

Question 4: Portfolio Management**(32 points)**

The Indian economy is growing rapidly. You are managing a global equity fund denominated in USD that has so far invested only in developed-country stocks. You have decided to add Indian stocks to your portfolio. The table below shows the expected rates of return, standard deviations, and correlation coefficients (all calculated using USD as base currency) estimated for the aggregate stock market of developed countries and Indian stock market. The risk-free interest rate is assumed to be 3%.

	Developed-country stocks	Indian stocks
Expected rate of return (annualized percent)	10	15
Risk (annualized standard deviation (%))	16	30
Correlation coefficient (ρ)	0.30	

- Adding the Indian stocks, you want to increase the expected rate of return on your portfolio by 0.5%. What percentage should you allocate to Indian stocks? (3 points)
- Assuming that Indian stocks are included in the portfolio as calculated in a) above, what will be the standard deviation of your portfolio? (3 points)
- How does the Sharpe ratio of the portfolio calculated in a) above change compared to the case of investing only in developed countries? (4 points)

The correlation coefficient between the developed countries' stock market and Indian stock market was on average 0.30 over the past 10 years. During this period, however, the correlation coefficient has been almost constantly rising since the year 2000, as shown in the graph below, when measured retrospectively for the previous 60 months at each point in time.



