```
hedge = Flatten[Import["c:\\book1.txt", "Table"], 1];
```

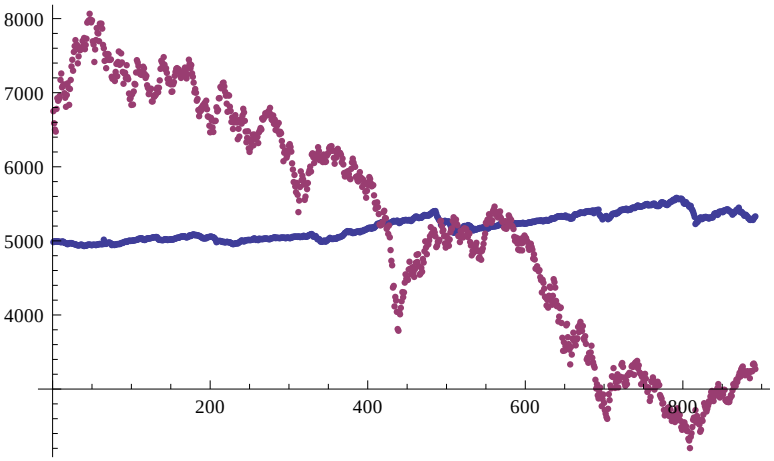
```
Length[hedge]
```

892

```
g = FinancialData["DAX", "1.1.2000"];
```

```
dax = Transpose[g][[2]][[1 ;; Length[hedge]]];
```

```
ListPlot[{hedge, dax}]
```




```
hedge = Log[hedge]; dax = Log[dax];
```

```
hedge = Differences[hedge];
```

```
dax = Differences[dax];
```

```
w = Transpose[{hedge, dax}];
```

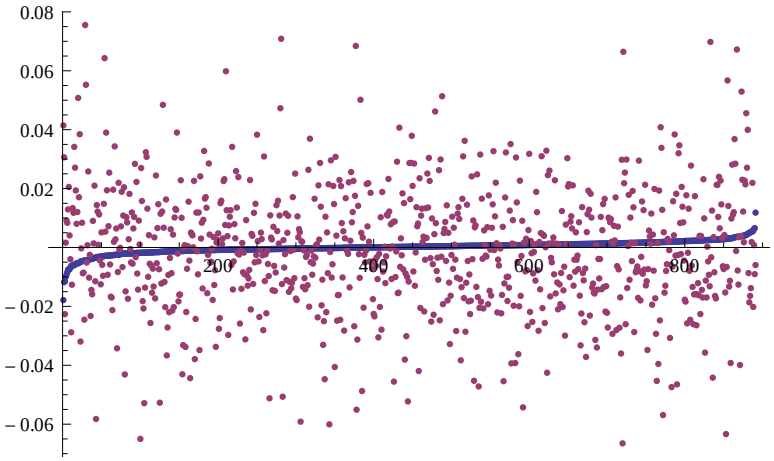
```
w = Sort[w, #1[[1]] < #2[[1]] &];
```

```
hedge = Transpose[w][[1]];
dax = Transpose[w][[2]];
```

```
w[[2]]
```

{−0.0117745, 0.0306036}

```
ListPlot[Transpose[w], PlotRange → All]
```




```
nN = 20; wN = Length[hedge];
m0 = Min[Transpose[w][[1]]]
Max[Transpose[w][[1]]]
m1 = Min[Transpose[w][[2]]]
Max[Transpose[w][[2]]]
f0 = (nN – 1) / (Max[Transpose[w][[1]]] – m0)
f1 = (nN – 1) / (Max[Transpose[w][[2]]] – m1)
d = 1 / wN // N
```

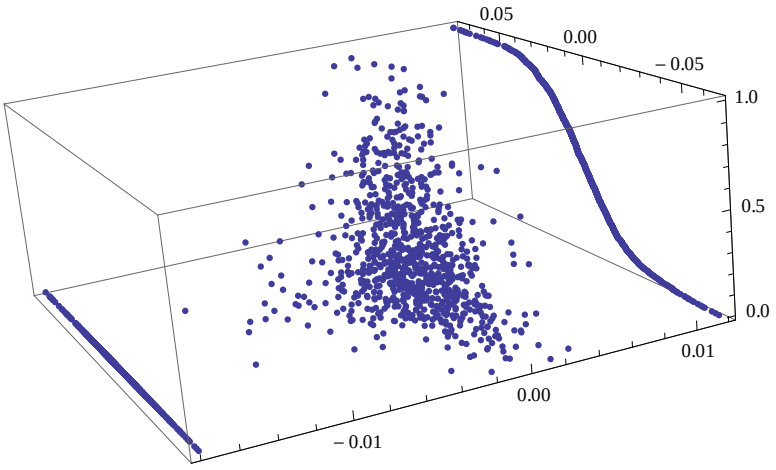
```
–0.0178719

0.0118256

–0.0665223

0.0755268

639.785

133.757

0.00112233
```

```
F = {}; For[i = 1, i ≤ wN, i++,
 For[j = 1, j ≤ wN, j++,
  m = 0;
  If[w[[j, 1]] <= w[[i, 1]]  && w[[j, 2]] ≤ w[[i, 2]], m++;];
 ];
 AppendTo[F, {w[[i, 1]], w[[i, 2]], m / wN}];
]
```

```
$Aborted
```

```
U = {}; nN = 20; For[i = 0, i ≤ nN, i++,
 AppendTo[U, {min0, i / nN * (max1 - min1) + min1, 0}];
]
For[i = 0, i ≤ nN, i++,
 AppendTo[U, {i / nN * (max0 - min0) + min0, min1, 0}];
]
For[i = 0, i ≤ nN, i++,
 AppendTo[U, {max0, i / nN * (max1 - min1) + min1,
    Length[Select[w, #[[1]] <= max0  && #[[2]] <= i / nN * (max1 - min1) + min1 &]] / wN}];
]
For[i = 0, i ≤ nN, i++,
 AppendTo[U, {i / nN * (max0 - min0) + min0, max1,
    Length[Select[w, #[[2]] <= max1  && #[[1]] <= i / nN * (max0 - min0) + min0 &]] / wN}];
]

wN = Length[hedge];
min0 = Min[Transpose[w][[1]]];
max0 = Max[Transpose[w][[1]]];
min1 = Min[Transpose[w][[2]]];
max1 = Max[Transpose[w][[2]]];

U = {}; sdax = Sort[dax]; AppendTo[U, {max0, max1, 1}];

For[i = 1, i ≤ wN, i++,
 (*AppendTo[U,{hedge[[i]],max1,(i-1)/wN}];*)
 AppendTo[U, {max0, sdax[[i]], (i - 1) / wN}];
 AppendTo[U, {min0, sdax[[i]], 0}];
]

F = {}; For[i = 1, i ≤ wN, i++,
 AppendTo[F, {w[[i, 1]], w[[i, 2]],
    Length[Select[w, #[[1]] < w[[i, 1]]  && #[[2]] < w[[i, 2]] &]] / wN}];
]

W = Join[F, U];
```

```
ListPointPlot3D[W]
```




```
ww = {};
For[i = 1, i ≤ wN, i++,
 AppendTo[ww, Select[W, #[[2]] == sdax[[i]] &]];
]

Length[W]
Length[Flatten[ww, 1]]
```

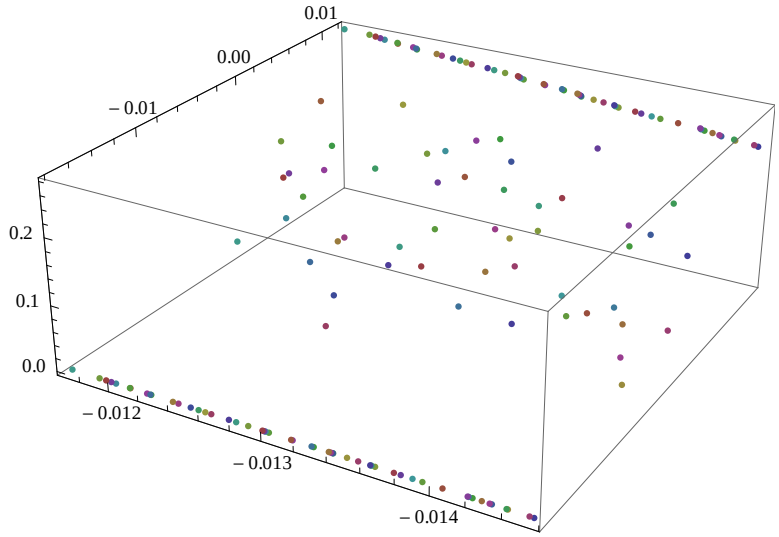
2674

2674

```
Sort[fi[[2]], #1[[1]] < #2[[1]] &] // N // MatrixForm
```

$$\begin{pmatrix} -0.0178719 & -0.0145212 & 0. \\ -0.000530372 & -0.0145212 & 0.0583614 \\ 0.0118256 & -0.0145212 & 0.224467 \end{pmatrix}$$

```
fi = ww[[200 ;; 250]];
ListPointPlot3D[fi]
```




```
Po[a_, b_] := If[b == 0, 1, If[b == -1, 0, a^b]];

B[n_, i_, x_] := Binomial[n, i] Po[x, i] Po[1 - x, n - i];

nn = Length[fi]
```

51

```
t = 0.1;

c =.

c[t0_, fi0_] := Module[{t = t0, fi = fi0, i, j, k, no, cc = {}, e}, For[i = 1, i ≤ nn, i++,
    e = Sort[fi[[i]], #1[[1]] < #2[[1]] &]; no = Length[fi[[i]]];

   For[j = 1, j ≤ no, j++,
    For[k = 1, k ≤ no - j, k++,
      e[[k]] = e[[k]] (1 - t) + e[[k + 1]] t;
     ];
   ];
   AppendTo[cc, e[[1]]];
  ];

  cc
 ]
```

```
erg[a0_, b0_, fi0_] := Module[{e = c[a0, fi0], t = b0, i, j, k, no},

  no = Length[e];

  For[j = 1, j ≤ no, j++,
   For[k = 1, k ≤ no - j, k++,
     e[[k]] = e[[k]] (1 - t) + e[[k + 1]] t;
    ];
  ];
  e[[1]]
 ]
```

```
erg[0.1, 0.1, fi]
```

```
{-0.0143759, -0.0142983, 0.0207922}
```

```
Erg = Flatten[Table[erg[x, y, fi], {x, 0, 1, 0.1}, {y, 0, 1, 0.1}], 1];
```

```
ListPointPlot3D[Erg]
```