Application of Fama and French three factor model to recent stock data

For chosen research topic the main literature and the paper the research is based on is “The Cross-Section of Expected Stock Returns” (1992a) (FF) by Eugene Fama and Kenneth French which explores which factors other than beta proposed in CAPM[1] (Sharpe(1964), Lintner(1965), Black(1972), Mossin(1966), Treynor(1961)) are related to future stock returns and if CAPM model holds as if there are other factors affecting returns assumptions of CAPM are violated. In FF the factors tested are: book value of common equity (BE), market equity (ME), ratio BE/ME and earnings-price ratios (E/P). The reason to test these factors is multiple studies preceding above research that found that the factors and returns are correlated. Through the tests it was concluded that they are interrelated and the best set of parameters on which the returns depend is ME and BE/ME while performance of beta significantly decreased when used with other variables. The model did not start on the base of some theoretical assumptions and one possible explanation provided as for why this regularity takes place is that there are risk factors other than variance that contribute to returns on assets and chosen parameters (ME and BE/ME) are proxies for such risks. Here the contradiction with SLB model is in the fact that under assumptions used in SLB there can not be factors other than variance of the returns. The method used in the paper is Fama-MacBeth[2] regression from “Risk, Return, and Equilibrium: Empirical Tests” (Eugene F. Fama; James D. MacBeth, 1973). So the 3 factor model based on this article relates stock returns with beta, ME and BE/ME.

1. In CAPM works it is assumed that agents prefer higher returns and lower variations of returns, then under rationality, perfect information, highly divisible securities, etc. assumptions it follows that all agents will hold some portfolios on the efficient frontier and if a risk free asset is present in the market there is one risky portfolio which in equilibrium turns out to be capitalization weighted portfolio of all assets that everyone combines with the risk free asset depending on preferences to get the most beneficial combination of assets and so one can relate degree of co-movement of an asset with the market portfolio with its expected return.
2. Fama-MacBeth regression (FM) is used in the study and is introduced in Fama-MacBeth 1973 paper in which CAPM model was tested. There it was tested on its own and the conclusion was that CAPM model holds on empirical data, which as discovered later in FF could as well be attributed to ME effect as the two are highly correlated. FM regression is a method of working with panel data which suggests running cross-sectional regressions for each time period thus acquiring time series of coefficients and then this time series can be considered a sample for which some hypotheses (e.g. ) are tested