***Calculation Example***

Q1) Find the discrete yearly returns of stocks CBA and BHP from the following price data.

|  |  |  |
| --- | --- | --- |
| **Date** | **Adjusted Closing Price ($)** | |
| **CBA** | **BHP** |
| 1/1/2007 | 48.39 | 25.17 |
| 2/1/2008 | 47.77 | 36.31 |
| 2/1/2009 | 26.01 | 30.11 |
| 4/1/2010 | 51.47 | 38.9 |
| 4/1/2011 | 52.46 | 44.25 |
|  |  |  |

To find CBA’s return from 2010 to 2011,

And so on. Here are the complete results:

|  |  |  |
| --- | --- | --- |
| **Date** | **Return (p.a.)** | |
| **CBA** | **BHP** |
| 1/1/2007 |  |  |
| 2/1/2008 | -0.0128 | 0.4426 |
| 2/1/2009 | -0.4555 | -0.1708 |
| 4/1/2010 | 0.9789 | 0.2919 |
| 4/1/2011 | 0.0192 | 0.1375 |
|  |  |  |

Q2) Calculate the arithmetic mean, variance and standard deviation of returns.

Similarly for BHP. Here are the complete results:

|  |  |  |
| --- | --- | --- |
|  | **CBA** | **BHP** |
| **Return** | 0.1324 | 0.1753 |
| **Variance** | 0.3653 | 0.0687 |
| **St. dev.** | 0.6044 | 0.2622 |
|  |  |  |

Q3) Calculate the covariance and correlation of their returns.

|  |  |  |
| --- | --- | --- |
|  | **CBA** | **BHP** |
| **Covariance** | 0.0892 | |
| **Correlation** | 0.5629 | |
|  |  |  |

In conclusion, BHP has a higher return and lower risk than CBA. The correlation is not near one so a fair amount of diversification is possible.