

# Variance Ratio Results

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To compute our variance ratios, we begin with daily price data and compute (1) daily returns; (2) five-day returns (for non-overlapping five day intervals); (3) ten-day returns (for non-overlapping ten day intervals); (4) twenty-day returns (for non-overlapping twenty day intervals); and (5) fifty-day returns (for non-overlapping fifty day intervals). We compute both simple returns and log returns for all of these periods. Pre-crisis, banks that are active throughout this period (2002-2007) have approximately 1500 daily return observations, 300 five-day return observations, 150 ten-day return observations, and so forth.

We then compute the variance of each of these samples before and after the crisis. We compute the variance ratio using both log and simple returns for each interval relative to our daily returns. Our goal is to ascertain whether there is more positive autocorrelation in the pre-crisis period relative to the post-crisis period (which would be an argument in favor of the market misunderstanding of risk hypothesis). If there is more positive serial correlation in the pre-crisis period, we would expect that variance ratios have decreased in the aftermath of the Great Recession for each of our intervals; for example,  $\frac{ret_{5_{pre}}}{ret_{1_{pre}}} > \frac{ret_{5_{post}}}{ret_{1_{post}}}$ .

We present results first for our big-6 banks and then for the other large US financial institutions separately. I'm not sure exactly how to interpret these very simple comparisons, but overall it looks like for most of our ratios (except ten-day log returns), on average the big-6 banks had higher variance ratios in the pre-crisis relative to the post-crisis period. In many cases, these are rather minute differences as the variance ratios look fairly similar in both periods.

We then do this same analysis for other large domestic financial institutions. There are 44 banks for which we have returns data in both the pre- and post-crisis period. For all of our variance ratios, we see that the majority (and in the case of some measures, large majority) of financial institutions have higher variance ratios in the pre-crisis period. Again, in many cases the differences are quite small (the average difference in five-day return ratios is -.30 for the Big 6 and -.11 for our large domestic institutions).