PORTFOLIO THEORY – ASSIGNMENT 2

Dr. Andrea Rigamonti

Consider the ten stocks from the dataset you were assigned.

1) Compute the expected return of the single stocks according to the Fama-French three-factor model using the entire dataset for the estimation
2) Compute the naïve 1/N, minimum variance, and long-only minimum variance portfolio weights using a 120-month rolling window.
3) Compute the mean, standard deviation, downside deviation (benchmark = 0), skewness, kurtosis, Sharpe ratio, Sortino ratio, CvaR (significance at 0.05), Jensen's alpha (with p-value) and average turnover of those three portfolios.
4) Compute the same measures net of transaction costs, assuming 10 bp proportional transaction costs.
5) Create two plots: one with the nominal wealth dynamics of the three strategies ignoring and net of transaction costs, and one with the real wealth dynamics of the three strategies ignoring and net of transaction costs.

The necessary data are provided in the file "assignment_2_dataset.RData", which can be downloaded from the online folder that contains the course material.

The student has to write a report (you can use Microsoft Word and then export it in PDF) to illustrate the results obtained with the R code. The report must contain the most important numeric results and the plots, with some short comment to give them context.

Both the R code and the report have to be uploaded in the Homework Vault by midnight of May 13. You can use any aid to write the R code, including working together with other students, but you must write the report on your own.

See next page for the set of ten stocks assigned to each student.

STUDENT ID	STUDENT NAME	STOCK 1	STOCK 2	STOCK 3	STOCK 4	STOCK 5	STOCK 6	STOCK 7	STOCK 8	STOCK 9	STOCK 10
533309	Abidi, Hamdi	ADSK	AXP	BIIB	CHRW	FAST	HSIC	JPM	MAR	PCAR	PFE
544134	Ahmad, Muhammad	ADI	BMRN	DD	EXPD	GE	MMM	NVDA	REGN	SWKS	VEON
533377	Çoban, Ali Berk	AMAT	BKNG	CVX	GE	INCY	INTC	LRCX	NKE	SIRI	WBA
546128	Dadzie, Emmanuel	AAPL	CAT	CMCSA	FAST	INTU	LRCX	MU	ROST	SRCL	WBA
556298	Dalil, Chaima	AMZN	BMRN	CAT	KLAC	LRCX	MSFT	ORLY	ROST	SRCL	VEON
556752	El feddali, Aymane	AAPL	BA	COST	GILD	HD	INTU	MAT	ORLY	PAYX	TXN
543393	Elizer, Archecard Josue	ADBE	BKNG	CHKP	DLTR	GE	KO	ORLY	PAYX	PG	VEON
556314	Guin, Supriya	AXP	CAT	CHKP	DD	EXPD	FISV	INCY	INTC	VEON	WDC
520714	Hossain, Md Shepon	AAPL	CAT	CMCSA	DD	EA	GILD	INTC	MAR	TRV	WDC
546172	Choudhary, Vishal	BIIB	CHKP	GS	HSIC	INCY	KO	SBAC	SIRI	SWKS	VRTX
533365	Khan, Sumaila	ADSK	AKAM	AMGN	BIIB	INTC	INTU	MAT	MCD	MU	UNH
545749	Khouaja, Waeil	ADSK	AMZN	CTSH	EA	GE	JNJ	ORLY	QCOM	VOD	WBA
547427	Kolomiiets, Polina	CAT	CSCO	DD	EA	KO	NTAP	PG	SIRI	TSCO	WBA
556296	Lum Mafor, Nora	AXP	CAT	CHRW	CTSH	FISV	GS	IBM	SBUX	TXN	UTX
546195	Meftun, Feridun Batu	ADSK	AMGN	AMZN	CVX	EBAY	INTC	NVDA	ORLY	SWKS	WDC
546168	Mishu, Taslima Rahman	CHRW	CTSH	GE	INTU	KO	MAR	MNST	NKE	NTAP	PAYX
556305	Myat, Aye Thiri	AAPL	AXP	BIIB	CHKP	COST	DD	DLTR	EXPD	PG	SIRI
556316	Nascimento Vianna, Cecilia	ADI	BMRN	CHKP	EXPD	MAT	NKE	NVDA	REGN	VEON	VOD
556287	Oyeyele, Funmilayo	ADP	CAT	CHRW	COST	CVX	HSIC	KLAC	KO	PAYX	PG
528037	Shiroiya, Darshit Jayesh	AMZN	BA	BMRN	COST	JPM	MNST	MU	NLOK	PAYX	XOM
546144	Yosra, Touirtou	ADP	AMZN	CAT	CHKP	DLTR	KLAC	MCD	NLOK	PFE	SBAC
546231	Zafar, Mutahar	CMCSA	EA	GS	LRCX	MAR	MCD	MU	PAYX	SBAC	SIRI