Stock returns and their distribution: an empirical assessment of the US and Argentina's stock market for the period 2002/18

Carlos Swoboda, Samuel Kaplan

Ponencia presentada en V Jornadas Argentinas de Econometría realizado en 2019 en la Facultad de Ciencias Económicas - Universidad de Buenos Aires. Buenos Aires, Argentina

Stock returns and their distribution: an empirical assessment of the US and Argentina's stock market for the period 2002/18

Key Words: CAPM, Portfolio Theory, Normality Tests, GMM, Markov Switching

Carlos Swoboda
swobodacarlos@gmail.com
Facultad de Ciencias Económicas (FCE) - Universidad Nacional de Córdoba (UNC), Argentina

Samuel Kaplan
kapla267@umn.edu
Facultad de Ciencias Económicas (FCE) - Universidad Nacional de Córdoba (UNC), Argentina

The objective of this work is to present a set of analytical tools to characterize the nature of the distribution of monthly returns of the stocks that comprised the Merval index in the period 2002-2018, and at the same time compare the results with those of the US market, where the same analysis will be performed for most of the 30 equities that compose the Dow Jones Industrial Index. A set of univariate normality tests will be resorted to, which include the Jarque - Bera and D'Agostino K squared tests. The coefficients of skewness and kurtosis will be estimated to better gauge the distribution of returns. Afterwards, multivariate normality tests will be performed, particularly in concern with the third and fourth moments of equities' return distributions, and a Generalized Method of Moments (GMM) based test will be used, allowing for contemporaneous correlation between securities and accounting for its effect on skewness and kurtosis.

Finally, a Markov-Switching model will be applied to the market premium time series with the goal of measuring the probability of regime switching (changes in variance) in the period of analysis, ending with an estimation of the most relevant parameters of the CAPM model.

The results for both the Argentinian and US stock markets for the period 2002-2018 reveal weak evidence in support for the normality in the distribution of returns. 90% or Argentine stocks and 72% of US equities reject the univariate normality assumption at a level of confidence of 0.05. However, when the samples are partitioned in 2 subsamples (one that goes from October 2002 to the beginning of 2008 and the other from January 2009 to December 2018), a much larger share of assets fit a univariate normal distribution for both markets. However, multivariate normality tests reject the null hypothesis of normality for all samples in both markets. From the Markov-Switching model, 2 types of normal distributions with different variances for returns can be identified.