1. The questions for this assignment is to explain the difference between the average return calculated in Problem 10-6 (a) and the realized return calculated in

10-5. Are both numbers useful? If so, explain why.

**To do this assignment the two problems had to be answered. Although you will see problem 10-5 and10-6 in this document, the answers are already indicated on this sheet. Use the date from below to answer to question which is above in red. Nothing needs to be downloaded from 10-5 because it is listed below.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Problem 10-5** |  |   |   |
|   |   |   |   |   |   |   |   |
| Download the spreadsheet from *www.aw-bc.com/berk\_demarzo* that contains historical monthly prices and dividends (paid at the end of the month) for Ford Motor Company stock (Ticker: F) from August 1994 to August 1998. Calculate the realized return over this period, expressing your answer in percent per month. |
|   |   |   |   |   |   |   |   |
| **Problem 10-6** |  |   |   |
|   |   |   |   |   |   |   |   |
| Using the same data as in Problem 5, compute the |
| **a.** | Average monthly return over this period. |   |   |   |
|   |   |   |   |   |   |   |   |
| **b.** | Monthly volatility (or standard deviation) over this period. |
|   |   |   |   |   |   |   |   |
|   |   |   |   |   |   |   |   |
|  |  |   |   |
|   |   |   |   |   |   |   |   |
|   |
|   |   |   |   |   |   |   |   |
| **Problem 10-5 answer:** |   | **Problem 10-6 answer:** |   | **Problem 10-8 answer:** |
| Total Realized Return = (1+R1)x(1+R2)…x(1+R36) = | **a.** | Arithmetic Average Monthly |  |   | Standard Error |  |
| 1.6789 |   | Return: | 1.595% |   |  | 0.910% |
| (This is the amount $1 invested in Aug-94 would have grown to by Aug-97.) | **b.** | Standard Deviation of  |   |   |  |   |
|   |   |   | Monthly Return: | 5.458% |   |  | 3.414% |
| Equivalent monthly return (% per month) = |   |   |   |   |  |   |
| 1.450% |   |   |   |   |  | -0.224% |
|  |  |   |   |   |   |   |   |
| **Date** | **End of Month Price** | **Dividend (end of month)** | **Monthly Return (1+R**t) | **Monthly Return % (R**t) |   |   |   |
| Aug-97 | 43.000 |  | 1.052 | 5.20% |   |   |   |
| Jul-97 | 40.875 | 0.420 | 1.087 | 8.67% |   |   |   |
| Jun-97 | 38.000 |  | 1.013 | 1.33% |   |   |   |
| May-97 | 37.500 |  | 1.079 | 7.91% |   |   |   |
| Apr-97 | 34.750 | 0.420 | 1.121 | 12.10% |   |   |   |
| Mar-97 | 31.375 |  | 0.954 | -4.56% |   |   |   |
| Feb-97 | 32.875 |  | 1.023 | 2.33% |   |   |   |
| Jan-97 | 32.125 | 0.385 | 1.008 | 0.81% |   |   |   |
| Dec-96 | 32.250 |  | 0.985 | -1.53% |   |   |   |
| Nov-96 | 32.750 |  | 1.048 | 4.80% |   |   |   |
| Oct-96 | 31.250 | 0.385 | 1.012 | 1.23% |   |   |   |
| Sep-96 | 31.250 |  | 0.933 | -6.72% |   |   |   |
| Aug-96 | 33.500 |  | 1.035 | 3.47% |   |   |   |
| Jul-96 | 32.375 | 0.385 | 1.012 | 1.19% |   |   |   |
| Jun-96 | 32.375 |  | 0.887 | -11.30% |   |   |   |
| May-96 | 36.500 |  | 1.017 | 1.74% |   |   |   |
| Apr-96 | 35.875 | 0.350 | 1.054 | 5.38% |   |   |   |
| Mar-96 | 34.375 |  | 1.100 | 10.00% |   |   |   |
| Feb-96 | 31.250 |  | 1.059 | 5.93% |   |   |   |
| Jan-96 | 29.500 | 0.350 | 1.034 | 3.38% |   |   |   |
| Dec-95 | 28.875 |  | 1.022 | 2.21% |   |   |   |
| Nov-95 | 28.250 |  | 0.983 | -1.74% |   |   |   |
| Oct-95 | 28.750 | 0.350 | 0.935 | -6.51% |   |   |   |
| Sep-95 | 31.125 |  | 1.012 | 1.22% |   |   |   |
| Aug-95 | 30.750 |  | 1.060 | 6.03% |   |   |   |
| Jul-95 | 29.000 | 0.310 | 0.985 | -1.48% |   |   |   |
| Jun-95 | 29.750 |  | 1.017 | 1.71% |   |   |   |
| May-95 | 29.250 |  | 1.078 | 7.83% |   |   |   |
| Apr-95 | 27.125 | 0.310 | 1.021 | 2.08% |   |   |   |
| Mar-95 | 26.875 |  | 1.029 | 2.87% |   |   |   |
| Feb-95 | 26.125 |  | 1.035 | 3.47% |   |   |   |
| Jan-95 | 25.250 | 0.260 | 0.915 | -8.48% |   |   |   |
| Dec-94 | 27.875 |  | 1.028 | 2.76% |   |   |   |
| Nov-94 | 27.125 |  | 0.919 | -8.05% |   |   |   |
| Oct-94 | 29.500 | 0.260 | 1.072 | 7.24% |   |   |   |
| Sep-94 | 27.750 |  | 0.949 | -0.051 |   |   |   |
| Aug-94 | 29.250 |  |  |  |   |   |   |
|   |   |   |   |   |   |   |   |

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