1 Trading Grid

	$\frac{S_t}{S_0}$	Δr	$\Delta \nu$	Type	Value	w_k
1	0.70	0.00	0.00	pi	9'833.10	1.00
2	0.80	0.00	0.00	pi	8'109.50	1.00
3	0.90	0.00	0.00	pi	6'714.80	0.50
4	1.00	0.00	0.00	delta	8'709.10	0.00
5	1.00	0.00	0.00	gamma	7.41	0.00
6	1.00	0.00	0.00	pi	5'671.40	10'000.00
7	1.00	0.00	0.00	rho	281'190.00	0.00
8	1.00	0.00	0.00	vega	28'024.00	0.00
9	1.10	0.00	0.00	pi	4'945.00	0.50
10	1.20	0.00	0.00	pi	4'476.30	1.00
11	1.30	0.00	0.00	pi	4'194.90	1.00

2 Optimizer Task

```
Requested Portfolio
-------------------
-- Key Value --> Value ('Value', None, None, 250.0)
-- Key P1 --> Value ('P', [1, 2], [0.5, 0.6], [0, 200])
-- Key P2 --> Value ('P', [4, 5], [0.5, 0.6], [0, 200])
-- Key P3 --> Value ('P', [9, 10], [0.5, 0.6], [0, 200])
-- Key P4 --> Value ('P', [1, 2], [0.8, 0.9], [0, 200])
-- Key P5 --> Value ('P', [4, 5], [0.8, 0.9], [0, 200])
-- Key P6 --> Value ('P', [9, 10], [0.8, 0.9], [0, 200])
-- Key C7 --> Value ('C', [1, 1.2], [1.2, 1.4], [-2, 2])
-- Key C8 --> Value ('C', [4, 4.2], [1.2, 1.4], [-2, 2])
-- Key C9 --> Value ('C', [9, 9.2], [1.2, 1.4], [-2, 2])
-- Key B10 --> Value ('B', None, None, [0, 250])


 Optimizer Result
==================
      fun: 17825.796490489498
 hess_inv: <28x28 LbfgsInvHessProduct with dtype=float64>
      jac: array([ 1.90356224e+03,  6.03827099e+04,  5.50742652e+02, -3.39157852e+02,
       3.76050344e+04,  6.89774549e+02, -7.87875550e+02, -7.53324344e+03,
       2.03990932e+02, -3.16056418e+04, -1.68787765e+05,  3.99037784e+03,
      -3.72672987e+03, -3.47118084e+04,  8.56708726e+02, -7.55659067e+01,
      -2.50178781e+03, -1.72133296e+03, -4.60322847e+03,  6.43211064e+04,
      -1.21424132e+04,  5.17563315e+03, -6.67653345e+04, -2.14673333e+04,
       3.85493627e+03, -6.74576164e+04, -3.50401783e+04, -6.05883492e+01])
  message: 'CONVERGENCE: REL_REDUCTION_OF_F_<=_FACTR*EPSMCH'
     nfev: 14500
      nit: 356
     njev: 500
   status: 0
  success: True
```

```
x: array([ 1.8920582 ,  0.5       ,  8.02518829,  4.11209765,  0.5       ,
8.1067062 ,  9.00000071,  0.5       ,  6.62732308,  1.18792324,
0.89961855, 13.27681595,  4.02478685,  0.81851319,  4.62542591,
9.00000007,  0.80428979,  0.2013064 ,  1.00000388,  1.26741195,
1.69469003,  4.19999945,  1.26309058, -1.89482338,  9.00913283,
1.20012115, -1.89982887,  9.4283859 ])
```

3 Asset Directory

	Type	t	S_t	Strike	Number
1	B	0.00	None	None	9.42
2	C	1.00	1'289.10	1'633.80	1.69
3	C	4.20	1'289.10	1'628.20	-1.89
4	C	9.00	1'289.10	1'547.10	-1.89
5	P	1.18	1'289.10	1'159.70	13.27
6	P	1.89	1'289.10	644.54	8.02
7	P	4.02	1'289.10	1'055.10	4.62
8	P	4.11	1'289.10	644.54	8.10
9	P	9.00	1'289.10	1'036.80	0.20
10	P	9.00	1'289.10	644.54	6.62

4 Valuation

	π	δ	γ	ρ	ν
1.30	-1'286.10	-4'258.00	6.72	-22'506.00	1'144.00
1.20	-917.83	-5'006.30	10.83	-23'326.00	3'119.40
1.10	-431.04	-6'258.60	16.37	-25'168.00	5'595.60
1.00	250.00	-8'102.70	22.85	-28'408.00	8'289.90
0.90	1'226.60	-10'456.00	28.44	-33'300.00	10'574.00
0.80	2'608.00	-12'918.00	30.38	-39'787.00	11'771.00
0.70	4'473.80	-14'844.00	27.87	-47'537.00	11'909.00

4.1 Valuation Details at level 1.30

	Type	t	S_t	Strike	π	δ	ρ
1	B	0.00	None	None	9.42	0.00	0.00
2	C	1.00	1'289.10	1'633.80	297.48	1'788.60	1'491.10
3	C	4.20	1'289.10	1'628.20	-696.58	-2'188.60	-6'266.30
4	C	9.00	1'289.10	1'547.10	-1'121.80	-2'464.60	-12'098.00
5	P	1.18	1'289.10	1'159.70	63.78	-678.19	-881.42
6	P	1.89	1'289.10	644.54	0.11	-1.60	-3.26
7	P	4.02	1'289.10	1'055.10	100.75	-477.92	-2'329.00
8	P	4.11	1'289.10	644.54	6.36	-44.45	-209.00
9	P	9.00	1'289.10	1'036.80	9.94	-27.09	-333.31
10	P	9.00	1'289.10	644.54	44.46	-164.14	-1'877.50

4.2   Valuation Details at level 1.20

	Type	t	S_t	Strike	π	δ	ρ
1	B	0.00	None	None	9.42	0.00	0.00
2	C	1.00	1'289.10	1'633.80	176.28	1'248.90	1'072.60
3	C	4.20	1'289.10	1'628.20	-536.57	-1'814.70	-5'368.00
4	C	9.00	1'289.10	1'547.10	-937.12	-2'154.70	-10'969.00
5	P	1.18	1'289.10	1'159.70	142.01	-1'331.30	-1'750.10
6	P	1.89	1'289.10	644.54	0.33	-4.33	-8.84
7	P	4.02	1'289.10	1'055.10	145.20	-637.43	-3'149.90
8	P	4.11	1'289.10	644.54	10.96	-72.21	-342.02
9	P	9.00	1'289.10	1'036.80	12.29	-31.61	-395.17
10	P	9.00	1'289.10	644.54	59.34	-209.01	-2'415.20

4.3   Valuation Details at level 1.10

	Type	t	S_t	Strike	π	δ	ρ
1	B	0.00	None	None	9.42	0.00	0.00
2	C	1.00	1'289.10	1'633.80	89.99	755.34	665.35
3	C	4.20	1'289.10	1'628.20	-395.01	-1'446.20	-4'415.00
4	C	9.00	1'289.10	1'547.10	-763.33	-1'844.70	-9'742.10
5	P	1.18	1'289.10	1'159.70	303.23	-2'448.60	-3'269.00
6	P	1.89	1'289.10	644.54	0.98	-11.72	-24.04
7	P	4.02	1'289.10	1'055.10	209.31	-841.00	-4'227.20
8	P	4.11	1'289.10	644.54	19.09	-117.75	-562.73
9	P	9.00	1'289.10	1'036.80	15.26	-36.80	-468.66
10	P	9.00	1'289.10	644.54	79.99	-267.21	-3'124.80

4.4   Valuation Details at level 1.00

	Type	t	S_t	Strike	π	δ	ρ
1	B	0.00	None	None	9.42	0.00	0.00
2	C	1.00	1'289.10	1'633.80	37.54	374.49	336.95
3	C	4.20	1'289.10	1'628.20	-274.40	-1'094.20	-3'443.00
4	C	9.00	1'289.10	1'547.10	-602.42	-1'537.60	-8'425.20
5	P	1.18	1'289.10	1'159.70	614.03	-4'143.70	-5'651.90
6	P	1.89	1'289.10	644.54	2.91	-31.44	-65.01
7	P	4.02	1'289.10	1'055.10	301.26	-1'092.60	-5'609.90
8	P	4.11	1'289.10	644.54	33.63	-192.26	-928.90
9	P	9.00	1'289.10	1'036.80	19.05	-42.66	-555.50
10	P	9.00	1'289.10	644.54	108.96	-342.71	-4'065.10

4.5   Valuation Details at level 0.90

	Type	t	S_t	Strike	π	δ	ρ
1	B	0.00	None	None	9.42	0.00	0.00
2	C	1.00	1'289.10	1'633.80	11.89	141.17	129.28
3	C	4.20	1'289.10	1'628.20	-176.70	-772.43	-2'502.10
4	C	9.00	1'289.10	1'547.10	-456.58	-1'237.70	-7'037.50
5	P	1.18	1'289.10	1'159.70	1'164.20	-6'312.90	-8'882.20
6	P	1.89	1'289.10	644.54	8.56	-82.85	-172.96
7	P	4.02	1'289.10	1'055.10	431.92	-1'389.10	-7'329.10
8	P	4.11	1'289.10	644.54	59.86	-313.05	-1'533.40
9	P	9.00	1'289.10	1'036.80	23.89	-49.13	-657.23
10	P	9.00	1'289.10	644.54	150.09	-440.41	-5'314.50

4.6   Valuation Details at level 0.80

	Type	t	S_t	Strike	π	δ	ρ
1	B	0.00	None	None	9.42	0.00	0.00
2	C	1.00	1'289.10	1'633.80	2.57	36.39	33.81
3	C	4.20	1'289.10	1'628.20	-102.82	-496.33	-1'652.70
4	C	9.00	1'289.10	1'547.10	-328.17	-951.08	-5'611.80
5	P	1.18	1'289.10	1'159.70	2'040.50	-8'456.10	-12'469.00
6	P	1.89	1'289.10	644.54	24.90	-210.73	-445.84
7	P	4.02	1'289.10	1'055.10	614.88	-1'713.60	-9'371.50
8	P	4.11	1'289.10	644.54	107.42	-505.14	-2'518.90
9	P	9.00	1'289.10	1'036.80	30.08	-55.99	-774.78
10	P	9.00	1'289.10	644.54	209.19	-565.87	-6'975.60

4.7   Valuation Details at level 0.70

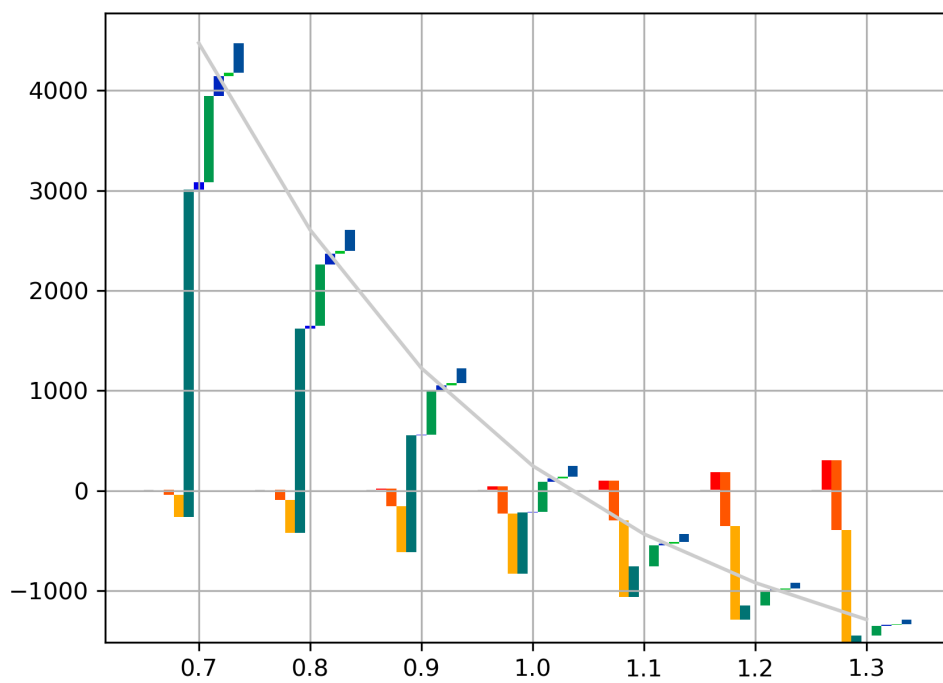|	Type	t	S_t	Strike	π	δ	ρ
1	B	0.00	None	None	9.42	0.00	0.00
2	C	1.00	1'289.10	1'633.80	0.32	5.48	5.16
3	C	4.20	1'289.10	1'628.20	-52.05	-279.71	-956.16
4	C	9.00	1'289.10	1'547.10	-219.58	-685.61	-4'198.50
5	P	1.18	1'289.10	1'159.70	3'272.70	-9'765.20	-15'488.00
6	P	1.89	1'289.10	644.54	70.55	-504.23	-1'087.50
7	P	4.02	1'289.10	1'055.10	865.54	-2'027.30	-11'643.00
8	P	4.11	1'289.10	644.54	193.67	-799.87	-4'085.50
9	P	9.00	1'289.10	1'036.80	38.03	-62.83	-907.79
10	P	9.00	1'289.10	644.54	295.18	-724.35	-9'175.70
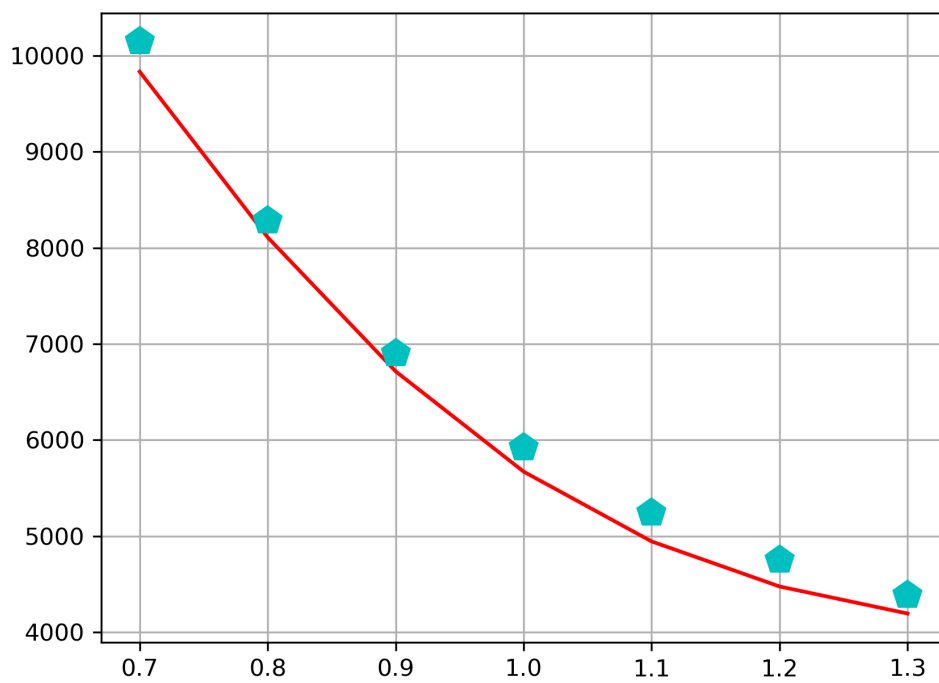
Figure 1: Adjusted Comparision
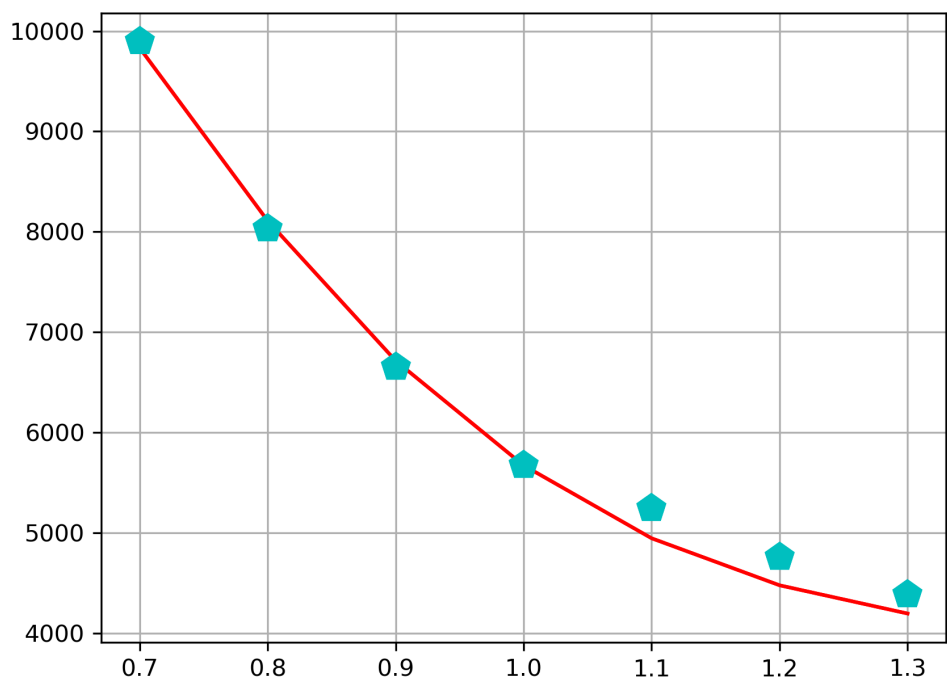
Figure 2: Adjusted Comparision

Figure 3: Decomposition P&L