# From Formation to Closure – A Navigator's Perspective\* on the Work and Cash Flow Cycle of a Small Business and its Main Delays \* i.e. A General Overview for Directors

The cash flow cycle is essential to a business's survival. Often, the process is delayed between the stages of acquiring orders, creating work results, invoicing, and receiving payments from customers. Managing cash flow can therefore be a challenge, particularly in the start-up phase or when expanding.

## Subject of discussion and methodology

A small business is generally dependent on the output of its employees (fixed costs are low). To keep the business running, money is needed:

- Cash flow (input and output): transformation of cash into work results (by paying salaries) and back into cash again (step by step). On the customer's side (Fig.1 on the left), delays have an impact on the work and cash flow cycle.
- Balance: profit and loss accounting.

Fig. 1 shows four system boundaries:



- 1 Employees produce results. Salaries (outgoing) have to be paid more or less at the same time that the work is carried out (no delay).
- 2 Project managers are responsible for order acquisition and the presentation of results (reports). Delays are the time between:
  - .. successful order acquisition and execution of work (*worklist*);
  - .. doing the actual work and delivering the results to the costumer and invoicing (*work in progress*);

  - .. invoicing and receiving payments (incoming). (debtors = outstanding receivables).
- 3 The board of directors is responsible for strategic issues (for scenarios, see below) and overheads (administration, profit and loss accounting), etc.
- 4 Capital budgeting includes starting capital and investments. They have to be financed by the business itself or by finding external sources.

Fig. 1 System sketch with cash flow cycle.

#### Delays matter – a comparison

The impact of delays can be seen on both cash and equity. A comparison is made for the duration of either 0 or 3 months between paying salaries and receiving payments from the customers (*work in progress + debtors*).

Equity is defined as cash + work in progress + debtors (outstanding receivables), while the worklist (work acquired but not yet started) is not added but represents a hidden reserve in accounting terms.

#### Scenarios within the life cycle of a business

Six scenarios within the life cycle of a business are studied, based on its size (number of employees).

Size of busines	at start	end
Scenario	[full-time jo	bs in %]
Formation	0	400
Business as usual	400	400
Expansion to 200 %	400	800
Downsizing to 50 %	400	200
Closure	400	0
Serious trouble	400	0

Fig. 1 Scenarios within the life cycle of a business.

For each scenario, a decision on whether to change is made at the beginning of year X. The transition is completed after one year. The time sequence starts in year X-1 and ends in year X+2. Note that it takes two years to see the full effects due to the delays.

#### Parameters – ceteris paribus

All other parameters (besides size and delays) are defined within a typical range with no variation, based on the concept of ceteris paribus (i.e. all other things being equal). In particular, it is assumed that the

- .. workload of each employee is 100 %. This can be a challenging target on its own to meet continuously. (An exception is "serious trouble" – it means a severly low workload and therefore going bankrupt.)
- .. business is sustainable and allows a yearly profit of 10 % of the revenues or  $\sim$  5 % of the starting capital;
- .. appropriation of the profits is limited. A **minimum cash base** of 25 % of the planned revenues per year is defined. This precautionary measure takes into account fluctuations due to large individual payments (in or out) and late payments (in), etc.

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Many businesses try to minimise delays in their cash flow cycle with short payment terms or cash on delivery. Without delays, work commenced plus debtors equals zero. This means they are converted into cash immediately and equity is minimised.

Balance	with	out	with delay						
as at 31/12	start	end	start	end					
cash	250	250	250	250					
equity	250	250	500	500					
profit per year	100	100	100	100					

Fig. 2 Comparison of balance for business as usual.

Equity (and required starting capital) is therefore only 50 % compared to a business with delays.

#### Formation stage: requires capital and full of risks

The formation stage is full of risks, as the business has to raise enough capital (expenses first, earnings later) and acquire orders quickly.

Balance	without	delay	with delay						
as at 31/12	start	end	start	end					
cash	475	250	725	250					
equity	475	250	725	500					
profit per year	0	100	0	100					
new capital	475	-	725	-					

Fig. 3 Balance in the formation stage.

With delays, businesses need more starting capital, as there is also a delay between carrying out the work and getting paid (*work in progress + debtors*).

Given the definition for equity without worklist, starting capital diminishes during the formation stage because of the delay between acquiring orders and carrying out work. Equity would be higher in the end if there was no such delay or if the worklist were added to equity.

## Expansion needs new capital

Balance	without	delay	with delay						
as at 31/12	start	end	start	end					
cash	250	500	250	500					
equity	250	500	500	1,000					
profit per year	100	200	100	200					
new capital	300	-	550	-					

Fig. 4 Balance before and after expansion.

With delays, businesses need more new capital to expand. This must be found from external sources (e.g. venture capital or going public) or from within the business itself. In this case, the risk of failure will be higher because of fluctuations in cash.

#### Downsizing and closure create backflow

It can be beneficial to reduce the size of a flourishing business to recoup the starting capital.

Balance	without	delay	with delay						
as at 31/12	start	end	start	end					
cash	250	125	250	125					
equity	250	125	500	250					
profit per year	100	40	100	40					
capital backflow	/ -	230	-	356					

Fig. 5 Balance before and after downsizing.

The backflow of capital is almost proportional to the equity including the worklist (= invested starting capital); it is higher for the business if there are delays.

Balance	without	delay	with delay							
as at 31/12	start	end	start	end						
cash	250	0	250	0						
equity	250	0	500	0						
profit per year	100	0	100	0						
capital backflov	V -	500	-	750						

Fig. 6 Balance before and after closure.

The capital backflow when shutting down is equal to equity including worklist. Note that this is only the case at a constant workload of 100 %, so the decrease in the number of employees and acquisition have to be closely coordinated. Otherwise, capital backflow may become negative, resulting in debt.

## Serious trouble and the emergency brake

The board of directors should always be aware of imminent difficulties and take fast and firm action to avoid insolvency in case of problems. To avoid running out of cash, a suboptimal workload must be corrected by adequate downsizing or enforced (and successful!) acquisition.

#### Conclusion and practical benefit

To successfully direct a business through its life cycle, both of the following are needed: high precision work (accurate accounting and administration, etc.) and a navigator's perspective\* of the big picture (a systems engineering view). Further discussions can be held about changes in delays during business as usual, etc. \* i.e. a general overview for directors.

	year X-1	year X		year X+1			year X+2									
	business as ι bu	siness as ubusin	ess as i b	ousiness as u	business as ι b	ousiness as ι b	usiness as ιb	usiness as i	business as ι b	usiness as ι b	usiness as ι b	usiness as	business as ι	business as	ι business as u	sual
quarters	Q 01	Q 02 Q	03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]																
full time jobs	400	400	400	400	400	400	400	400	400	400	400	400	400			
ideal workload	100	100	100	100	100	100	100	100	100	100	100	100	100			
outstanding receivables	all data in [kchf	]		į												
worklist		250	250	250	250	250	250	250	250	250	250	250	250			
worklist = contracts existing,		dolou	1	i					1					dolou 1		
work not done yet		ueray	1											auartor		
		quart	21											quarter		
work in progress + debtors		Y	250	250	250	250	250	250	250	250	250	250	250	250	0	
				la la vid	work in progre	ess			debtors = invo	ices sent to co	ostumers				data a data data data data data data da	
				delay I	this means wo	ork performed			but not paid ye	et					delay I	
			6	quarter	not yet invoice	ed			ĺ						quarter	
input and output (cash flow)	all data in [kchf]	]		1									ĺ			
revenues			Y	250	250	250	250	250	250	250	250	250	250	250	250	
annual sales	=f(revenues)			1'000	1'000	1'000	1'000	1'000	1'000	1′000	1'000	1'000	1'000			
variable costs: salaries	=f(no. of employ	yees, work load)		-200	-200	-200	-200	-200	-200	-200	-200	-200	-200			
fixed costs: rent a.o.				-25	-25	-25	-25	-25	-25	-25	-25	-25	-25			
expenses	=∑ variable + fix	ed costs		-225	-225	-225	-225	-225	-225	-225	-225	-225	-225			
profit per quarter (earnings)	=revenues - exp	enses		25	25	25	25	25	25	25	25	25	25			
appropriation of earnings	=f(cash, minima	aler Bestand)			-100				-100				-100			
balance	all data in [kchf	1		ļ												
minimum cash = 25 % of planned annual	sales*			250	250	250	250	250	250	250	250	250	250	* to be able	to react to flue	ctuations
cash			325	350	275	300	325	350	275	300	325	350	275			
cash + work in progress + debtors	=∑			600	525	550	575	600	525	550	575	600	525			
cash + work i.p. + deb. + worklist	=5			850	775	800	825	850	775	800	825	850	775			
	_															





	year X y					year X+1				year X+2						
	business as ι bι	usiness as Lbusine	ess as i bi	usiness as u	business as ι b	usiness as ιb	usiness as ιb	usiness as u	business as ι b	usiness as ι b	usiness as ι b	usiness as u	business as u	business as ι b	usiness as us	ual
quarters	Q 01	Q 02 Q	03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]				1								1				
full time jobs	400	400	400	400	400	400	400	400	400	400	400	400	400			
ideal workload	100	100	100	100	100	100	100	100	100	100	100	100	100			
outstanding receivables	all data in [kch	f]		ĺ												
worklist			250	250	250	250	250	250	250	250	250	250	250			
worklist = contracts existing,				alau 1								1		ما ما م		
work not done yet			de	elay 1										delay 1		
			ldr	Jarter										quarter		
work in progress + debtors			0	0	0	0	0	0	0	0	0	0	0	0		
Arbeiten werden sofort in Rechnung					work in progres	SS			debtors = invoi	ices sent to co	ostumers			work comment	ed plus	
gestellt und bezahlt (Prinzip Barzahlung				ļ	this means wo	rk performed		ļ	but not paid ye	et				debtors are con	nverted	
bei Coiffeur)				1	not yet invoice	d		į				1		into cash imme	ediately	
input and output (cash flow)	all data in [kch	f]										1				
revenues			The second secon	250	250	250	250	250	250	250	250	250	250	250		
annual sales	=f(revenues)			1'000	1'000	1'000	1'000	1'000	1'000	1'000	1'000	1'000	1'000			
variable costs: salaries	=f(no. of emplo	oyees, work load)		-200	-200	-200	-200	-200	-200	-200	-200	-200	-200			
fixed costs: rent a.o.				-25	-25	-25	-25	-25	-25	-25	-25	-25	-25			
expenses	=∑ variable + fi	xed costs		-225	-225	-225	-225	-225	-225	-225	-225	-225	-225			
profit per quarter (earnings) .	=revenues - exp	penses		25	25	25	25	25	25	25	25	25	25			
appropriation of earnings	=f(cash, minim	aler Bestand)			-100				-100				-100			
balance	all data in [kchi	f]		ļ												
minimum cash = 25 % of planned annual	l sales*			250	250	250	250	250	250	250	250	250	250	* to be able to	react to fluct	tuations
cash			325	350	275	300	325	350	275	300	325	350	275			
cash + work in progress + debtors	=Σ			350	275	300	325	350	275	300	325	350	275			
cash + work i.p. + deb. + worklist	=5			600	525	550	575	600	525	550	575	600	525			
	_															





	year X-1				year X	build up	build un	build up	year X+1 build up	husiness as I h	husiness as I h	usiness as I	year X+2 business as I	nusiness as I	husiness as us	ual
quarters	Q 01	Q 02 Q	03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]	0	0	0		400	200	200	400	400		400	100	100			
full time jobs	100	100	100	100	100	100	300 100	400	400	) 400 ) 100	400	400	400			
	100	100	100	100	100	100	100	100	100	, 100	100	100	100			
outstanding receivables	all data in [kch	nf]		ļ												
worklist		0	0	0	63	125	188	250	250	) 250	250	250	250			
worklist = contracts existing,		delay	1	1									1	delay 1		
work not done yet		quarte	r	í									1	quarter		
work in progress + debtors			0	0	0	63	125	188	250	) 250	250	250	250	250		
			del	ay 1	work in prog	ress	.al		debtors = in	voices sent to c	ostumers		1		delay 1	
			qua	arter	not vet invoi	vork periorme	a,		but not paid	iyet					quarter	
input and output (cash flow)	all data in [kch	sf1			not yet mvon	ceu										
revenues		"]	<b>↓</b>	0	0	0	63	125	188	3 250	250	250	250	250	250	
(planned) annual sales	=f(revenues)			1'000	1000	188	188	188	1000	938	938	938	1000	200		
variable costs: salaries	=f(no. of emplo	oyees, work load)		0	-50	-100	-150	-200	-200	) -200	-200	-200	-200			
fixed costs: rent a.o.				0	-25	-25	-25	-25	-25	-25	-25	-25	-25			
expenses	=∑ variable + fi	ixed costs		0	-75	-125	-175	-225	-225	-225	-225	-225	-225			
profit per quarter (earnings) .	=revenues - ex	penses		0	-75	-125	-113	-100	-38	3 25	25	25	25			
appropriation of earnings	=f(cash, minim	naler Bestand)		1	0				C	0			-100			
halanca	all data in [keh	.fl		1	nood for con	itall							1			
minimum cash = 25 % of planned annual	all uata III [KCII	"]		250	250	11.01 !	/17	47	250	) 23/	23/	23/	250 3	to be able	to react to fluct	tuations
cash	50105		0	725	650	525	413	313	230	5 300	325	350	230		to react to nuc	tuations
cash + work in progress + debtors	=5		0	725	650	588	538	500	525	5 550	575	600	525			
cash + work i.p. + deb. + worklist	=5			725	713	713	725	750	775	5 800	825	850	775			
	_												1			



	year X-1					year X	build up	build up	build up	year X+1	husinoss as i	husinoss os i h	usinoss as i	year X+2	husinoss as i	husinoss as u	cual
quarters	Q 01	Q 02	Q	03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]	-				1					1				1			
full time jobs		0	0	0	0	100	200	300	400	400	400	400	400	400			
ideal workload	1	100	100	100	100	100	100	100	) 100	100	0 100	100	100	100			
outstanding receivables	all data ii	n [kchf]								l							
worklist		0		0	0	63	125	188	3 250	250	) 250	250	250	250			
worklist = contracts existing, work not done yet				del qua	ay 1 Irter										delay 1 quarter		
work in progress + debtors				о	0	0	0	(	) 0	c	) 0	0	0	0	0		
Arbeiten werden sofort in Rechnung gestellt und bezahlt (Prinzip Barzahlung bei Coiffeur)						work in prog this means v not yet invoi	ress work perform ced	ed,		debtors = in but not paid	voices sent to c l yet	costumers			work comme debtors are c into cash imr	nced plus onverted nediately	
input and output (cash flow)	all data i	n [kchf]			1					1							
revenues					0	0	63	125	5 188	250	) 250	250	250	250	250		
(planned) annual sales	=f(revenu	ues)			1'000	1'000	375	375	375	1'000	<b>)</b> 1'000	1'000	1'000	1'000			
variable costs: salaries	=f(no. of	employees, v	vork load)		0	-50	-100	-150	) -200	-200	) -200	-200	-200	-200			
fixed costs: rent a.o.	State and a la	I Russian			0	-25	-25	-25	-25	-25	-25	-25	-25	-25			
expenses	=> variab	ble + fixed cos	TS		0	-75	-125	-1/5	-225	-225	-225	-225	-225	-225			
appropriation of earnings	=f(cash, r	minimaler Be	stand)		0	-75	-05	-50	-30	23	) 25	25	25	-100			
balance	all data i	n [kchf]				need for cap	ital!			1							
minimum cash = 25 % of planned annual	l sales*				250	250	94	94	94	250	) 250	250	250	250	* to be able t	o react to fluo	ctuations
cash				0	475	400	338	288	3 250	275	5 300	325	350	275			
cash + work in progress + debtors	=Σ				475	400	338	288	3 250	275	5 300	325	350	275			
cash + work i.p. + deb. + worklist	=∑				475	463	463	475	5 500	525	5 550	575	600	525			

Formation

without delay



		year X				year X+1				year X+2					
	business as ι bu	siness as ι busine	ss as ι business as	downsizing	downsizing	downsizing	downsizing	downsizing	business as ι b	ousiness as ι b	usiness as u	business as ι	ousiness as	ubusiness as u	sual
quarters	Q 01	Q 02 Q 0	03 Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]				1				ĺ			1				
full time jobs	400	400	400 400	375	325	275	225	200	200	200	200	200			
ideal workload	100	100	100 100	100	100	100	100	100	) 100	100	100	100			
outstanding receivables	all data in [kchf]	]		1							ĺ				
worklist	250	250	250 250	234	203	172	141	125	125	125	125	125			
worklist = contracts existing,		delay 1	L	1									lelav 1		
work not done yet		quarte	r								ļ	c	uarter		
work in progress + debtors			250 250	250	234	203	172	141	. 125	125	125	125	125		
			data a d	work in prog	ress			debtors = in	voices sent to c	ostumers		_			
			delay 1	this means v	work perform	ed,		but not paid	yet					delay 1	
			quarter	not yet invoi	ced			ĺ			1			quarter	
input and output (cash flow)	all data in [kchf]	]		1							1				
revenues			250	250	250	234	203	172	. 141	125	125	125	125	125	
(planned) annual sales	=f(revenues)		1000	1000	938	938	938	500	500	500	500	500			
variable costs: salaries	=f(no. of employ	yees, work load)	-200	.188	-163	-138	-113	-100	) -100	-100	-100	-100			
fixed costs: rent a.o.	downsizing		-25	5 -25	-25	-25	-25	-15	-15	-15	-15	-15			
expenses	=∑ variable + fix	ed costs	-225	5 -213	-188	-163	-138	-115	-115	-115	-115	-115			
profit per quarter (earnings) .	=revenues - exp	enses	25	5 38	63	72	66	57	26	10	10	10			
appropriation of earnings	=f(cash, minima	aler Bestand)		-100				-363	5			-103			
				1				high revenu	getting back st	arting capital	(293)	high revenu: g	etting back	starting capita	ıl (63)
balance	all data in [kchf]	]		1											
minimum cash = 25 % of planned annual	sales*		250	250	234	234	234	125	125	125	125	125 '	to be able	to react to flue	ctuations
cash			325 350	288	350	422	488	182	208	218	228	135			
cash + work in progress + debtors	=∑		600	538	584	625	659	323	333	343	353	260			
cash + work i.p. + deb. + worklist	=∑		850	772	788	797	800	448	458	468	478	385			
				1											





	year X-1	year X ye					year X+1				year X+2				
	business as ι b	usiness as ubusine	ss as ι busines	s as 🕻	downsizing	downsizing	downsizing	downsizing	downsizing	business as ι b	business as ι b	usiness as	business as ι	business as ι busin	ness as usual
quarters	Q 01	Q 02 Q 0	13 Q 04	4	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02 0	Q 03 Q 04
size of enterprise [%]				1					1						
full time jobs	400	400	400	400	375	325	275	225	200	200	200	200	200		
ideal workload	100	100	100	100	100	100	100	100	100	0 100	100	100	100		
outstanding receivables	all data in [kch	f]		1					ļ						
worklist			250	250	234	203	172	141	125	5 125	125	125	125		
worklist = contracts existing,			dalau 1	1					1					dalau 1	
work not done yet			delay 1											delay 1	
			quarter						1					quarter	
work in progress + debtors			0	0	0	0	0	0	(	0 0	0	0	0	0	
Arbeiten werden sofort in Rechnung				V	work in prog	ress			debtors = in	voices sent to c	ostumers			work commenced	plus
gestellt und bezahlt (Prinzip Barzahlung				t	this means v	vork perform	ed,		but not paid	l yet				debtors are conve	rted
bei Coiffeur)				ļr	not yet invoi	ced			1					into cash immedia	ately
input and output (cash flow)	all data in [kch	f]		1					ĺ						
revenues			Y	250	250	234	203	172	141	L 125	125	125	125	125	
annual sales	=f(revenues)			1000	1'000	859	859	859	500	516	516	516	500		
variable costs: salaries	=f(no. of emplo	oyees, work load)		-200	-188	-163	-138	-113	-100	) -100	-100	-100	-100		
fixed costs: rent a.o.	downsizing			-25	-25	-25	-25	-25	-19	5 -15	-15	-15	-15		
expenses	=∑ variable + fi	ixed costs		-225	-213	-188	-163	-138	-115	5 -115	-115	-115	-115		
profit per quarter (earnings) .	=revenues - ex	penses		25	38	47	41	34	26	5 10	10	10	10		
appropriation of earnings	=f(cash, minim	aler Bestand)		- 1	-100				-284	1			-56		
									high revenu	: getting back st	tarting capital	(214)	high revenu:	getting back starti	ng capital (16)
balance	all data in [kch	f]													
minimum cash = 25 % of planned annua	l sales*			250	250	215	215	215	125	5 129	129	129	125	* to be able to rea	act to fluctuations
cash			325	350	288	334	375	409	151	L 161	171	181	135		
cash + work in progress + debtors	=∑			350	288	334	375	409	151	L 161	171	181	135		
cash + work i.p. + deb. + worklist	=∑			600	522	538	547	550	276	5 286	296	306	260		
				1					1						





	year X-1 business as ι bus	siness as ubusine	ess as ι business a	year X s u <mark>downsizing</mark>	downsizing	downsizing	downsizing	year X+1 downsizing				year X+2			
quarters	Q 01	Q 02 Q	03 Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]	400					450									
full time jobs	400	400	400 40	350	100	150	50 100	0	0	0	0	0			
	100	100	100 10	100	100	100	100				1				
outstanding receivables	all data in [kchf]										į				
worklist	250	250	250 25	50 219	156	94	31	0	0	0	0	0			
worklist = contracts existing,		veleb	1	1							1	d	olov 1		
work not done yet		quarte	r vr	1							1	a	uarter		
		quarce		1								9	aareer		
work in progress + debtors			250 2	50 250	219	156	94	31	0	0	0	0	0		
			delay 1	work in prog	gress	a.		debtors = invoi	ces sent to co	stumers				delay 1	
			quarter	this means	work performe	a,		but not paid ye	τ.					quarter	
innut and autout (see h flour)	all data in [kahf]			mot yet moo	iceu										
			21	50 250	250	210	156	94	21	0	0	0	0		
(planned) annual sales	=f(revenues)		10	100	875	875	875	0	0	0	0	0	0		
variable costs: salaries	=f(no. of employ	ees, work load)	-20	-175	-125	-75	-25	0	0	0	0	0			
fixed costs: rent a.o.	downsizing	· · · · ·	-3	25 -25	-25	-25	-25	0	0	0	0	0			
expenses	=∑ variable + fixe	ed costs	-22	25 -200	-150	-100	-50	0	0	0	0	0			
profit per quarter (earnings) .	=revenues - expe	enses	:	25 50	100	119	106	94	31	0	0	0			
appropriation of earnings	=f(cash, minima	ler Bestand)		-100	1			-625			1	-125			
				1				high revenu: ge	etting back sta	rting capital		high revenu: ge	etting back	starting capital	
balance	all data in [kchf]		2		240	24.0	24.0	0	0	0	_	0.*		the second test filles	
minimum cash = 25 % of planned annual	I sales*		225 21	250	219	Z19 E10	219	04	125	125	125	0 ~	to be able	to react to fluc	tuations
cash + work in progress + debtors	-2		525 3: 61	0 550	400 610	519	710	94 125	125	125	125	0			
cash + work in + deb + worklist	=2		81	50 769	775	769	713	125	125	125	125	0			
cash - Working - acti - Working	2		0.		115	705	750	125	120	125	125	Ŭ			



Closure

with delay

	year X-1 business as ι bu	isiness as ι busin	ess as ι busin	ess as l	year X downsizing	downsizing	downsizing	downsizing	year X+1 downsizing				year X+2			
quarters	Q 01	Q 02 Q	03 O	04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]				1					1							
full time jobs	400	400	400	400	350	250	150	50	0	0	0	0	0			
ideal workload	100	100	100	100	100	100	100	100	100	100	100	100	100			
outstanding receivables	all data in [kchf	.]														
worklist			250	250	219	156	94	31	0	0	0	0	0			
worklist = contracts existing,			delay	1					1			1		delay 1		
work not done yet			quart	er										quarter		
work in progress + debtors			0	0	0	0	0	0	0	0	0	0	0	c	)	
Arbeiten werden sofort in Rechnung gestellt und bezahlt (Prinzip Barzahlung bei Coiffeur)					work in prog this means v not yet invoid	ress vork performe ced	ed,		debtors = invo but not paid y	vices sent to co et	ostumers			work comm debtors are into cash im	enced plus converted mediately	
input and output (cash flow)	all data in [kchf	]							1			í			_	
revenues			Υ	250	250	219	156	94	31	0	0	0	0	C	0	
annual sales	=f(revenues)			1000	719	719	719	719	0	0	0	0	0			
variable costs: salaries	=f(no. of emplo	yees, work load)		-200	-175	-125	-75	-25	0	0	0	0	0			
fixed costs: rent a.o.	downsizing			-25	-25	-25	-25	-25	0	0	0	0	0			
expenses	=∑ variable + fix	xed costs		-225	-200	-150	-100	-50	0	0	0	0	0			
profit per quarter (earnings) .	=revenues - exp	benses		25	50	69	56	44	31	0	0	0	0			
appropriation of earnings	=f(cash, minima	aler Bestand)		1	-170				-398				-31			
				1	revenu: fast	and firm reac	tion needed		revenu: fast a	nd firm reacti	on needed		revenu: fast	and firm rea	ction needed	
balance	all data in [kchf	.]		- 1												
minimum cash = 25 % of planned annual	l sales*			250	180	180	180	180	0	0	0	0	0	* to be able	to react to fluo	ctuations
cash			325	350	230	298	355	398	31	31	31	31	0			
cash + work in progress + debtors	=∑			350	230	298	355	398	31	31	31	31	0			
cash + work i.p. + deb. + worklist	=∑			600	448	455	448	430	31	31	31	31	0			

Closure

without delay



	year X-1 business as ι bus	siness as ι busine	ess as ı busi	ness as u	year X Auslastung? A	Auslastung? A	uslastung? A	uslastung?	year X+1 Radikaler Schn	itt: Schliessur	ng der Firma		year X+2			
quarters	Q 01	Q 02 Q	03 (	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]																
full time jobs	400	400	400	400	400	400	400	400	50	0	0	0	(	)		
ideal workload	100	100	100	100	/5	50	25	0	0			1				
outstanding receivables	all data in [kchf]			1												
worklist		250	250	250	188	125	63	0	0	0	0	0	C			
worklist = contracts existing,		dolay	1	1					1					dolay 1		
work not done yet		quarte	1 ar	- 1										quarter		
		quarte		- 1										quarter		
work in progress + debtors		Y	250	250	250	188	125	63	0	0	0	0	C	Y	0	
			dela	v 1	work in progre	SS			debtors = invoi	ces sent to co	stumers				delay 1	
			quar	ter i	this means wo	ork performed	,		but not paid ye	t					quarter	
			4		not yet invoice	d									4	
input and output (cash flow)	all data in [kchf]														J	
revenues				250	250	250	188	125	63	0	0	0	C		0 0	
(planned) annual sales	=f(revenues)			1'000	1′000	1′000	1′000	1′000	0	0	0	0	C			
variable costs: salaries	=f(no. of employ	ees, work load)		-200	-200	-200	-200	-200	-25	0	0	0				
fixed costs: rent a.o.	downsizing			-25	-25	-25	-25	-25	0	0	0	0				
expenses	=> variable + fixe	ed costs		-225	-225	-225	-225	-225	-25	0	0	0	L L			
profit per quarter (earnings)	=revenues - expe	lor Bostand)		25	25	25	-37.5	-100	37.5	0	0	U	20	,		
appropriation of earnings		lei bestalluj			-100				-105	d firm reactio	n noodod		-sc rovonu: fact	and firm ro	action pooded	
halance	all data in [kchf]			1					revenu. Tast an		inneeueu		revenu. rast	anu mini re		
minimum cash = $25\%$ of planned annual	sales*			250	250	250	250	250	0	0	0	0	C	* to be abl	e to react to flue	tuations
cash	50105		325	350	275	300	262.5	162.5	37.5	37.5	37.5	37.5	Ċ	)		
cash + work in progress + debtors	=5			600	525	487.5	387.5	225	37.5	37.5	37.5	37.5	C	)		
cash + work i.p. + deb. + worklist	=5			850	712.5	612.5	450	225	37.5	37.5	37.5	37.5	C	)		
	-															



# Closure due to serious trouble with delay

	year X-1 business as ι	business as ι busine	ss as ı busi	ness as u	year X Auslastung? A	uslastung? A	uslastung? A	uslastung?	year X+1 Radikaler Schi	nitt: Schliessur	ng der Firma		year X+2			
quarters	Q 01	Q 02 Q	03 (	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
size of enterprise [%]				1												
full time jobs	400	400	400	400	400	400	400	400	50	0	0	0	(	)		
ideal workload	100	100	100	100	75	50	25	0	0							
outstanding receivables	all data in [ko	chf]												_		
worklist			250	250	188	125	63	0	0	0	0	0	(	0		
worklist = contracts existing,			dela	IV 1										delay 1		
work not done yet			quar	rter										quarter		
			4											1		
work in progress + debtors			0	0	0	0	0	0	0	0	0	0	(		)	
Arbeiten werden sofort in Rechnung					work in progre	SS			debtors = invo	ices sent to co	ostumers			work comm	enced plus	
gestellt und bezahlt (Prinzip Barzahlung					this means wo	rk performed	,		but not paid ye	et				debtors are	converted	
bei Coiffeur)				ļ	not yet invoice	d								into cash in	nmediately	
input and output (cash flow)	all data in [ko	chf]													-	
revenues			Y	250	250	188	125	63	0	0	0	0	(		<u>)</u>	
annual sales	=f(revenues)			1000	625	625	625	625	0	0	0	0				
variable costs: salaries	=f(no. of emp	ployees, work load)		-200	-200	-200	-200	-200	-25	0	0	0	(	)		
fixed costs: rent a.o.	downsizing			-25	-25	-25	-25	-25	0	0	0	0	(	)		
expenses	=∑ variable +	fixed costs		-225	-225	-225	-225	-225	-25	0	0	0	(	)		
profit per quarter (earnings) .	=revenues - e	expenses		25	25	-38	-100	-163	-25	0	0	0	(	)		
appropriation of earnings	=f(cash, mini	imaler Bestand)		1	-194				119				25	5		
									debts				depts			
balance	all data in [ko	chf]														
minimum cash = 25 % of planned annua	l sales*			250	156	156	156	156	0	0	0	0	(	) * to be able	to react to fluct	tuations
cash			325	350	181	144	44	-119	-25	-25	-25	-25	(	)		
cash + work in progress + debtors	=∑			350	181	144	44	-119	-25	-25	-25	-25	(	)		
cash + work i.p. + deb. + worklist	=∑			600	369	269	106	-119	-25	-25	-25	-25	(	)		



# Closure due to serious trouble without delay



Time [quarters]

work in progress + debtors worklist

equity for ongoi

Costs arise without delay

100 0 -100 -200 -300

-400

-500



Expansion

quarters size of enterprise [%]	year X-1 business as ι bu Q 01	siness as ι busin Q 02 Q	ess as ι business as ι .03 Q 04	year X expansion Q 01	expansion Q 02	expansion Q 03	expansion Q 04	year X+1 expansion Q 01	business as u Q 02	business as ι b Q 03	usiness as i Q 04	year X+2 business as ι Q 01	business as ι Q 02	business as us Q 03	sual Q 04
full time jobs ideal workload	400 100	400 100	400 400 100 100	450 100	550 100	<mark>650</mark> 100	750 100	800 100	800 100	800 100	800 100	800 100			
	all data in flight														
worklist worklist = contracts existing, work not done yet	ali data in [kcnr	250 delay quarte	250 250 1 er	281	344	406	469	500	500	500	500	500	delay 1 quarter		
work in progress + debtors		*	250 250 delay 1 quarter	250 work in progr this means w not yet invoid	281 ress vork perform ced	344 ed,	406	469 debtors = in but not paid	voices sent to o yet	500 ostumers	500	500	500	delay 1 quarter	
input and output (cash flow)	all data in [kchf]	]	250	250	250	201	244	100	460	500	500	500	500	500	
(planned) annual sales			1000	250	250	281	2000	2000	2000	2000	2000	2000	500	500	
variable costs: salaries	=f(no. of employ	yees, work load)	-200	-225	-275	-325	-375	-400	-400	-400	-400	-400			
fixed costs: rent a.o.	increase!		-25	-50	-50	-50	-50	-50	-50	-50	-50	-50			
expenses	=∑ variable + fix	ed costs	-225	-275	-325	-375	-425	-450	-450	-450	-450	-450			
profit per quarter (earnings) . appropriation of earnings	=revenues - exp =f(cash, minima	enses aler Bestand)	25	-25 0	-75	-94	-81	-44 0	19	50	50	50 -200			
balance	all data in [kchf]	]		need for capi	tal = 550 !			1							
minimum cash = 25 % of planned annua	al sales*		250	500	500	500	500	500	500	500	500	500	* to be able 1	to react to fluc	tuations
cash			325 350	875	800	706	625	581	600	650	700	550			
cash + work in progress + debtors	=Σ		600	1125	1081	1050	1031	1050	1100	1150	1200	1050			
cash + work i.p. + deb. + worklist	=>		850	1406	1425	1456	1500	1550	1600	1650	1700	1550			

Expansion

with delay







Expansion without delay

	year X-1 business as ι b	usiness as ι busin	iess as ι business as i	year X expansion	expansion	expansion	expansion	year X+1 expansion	business as ι	business as ι b	usiness as i	year X+2 business as u	business as	ι business as u	sual
quarters	Q 01	Q 02 Q	Q 03 Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04	Q 01	Q 02	Q 03	Q 04
full time jobs	400	400	400 400	450	550	650	750	800	800	800	800	800			
ideal workload	100	100	100 100	100	100	100	100	100	0 100	100	100	100			
outstanding receivables	all data in [kch	fl													
worklist		.,	250 250	281	344	406	469	500	500	500	500	500			
worklist = contracts existing,	1		dolay 1										dolou 1		
work not done yet			quarter										quarter		
			quarter										quarter		
work in progress + debtors			0 0	0	0	0	0	(	0 0	0	0	0		)	
				work in progr	ress			debtors = in	voices sent to	costumers			work comm	enced plus	
				not vet invoic	ork perform	eu,		but not part	i yet				into cash in	mediately	
input and output (cash flow)	all data in [kch	fl		not yet involt	.cu								into casir in	inculately	
revenues		1	250	250	281	344	406	469	9 500	500	500	500	/ 50	ז	
(planned) annual sales	=f(revenues)		1000	2000	2000	2000	2000	2000	2000	2000	2000	2000		-	
variable costs: salaries	=f(no. of emplo	oyees, work load)	-200	-225	-275	-325	-375	-400	0 -400	-400	-400	-400			
fixed costs: rent a.o.	increase!		-25	-50	-50	-50	-50	-50	) -50	-50	-50	-50			
expenses	=∑ variable + fi	xed costs	-225	-275	-325	-375	-425	-450	0 -450	-450	-450	-450			
profit per quarter (earnings)	=revenues - exp	penses	25	-25	-44	-31	-19	19	50	50	50	50			
appropriation of earnings	=f(cash, minim	aler Bestand)		0				<sup>(</sup>	)			-200			
balance	all data in [kch	f]	)	need for capi	tal = 300 !			ļ							
minimum cash = 25 % of planned annual	sales*		250	500	500	500	500	500	500	500	500	500	* to be able	to react to flue	ctuations
cash			325 350	625	581	550	531	550	600	650	700	550			
cash + work in progress + debtors	=Σ		350	625	581	550	531	550	0 600	650	700	550			
casn + work i.p. + αeb. + worklist	=>		600	906	925	956	1000	1050	5 1100	1150	1200	1050			



Expansion without delay

