten periods ahead money supply. In the case of steep slope \( (-\alpha = -108.63) \), on the other hand, current nominal prices hardly responded to future money supply regardless of how far future is.

The above exercise indicates how difficult it is for a central bank to control currently nominal prices by changing current money supply or making commitment to future money supply, when nominal interest rates are quite close to zero.

Figure 3: