Modelling the risk surface of Outokumpu corporation using a generic HPC platform for cross-disciplinary R & D

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Table 1: The parameter space of Outokumpu at the minimum risk point (core 1408)

The parameter space — **Historical accounts** — **Predicted accounts** — **Parametric variation for the risk surface**

Input

Outokumpu Oyj

range of linear variation ($\|dp\|$)	-0.075	κ_1	0.34969	$d\kappa_1$	-0.0225	$dS\kappa_1$	1.0707	dp
range of stochastic variation (Δ)	0.100	κ_2	0.00718	$d\kappa_2$	-0.0739	$dS\kappa_2$	1.1095	b_0
average inflation: 2.00 % cash tol.	0.100	b_0	0.2	b_1	10	t_0	0.5	kappaSwitch_point [0,1] 0.2000

	Low	High
dp	-0.0750	-0.0750
b_0	0.0100	0.2000

	2012	2013	2014	2015	2016	Mean	2017	2018	2019	2020	2021
Balance sheet											
1. Intangibles	0.6290	0.5700	0.5670	0.4980	0.5040	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536
2. Other financial assets	1.9620	2.6130	0.4520	0.4910	0.7050	1.2446	0.7050	0.7050	0.7050	0.7050	0.7050
3. Other restricted equity	0.7140	0.7140	0.7140	0.7140	0.7140	0.7140					
4. Accumulated depreciation difference											
5. Reserves											
6. Valuation items (liabilities)											
7. Current liabilities ratio	0.6738	0.4548	0.2972	0.2753	0.3780	0.4158	0.3780	0.3780	0.3780	0.3780	0.3780
8. Sales price/unit	1.7468	1.3797	1.4395	1.5852	1.6880	1.5679	1.7218	1.7562	1.7913	1.8271	1.8637
9. Sales receivables ratio	0.1870	0.0833	0.0778	0.0646	0.0815	0.0989	0.0815	0.0815	0.0815	0.0815	0.0815
10. Max new issue ratio											
11. Debt (t) < k_2*Eq(t)	1.2228	2.0048	1.0610	0.7746	0.6315	1.1389	0.6315				
12. Amortization ratio					-0.1547	-0.0309	0.0300				
Statement of Income											
13. Interest margin							7.9990 %				
14. Depreciation ratio	0.0906	0.1147	0.1106	0.1008	0.0839	0.1001	0.0950				
15. Fixed costs	2.0000	2.0000	2.0000	2.0000	2.0000	2.0000	2.0400	2.0808	2.1224	2.1649	2.2082
16. Interest rate ratio	0.0474	0.0852	0.0999	0.0881	0.0793	0.0800	7.9990 %	7.9990 %	7.9990 %	7.9990 %	7.9990 %
17. Other financial income	0.0168	0.0042	0.0221	0.1181	0.0071	0.0337					
18. Extraordinary income and expenses		0.0000	0.0000			0.0000					
19. Tax ratio	-0.0442	-0.0317	-2.2500	0.0899	-0.6856	-0.5843	0.1059				
Restrictions	**2012**	**2013**	**2014**	**2015**	**2016**	**Mean**	**2017**	**2018**	**2019**	**2020**	**2021**
20. Operating cost per unit	1.01	1.02	0.98	0.92	0.94	0.9754	1.0200	1.0404	1.0612	1.0824	1.1041
21. Efficiency factor							0.9987				
22. Use factor cost (0/1)							1.0000				
23. Factor cost per unit							1.0000	1.0000	1.0000	1.0000	1.0000
Other											
24. Discount rate for present value (WACC)							0.1500				
25. Investment profile											
26. Inertia							1.0000				
27. Dividend ratio							0.0100				
28. Default MC-iterations											
29. Default number of local grid points (s)							1.0000				

			2017	2018	2019	2020	2021
use market share (0-4):	2						
Market volume			3.457230	3.491802	3.526720	3.561988	3.597607
Gross share			100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SMI			1.00	1.00	1.00	1.00	1.00
Market share			100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Max sales			3.457230	3.491802	3.526720	3.561988	3.597607
H_1: parametric sales ceiling			3.701572	3.738587	3.775973	3.813733	3.851870
			sales price				
		κ_1	1.682933	1.716591	1.750923	1.785942	1.821660
use issue profile		κ_1					
	1		H_2: capital structure				
		κ_2	0.700625				
fixed cost rate			H_2: interest rate				
			1.994004	2.033884	2.074562	2.116053	2.158374
		κ_1	0.074077	0.074077	0.074077	0.074077	0.074077
			adjust prod.cost:	1			
			2017	**2018**	**2019**	**2020**	**2021**
		κ_1	1.020000	1.040400	1.061208	1.082432	1.104081
			1.00				
		H_3: factor cost					
		κ_1	0.890486	0.890486	0.890486	0.890486	0.890486
use investmt profile	1		Operations<Efficiency factor*Business driving assets				
			Factor cost per unit				

Table 2: The optimal PC-solution based on the parameters of Cray XC40 core number 1408 presented on the previous page.

Outokumpu Oyj	CPU-secs:	256.57	Solved:	30.3.2018 14:13:00
Discounted:	Solve	CHANGE DEFAULTS	Save results	
Net income	0.530452			
Dividends	0.01		Load data for Outokumpu Oyj	
Cash flow	2.94	System model: generator_2		

Key decisions

Decision variables/deviations	2017	2018	2019	2020	2021
1: Sales	3.7016	3.7386	3.7760	3.8137	3.8519
2: Operations	2.3889	3.7386	3.7760	3.8137	3.8519
3: New debt					
4: Amortization	0.0444	0.0431	0.0419	0.0406	0.0395
5: Investments		0.4851	0.3063	0.3098	0.3134
6: New issues					
7: Dividends	0.0031	0.0031	0.0031	0.0031	0.0031
8: Depreciation	0.2493	0.2698	0.2730	0.2762	0.2794
9: Dividend deviation (Divdiff)					
10: Equity deviation (EKdiff)					
11: Debt-Equity deviation (D/E_diff)					
12: Repayment deviation (REPdiff)					
13: Max dividend deviation (MAXdivdf)					
14: Investment deviation (Inv_diff)		0.4851	0.3063	0.3098	0.3134
15: Optimal cash from operations	2.0421	1.9416	2.0580	2.2100	2.3990
16: Pretax profit+	0.2078	0.1178	0.1534	0.1904	0.2288
17: Net loss-					
18: Inventory volume					
Liquidity difference					
PERIOD:	**2012**	**2013**	**2014**	**2015**	**2016**
Inventory volume	2.28	1.19	1.55	1.36	1.31

CHECK

PERIOD:	2017	2018	2019	2020	2021
Optimal cash	2.042050	1.941612	2.057951	2.209969	2.398954
Cash from statements	2.042050	1.941612	2.057951	2.209969	2.398954
Maximal Sales Volume	4.81	3.74	3.78	3.81	3.85
Optimal Sales Volume	3.70	3.74	3.78	3.81	3.85
Actual Sales Volume	3.70	3.74	3.78	3.81	3.85
Maximal Operations	3.50	3.74	3.78	3.81	3.85
Optimal Operations	2.39	3.74	3.78	3.81	3.85
Actual Operations	2.39	3.74	3.78	3.81	3.85
Minimal Depreciation	0.27	0.30	0.30	0.30	0.31
Optimal Depreciation	0.25	0.27	0.27	0.28	0.28
Actual Depreciation	0.25	0.27	0.27	0.28	0.28
Minimal Equity/Assets	0.70	0.70	0.70	0.70	0.70
Optimal Equity/Assets	0.40	0.41	0.42	0.43	0.45
Actual Equity/Assets	0.40	0.41	0.42	0.43	0.45
Maximal New Issues					
Optimal New Issues					
Actual New Issues					
Maximal Dividend	1.58	2.39	2.53	2.69	2.89
Minimal Dividend	0.00	0.00	0.00	0.00	0.00
Optimal Dividend	0.00	0.00	0.00	0.00	0.00
Actual Dividend	0.00	0.00	0.00	0.00	0.00
Equal Amortization	0.05	0.04	0.04	0.04	0.04
Optimal Amortization	0.04	0.04	0.04	0.04	0.04
Actual Amortization	0.04	0.04	0.04	0.04	0.04
Optimal fixed assets	2.62	2.84	2.87	2.91	2.94
Actual fixed assets	2.62	2.84	2.87	2.91	2.94
Optimal long.term debt	1.48	1.44	1.40	1.35	1.32
		1.44	1.40	1.35	1.32
Optimal new debt					
Actual new debt					
Optimal investments		0.49	0.31	0.31	0.31
Actual Investments		0.49	0.31	0.31	0.31
PERIOD:	**2017**	**2018**	**2019**	**2020**	**2021**
Inventory volume		0.00			0.00

Table 3: Allocation of the first budget year for monthly follow-up. The first budget year is derived from the optimal risk minimizing solution of core nr 1408

FINANCIAL STATEMENTS | base year: 2016 | scale: 1.E+06 units: giga€ | **PREDICTED ACCOUNTS**

Outokumpu Oyj | year in process: 2017 current calendar month: April | first financial month: Jan

																	Strategy				
	2016	Jan	Feb	March	April	May	June	July	August	Sep	Oct	Nov	Dec	Cumu-lative	Expected total	budget 2017	2017	2018	2019	2020	2021
Statement of income		monthly income 2017																			
Turnover	5.7780	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	1.5574	6.2295	**6.2295**	6.2295	6.4176	6.6114	6.8111	7.0168
Variable operating costs	3.4230	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.9172	3.6687	**3.6687**	3.6687	3.8896	4.0071	4.1281	4.2528
Fixed costs	2.0000	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.4985	1.9940	**1.9940**	1.9940	2.0339	2.0746	2.1161	2.1584
Operating income	0.3550	0.0472	0.0472	0.0472	0.0472	0.0472	0.0472	0.0472	0.0472	0.0472	0.0472	0.0472	0.0472	0.1417	0.5668	**0.5668**	0.5668	0.4941	0.5298	0.5669	0.6056
Depreciation	0.2520	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0623	0.2493	**0.2493**	0.2493	0.2698	0.2730	0.2762	0.2794
Operating income after depreciation	0.1030	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0265	0.0794	0.3174	**0.3174**	0.3174	0.2243	0.2568	0.2908	0.3263
Interest expenses	0.1210	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0274	0.1097	**0.1097**	0.1097	0.1065	0.1034	0.1004	0.0974
Other financial income	0.0050																				
Extraordinary income and expenses																					
Allocations (+/-)																					
Taxes	-0.1570	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0055	0.0220	**0.0220**	0.0220	0.0125	0.0162	0.0202	0.0242
Net income	**0.1440**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0155**	**0.0464**	**0.1858**	**0.1858**	**0.1858**	**0.1054**	**0.1372**	**0.1702**	**0.2046**
Assets		cumulative positions 2017																			
Fixed assets	2.8740	2.8532	2.8324	2.8117	2.7909	2.7701	2.7493	2.7286	2.7078	2.6870	2.6662	2.6454	2.6247	2.8117	2.6247	**2.6247**	2.6247	2.8400	2.8733	2.9070	2.9410
Intangible assets	0.5040	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	**0.5536**	0.5536	0.5536	0.5536	0.5536	0.5536
Inventory	1.2320	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0000	0.0000	0.0000	0.0000	0.0000
Sales receivables	0.4710	0.4741	0.4771	0.4802	0.4833	0.4863	0.4894	0.4925	0.4955	0.4986	0.5017	0.5047	0.5078	0.4802	0.5078	**0.5078**	0.5078	0.5231	0.5389	0.5552	0.5720
Cash	0.2040	1.4413	1.4962	1.5480	1.6029	1.6578	1.7127	1.7676	1.8225	1.8774	1.9323	1.9872	2.0421	1.5480	2.0421	**2.0421**	2.0421	1.9416	2.0580	2.2100	2.3990
Other financial assets	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	**0.7050**	0.7050	0.7050	0.7050	0.7050	0.7050
Financial assets	1.3800	2.6204	2.6783	2.7332	2.7911	2.8491	2.9071	2.9650	3.0230	3.0810	3.1389	3.1969	3.2549	2.7332	3.2549	**3.2549**	3.2549	3.1698	3.3019	3.4702	3.6759
Total Assets	**5.9900**	**6.0272**	**6.0644**	**6.0984**	**6.1356**	**6.1728**	**6.2100**	**6.2472**	**6.2844**	**6.3216**	**6.3587**	**6.3959**	**6.4331**	**6.0984**	**6.4331**	**6.4331**	**6.4331**	**6.5634**	**6.7288**	**6.9308**	**7.1705**
Shares equity and liabilities		cumulative positions 2017																			
Capital stock	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	0.3110	**0.3110**	0.3110	0.3110	0.3110	0.3110	0.3110
Other restricted equity	0.7140																				
Dividends				0.0031										0.0031							
Monthly net income		0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155	0.0155			0.1858	0.1054	0.1372	0.1702	0.2046
Accumulated net income	0.1440	0.0155	0.0310	0.0464	0.0619	0.0774	0.0929	0.1084	0.1238	0.1393	0.1548	0.1703	0.1858	0.0464	0.1858	**0.1858**					
Unrestricted equity	1.2460	2.1040	2.1040	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	2.1009	**2.1009**	2.1009	2.2835	2.3858	2.5199	2.6870
Shareholders' equity	2.4150	2.4305	2.4460	2.4583	2.4738	2.4893	2.5048	2.5203	2.5357	2.5512	2.5667	2.5822	2.5977	2.4583	2.5977	**2.5977**	2.5977	2.6999	2.8340	3.0011	3.2026
Accumulated depreciation difference																					
Reserves																					
Valuation items																					
Current liabilities	2.0500	2.0754	2.1008	2.1262	2.1516	2.1770	2.2024	2.2278	2.2532	2.2787	2.3041	2.3295	2.3549	2.1262	2.3549	**2.3549**	2.3549	2.4260	2.4993	2.5747	2.6525
Long-term debt	1.5250	1.5213	1.5176	1.5139	1.5102	1.5065	1.5028	1.4991	1.4954	1.4917	1.4880	1.4843	1.4806	1.5139	1.4806	**1.4806**	1.4806	1.4375	1.3956	1.3549	1.3155
Liabilities	3.5750	3.5967	3.6184	3.6401	3.6618	3.6835	3.7052	3.7269	3.7486	3.7703	3.7920	3.8137	3.8355	3.6401	3.8355	**3.8355**	3.8355	3.8634	3.8948	3.9297	3.9680
Liabilities & shareholders' equity	**5.9900**	**6.0272**	**6.0644**	**6.0984**	**6.1356**	**6.1728**	**6.2100**	**6.2472**	**6.2844**	**6.3216**	**6.3587**	**6.3959**	**6.4331**	**6.0984**	**6.4331**	**6.4331**	**6.4331**	**6.5634**	**6.7288**	**6.9308**	**7.1705**
Initial cash	0.1860	monthly cash flows 2017													**0.2040**	**0.2040**	**0.2040**	**2.0421**	**1.9416**	**2.0580**	**2.2100**
Initial monthly cash 2017		**0.2040**	**1.4413**	**1.4962**	**1.5480**	**1.6029**	**1.6578**	**1.7127**	**1.7676**	**1.8225**	**1.8774**	**1.9323**	**1.9872**								
Turnover		0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	1.5574	6.2295	**6.2295**	6.2295	6.4176	6.6114	6.8111	7.0168
Sales receivables change		-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031	-0.0092	-0.0368	**-0.0368**	-0.0368	-0.0153	-0.0158	-0.0163	-0.0168
Variable Operating Costs		-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.3057	-0.9172	-3.6687	**-3.6687**	-3.6687	-3.8896	-4.0071	-4.1281	-4.2528
Inventory change		1.2320												1.2320	1.2320	**1.2320**	1.2320	0.0000	0.0000	0.0000	0.0000
Fixed costs		-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.1662	-0.4985	-1.9940	**-1.9940**	-1.9940	-2.0339	-2.0746	-2.1161	-2.1584
Other financial assets change																					
Other financial income																					
Extraordinary income & expenses																					
Interest expenses		-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0091	-0.0274	-0.1097	**-0.1097**	-0.1097	-0.1065	-0.1034	-0.1004	-0.0974
Taxes		-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0018	-0.0055	-0.0220	**-0.0220**	-0.0220	-0.0125	-0.0162	-0.0202	-0.0242
Operating cash flows		**1.2652**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**0.0332**	**1.3316**	**1.6303**	**1.6303**	**1.6303**	**0.3598**	**0.3944**	**0.4301**	**0.4672**
Current liabilities change		0.0254	0.0254	0.0254	0.0254	0.0254	0.0254	0.0254	0.0254	0.0254	0.0254	0.0254	0.0254	0.0762	0.3049	**0.3049**	0.3049	0.0711	0.0733	0.0755	0.0778
New debt																					
Repayment		-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0037	-0.0111	-0.0444	**-0.0444**	-0.0444	-0.0431	-0.0419	-0.0406	-0.0395
Investments																		-0.4851	-0.3063	-0.3098	-0.3134
Investments in intangible assets		-0.0496												-0.0496	-0.0496	**-0.0496**	-0.0496				
New Issues																					
Share premium																					
Dividends				-0.0031										-0.0031	-0.0031	**-0.0031**	-0.0031	-0.0031	-0.0031	-0.0031	-0.0031
Terminal monthly cash 2017		**1.4413**	**1.4962**	**1.5480**	**1.6029**	**1.6578**	**1.7127**	**1.7676**	**1.8225**	**1.8774**	**1.9323**	**1.9872**	**2.0421**								
Terminal cash	0.2040													**1.3440**	**2.0421**	**2.0421**	**2.0421**	**1.9416**	**2.0580**	**2.2100**	**2.3990**

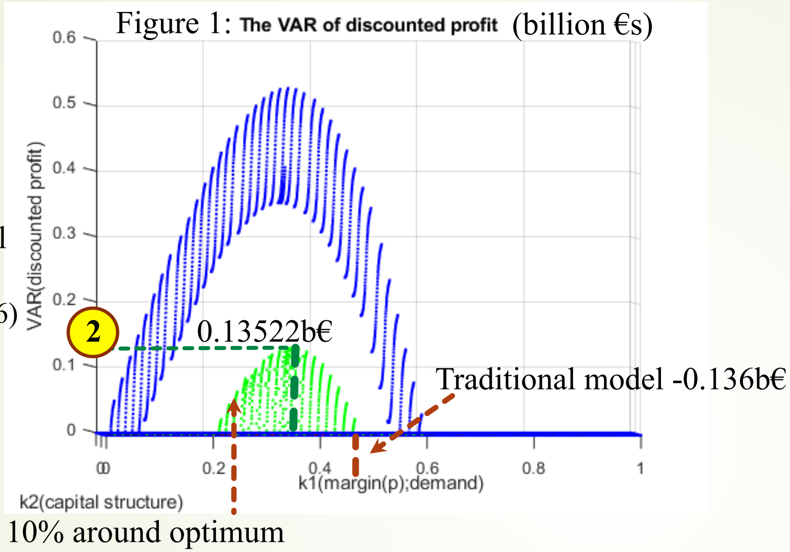
Table 4: Monthly allocation keys for budget follow-up. The allocations correspond to standard items in the general ledger

FINANCIAL STATEMENTS	**base year:**	**2016**				**Monthly allocation keys**											**PREDICTED ACCOUNTS**			
	scale:	**1.E+06**	**units:**	**giga€**																
Outokumpu Oyj	year in process:	**2017**	current calendar month:		**April**	first financial month:			**Jan**						**budget**					
	2016	**Jan**	**Feb**	**March**	**April**	**May**	**June**	**July**	**August**	**Sep**	**Oct**	**Nov**	**Dec**	**total**	**2017**	**2017**	**2018**	**2019**	**2020**	**2021**
(1) Investments and financing		**monthly allocations 2017**																		
New debt																				
Repayment		0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0037	0.0444	**0.0444**	0.0444	0.0431	0.0419	0.0406	0.0395
Long debt	1.5250	1.5213	1.5176	1.5139	1.5102	1.5065	1.5028	1.4991	1.4954	1.4917	1.4880	1.4843	1.4806	1.4806	**1.4806**	1.4806	1.4375	1.3956	1.3549	1.3155
Investments																	0.4851	0.3063	0.3098	0.3134
New Issues																				
Dividends				0.0031										0.0031	**0.0031**	0.0031	0.0031	0.0031	0.0031	0.0031
(2) Other asset components		**cumulative positions 2017**																		
Intangible assets	0.5040	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	0.5536	**0.5536**	0.5536	0.5536	0.5536	0.5536	0.5536
Inventory	1.2320																0.0000			0.0000
Sales receivables	0.4710	0.4741	0.4771	0.4802	0.4833	0.4863	0.4894	0.4925	0.4955	0.4986	0.5017	0.5047	0.5078	0.5078	**0.5078**	0.5078	0.5231	0.5389	0.5552	0.5720
Other financial assets	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	0.7050	**0.7050**	0.7050	0.7050	0.7050	0.7050	0.7050
(3) Other liability components		**cumulative positions 2017**																		
Other restricted equity	0.7140																			
Accumulated depreciation difference																				
Reserves																				
Valuation items																				
Current liabilities	2.0500	2.0754	2.1008	2.1262	2.1516	2.1770	2.2024	2.2278	2.2532	2.2787	2.3041	2.3295	2.3549	2.3549	**2.3549**	2.3549	2.4260	2.4993	2.5747	2.6525
(4) Statement of income		**monthly allocations 2017**																		
Turnover	5.7780	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	0.5191	6.2295	**6.2295**	6.2295	6.4176	6.6114	6.8111	7.0168
Variable operating costs	3.4230	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	0.3057	3.6687	**3.6687**	3.6687	3.8896	4.0071	4.1281	4.2528
Fixed costs	2.0000	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	0.1662	1.9940	**1.9940**	1.9940	2.0339	2.0746	2.1161	2.1584
Depreciation	0.2520	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.0208	0.2493	**0.2493**	0.2493	0.2698	0.2730	0.2762	0.2794
Interest expenses	0.1210	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.0091	0.1097	**0.1097**	0.1097	0.1065	0.1034	0.1004	0.0974
Other financial income	0.0050																			
Extraordinary income and expenses																				
Taxes	-0.1570	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0220	**0.0220**	0.0220	0.0125	0.0162	0.0202	0.0242

The profit profile and (green) 2.5% risk surface of Outokumpu (the graph is in billions of euros. 4096 dots in the figure, containing the numerical information presented below for core number 1408, $\{\kappa_1,\kappa_2\}^* = (3.496875e\text{-}01,\ 7.1875e\text{-}03)$.)

The maximum distance to the loss level of the HPC-model 2 is 0.135 billion euros and for the traditional model -0.136 billion euros: the difference is 0.135-(-0.136) = 0.27b€.

The best HPC-strategy is ~270 million euros safer.



The 100-year risk surface of Outokumpu Oyj (best core 1408, (m,n) = (2400, 3200), $\{\kappa_1, \kappa_2\}^* = (3.509375\text{e-}01, 1.2500\text{e-}03)$)

Figure 2: **The VAR of discounted profit**

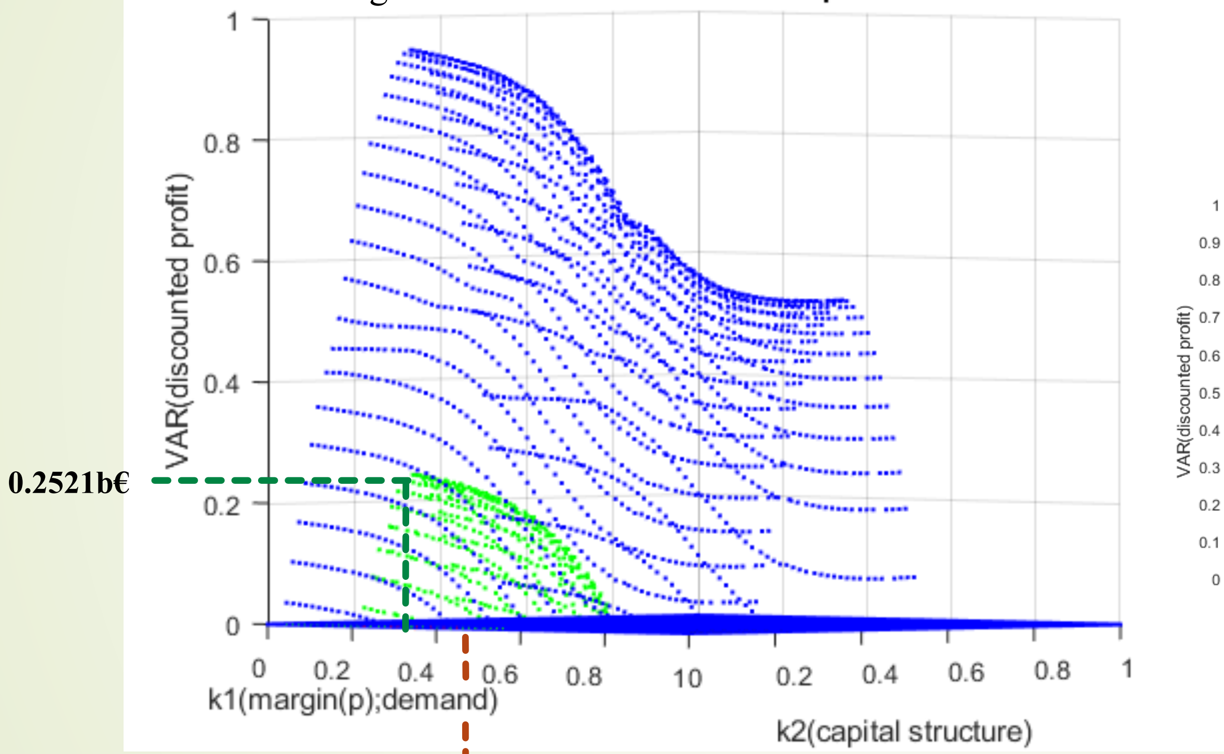
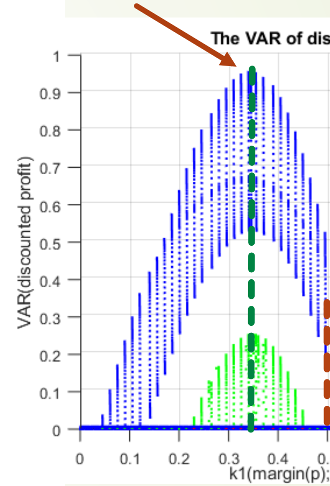


Figure 3: Rotated view

The expected discounted profit of the HPC-strategy = 0.954b€ (cf. enclosed Excel-file (sheet f...statements.1408)



The expected discounted profit of the traditional strategy = 0.331b€ (cf. enclosed Excel-file (sheet f...statements.0)

Traditional risk analysis yields losses also over 100 years

The κ-space is the same in both the 5- and 100-year experiments:
-0.075 -0.075 dp_L;dp_H (price_range(>0->linear,<0->sigmoidal activation))
0.2 0.2 0.2 b_L;b_H;kappaSwitch_point