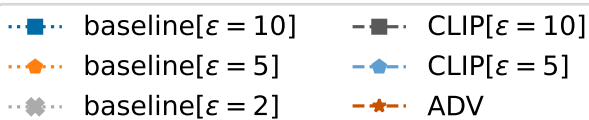


avg. empirical competitive ratio



$\xi$