

Readme file for the paper

The CAPM with Measurement Error: "There's life in the old dog yet!"

Simmet and Pohlmeier, 2019

The .zip file contains MATLAB and GAUSS codes as well as the data required for replication of the results from the paper

1. Monte Carlo Simulation:

Contains codes and data for simulation study from Section 3.

Data:

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- MV.mat, MV.txt - monthly data on market capitalization of the 205 stocks of the S&P500 index obtained from DataStream for the period 01.01.1974-01.05.2015
 - sp500_edata.mat - monthly data on close prices of components of S&P500 index for the period 01.01.1974-01.05.2015 processed - to obtain excess returns using as a risk free return data on the risk free return from French & Fama database.
Description of the price data from DataStream:
"The 'current' prices taken at the close of market are stored each day. These stored prices are adjusted for subsequent capital actions, and this adjusted figure then becomes the default price offered on all Research programs."
Description of the excess return of the market from French & Fama database :
"the excess return on the market, value-weight return of all CRSP firms incorporated in the US and listed on the NYSE, AMEX, or NASDAQ that have a CRSP share code of 10 or 11 at the beginning of month t, good shares and price data at the beginning of t, and good return data for t minus the one-month Treasury bill rate (from Ibbotson Associates)."
- From the latest file two separate data files were created (see CAPMsim.m):
- sp500_stocks.txt, sp500_stocks.mat - monthly data on close prices of 205 components of S&P500 index for the period 01.01.1974-01.05.2015
 - FactorData.txt, FactorData.txt - The Fama & French factors from French & Fama database for a period July 1926 - May 2015.

Codes:

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- CAPMsim.m - the main code that replicates the Monte Carlo simulation of the artificial market and proxy indices subject to different types of the measurement error.
 - sure.m - obtains the estimated parameters for the SUR system and performs hypothesis testing of the significance of the coefficients.

2. Empirical Application

Contains codes and data for empirical application from Section 4.

Data:

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- data1203.txt - 120 monthly observations on the excess returns on 20 random stocks from S&P500, S&P500 index return, DJIA return from DataStream and excess return of the CRSP index from French & Fama database for a period 01/06/2005-01/05/2015.
 - data1204.txt - 120 monthly observations on the excess returns on 30 stocks from DJIA, S&P500 index return, DJIA return from DataStream and excess return of the CRSP index from French & Fama database for a period 01/06/2005-01/05/2015.
 - DJSTOCKS_60_FF_Z.dat - 60 monthly observations on the excess returns on 30 stocks from DJIA from DataStream and excess return of the CRSP index from French & Fama database for a period 01/06/2010-01/05/2015.
 - DJSTOCKS_60_SP_Z.dat - 60 monthly observations on the excess returns on 30 stocks from DJIA and S&P500 index return from DataStream for a period 01/06/2010-01/05/2015.
 - DJSTOCKS_60_DJ_Z.dat - 60 monthly observations on the excess returns on 30 stocks from DJIA and DJIA return from DataStream for a period 01/06/2010-01/05/2015.
 - STOCKS_60_FF_Z.dat - 60 monthly observations on the excess returns on 20 random stocks from S&P500 from DataStream and excess return of the CRSP index from French & Fama database for a period 01/06/2010-01/05/2015.
 - STOCKS_60_SP_Z.dat - 60 monthly observations on the excess returns on 20 random stocks from S&P500 and S&P500 index return from DataStream for a period 01/06/2010-01/05/2015.
 - STOCKS_60_DJ_Z.dat - 60 monthly observations on the excess returns on 20 random stocks from S&P500 and DJIA return from DataStream for a period 01/06/2010-01/05/2015.

Description of the variables in the data sets:

- Z_1, Z_2, ..., Z_20, ..., Z_30 - returns of individual stocks depending on the data set
1. For calculation of the returns adjusted prices from DataStream were used (see data from Monte Carlo simulation part). Risk free return is taken from French & Fama database.
 2. Time period was shortened from 120 to 60 observations: 01/06/2010-01/05/2015
 3. Excess returns from the market and indices:
Z_SP - 60 observations on excess return of the S&P500 from DataStream
Z_DJ - 60 observations on excess return of the DJIA from DataStream
Z_FF - 60 observations on excess return of the market from French & Fama database

Codes:

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- load_stocks120.gss - loads the data on the returns of the randomly selected 20 stocks of S&P500 and selects last 60 observations

- load_djstocks120.gss - loads the data on the returns of the 30 stocks of the Dow-Jones Industrial Average Index and selects last 60 observations
- CAPM.prc - contains functions to estimate CAPM model by SUR and Minimum Distance methods
- CAPM.inc - sets the format for the output files from the GAUSS procedures
- CAPM_STOCKS20_FF.gss, CAPM_STOCKS20_DJ.gss, CAPM_STOCKS20_SP.gss, CAPM_DJSTOCKS30_FF.gss, CAPM_DJSTOCKS30_DJ.gss, CAPM_DJSTOCKS30_SP.gss - GAUSS procedures to estimate the CAPM models based on

particular data set (20 random stocks or 30 stocks from DJIA as well as different market indexes: S&P500, DJIA, CRSP) and generate separate output files.