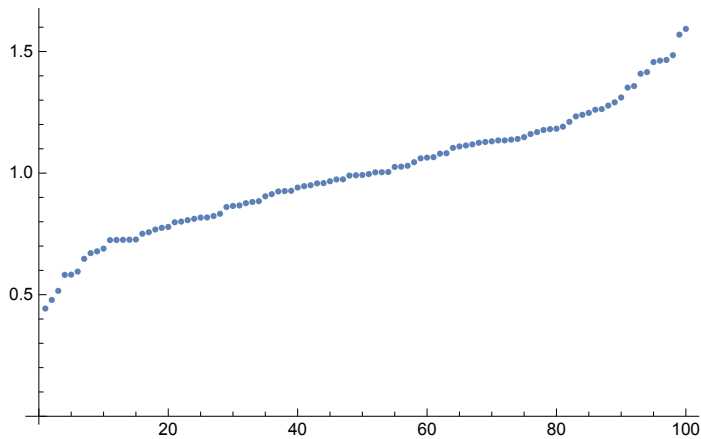


```

numstock = 100;
numindustry = 10;

stkind = Sort@RandomInteger[{1, numindustry}, numstock];
stkbeta = RandomVariate[NormalDistribution[1, 0.25], numstock];
ListPlot[Sort[stkbeta]]

```



```

mktvar = 16 / 100. / Sqrt[252.]
0.0100791

indvar = Abs@RandomVariate[NormalDistribution[mktvar / 2, mktvar / 4], numstock];
indcov = Table[Sqrt[indvar[[i]] * indvar[[j]]] * RandomReal[{-1, 1}],
  {i, numindustry}, {j, numindustry}];

stkindbeta = RandomVariate[NormalDistribution[1, 0.25], numstock];

idiovar = Abs@RandomVariate[NormalDistribution[mktvar / 2, mktvar / 4], numstock];

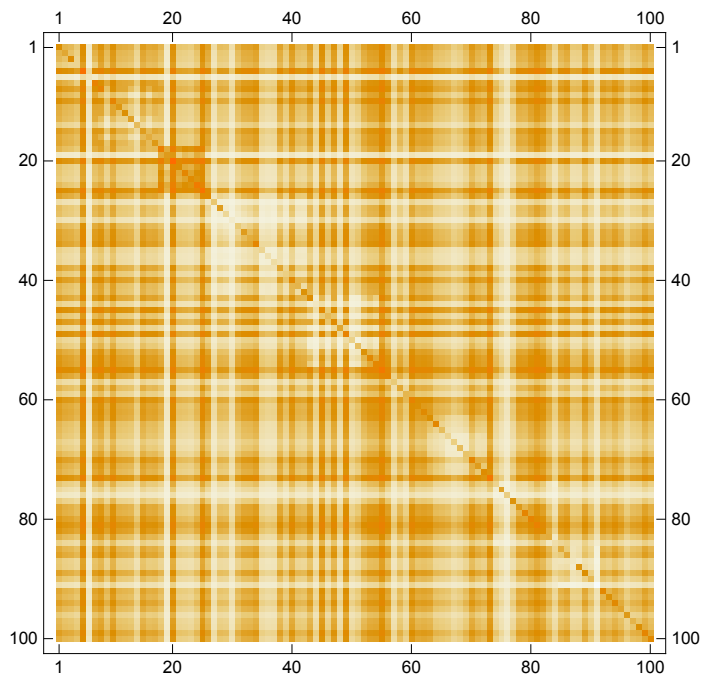
Σ = Transpose[{stkbeta}].{stkbeta * mktvar};

Σ = Table[stkbeta[[i]] * stkbeta[[j]] * mktvar + Boole[i == j] * idiovar[[i]],
  {i, numstock}, {j, numstock}];

Σ = Table[
  stkbeta[[i]] * stkbeta[[j]] * mktvar +
  Boole[stkind[[i]] == stkind[[j]]] * stkindbeta[[i]] *
  stkindbeta[[j]] * incov[[stkind[[i]], stkind[[j]]]] +
  Boole[i == j] * idiovar[[i]],
  {i, numstock}, {j, numstock}];

```

Σ // MatrixPlot



Inverse[Σ] // MatrixPlot

