The Form of the Balance Sheet:

Assets:

Current: Cash
Receivables
Short Term Notes
Inventory
Prepaid Expenses

Current (≤ 1 yr)

Fixed: Land, Bldgs, & Equip
less Accum Depreciation

Long Term Investments

Goodwill and Intangible Assets

Total Assets

Liabilities:

Current: Short Term Credit Line — floating
Accounts Payable
Accrued Expenses — staff on fixed salary
Taxes Payable
Curr. Port. Of L-T Debt

Debt

Long Term: Long Term Debt
Repayable Grants

Shareholder's Equity

Capital Shares (1)
Retained Earnings (2)

Total:

Liquidity

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The Concept of Debt:

- In a western agricultural or industrial society, wealth is held primarily by individuals and not by society at large. There are exceptions, e.g. resources, but the profits from development generally flow to individuals.
- Most with wealth wish to preserve or grow wealth.
- Wealth and entrepreneurial spirit often do not align, and there are vast differences in the tolerance for risk.
- The borrower believes inherently that he/she can create more wealth than the cost of the borrowed funds.

Lenders trade lower return (growth in wealth) for lower risk (the “risk-reward relationship). Debt is the primary mechanism to reduce risk, since it ranks ahead of equity.

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Equity vs. Debt

Continue Next Session.

- Equity is fundamentally different than debt; understanding this difference is key to understanding the commercial world.
- Equity is focused on growth (Dell); debt is focused on preservation of value (Nortel).
- The "mindset" is drastically different. Debt: "will I be repaid"? Equity: "how much value creation can I get?"
- The legal rights are different: debt can push a company into bankruptcy.

The Concept of Debt (2):

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- The benefit to the borrower is that debt does not convey ownership. The lender may restrict the business through covenants, but the equity owners own the business and its "blue sky" potential.
- Interest is the cost of debt. It is:

  RISK <=> Interest

  – Highly variable from loan to loan, i. e. it depends on the risk associated with the loan, and over time, reflecting the balance between savers and borrowers and inflation rate.
  – Often secured, i.e. if not repaid the lender can "attach" (seize) certain assets in order to recover the principal.
  – Always lower than the projected rate of return on equity in the project/business. Otherwise, the business would not be able to repay the equity investors at an acceptable return.

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Secured vs. Unsecured Lenders:

- Long term lenders are usually secured by a claim on fixed assets. Home mortgages are like this. Because the home can be seized if the loan isn't paid, the lender is relatively indifferent to the borrower's financial status.

- Short term lenders and suppliers are not secured by hard assets. Given that debt is focused on repayment, why do they lend?

Working captials

Working Capital

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- Working capital= Current assets – Current Liability
- Working capital ratio = current assets / current liabilities

Working Capital

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- *Working capital* is the difference between current assets and current liabilities; it is the extra cost of being in business over and above fixed assets.
- The ST credit line is usually the largest unsecured creditor. It looks to a surplus of working capital as proof that more funds are available in the near term to pay obligations.

$\geq 1.0 \Leftarrow x$

industry dependent

2.0

- The credit line is a demand loan, callable at any time, and subject to covenants.

Conditions

Covenants re Working Capital

- There are typically four covenants for working capital:
  1. The company will file monthly financial statements with the bank.
  2. The owners will not declare a dividend without the consent of the bank.
  3. The company will maintain a fixed dollar amount of working capital.
  4. The company will maintain a fixed working capital ratio.

serious matter

Failure to comply with these covenants will lead a short term lender to call the loan, often pushing the company into bankruptcy.

Sales Growth and Working Capital

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- Current assets and liabilities change with sales level; failure to recognize this has sunk many business. Typically, inventory, payables and receivables are proportional to sales.

- Novel "one time" means are sometimes available to cover a major growth in sales.

Working Capital is a constraint

Sales Growth and Working Capital

- Current assets and liabilities change with sales level; failure to recognize this has sunk many business. Typically, inventory, payables and receivables are proportional to sales.
- Novel "one time" means are sometimes available to cover a major growth in sales.

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Working Capital Deficiency:

- Imagine a startup "magic box" business with the following characteristics:
  - Your "rich uncle" gave you $500k to see what you could do.
  - You and some friends spent two years and $400k doing the software. It has been depreciating at the rate of $4K per month for 10 months ✓
  - Your losses to date from two years of prototyping are $95k.
  - Your sales strategy is a CM of 50%. COGS level
  - Material is 90% of COGS, contract labor is 10%. → payables
  - Sales level You are selling $25K/mo of boxes to larger companies, who are testing the product. You are at break even.
  - One company gives you an order for $1,000,000!! – W. C.

Can you survive the order?

Working Capital Deficiency (2):

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- The sequence:
  - You order the material at time zero, terms net 30.
  - You receive the material a month later.
  - You pay for the material on time.
  - You hire the labor force in month two to finish the product.
  - You ship the product at the start of month three, terms net 30. You book the earnings at this time.
  - Your large customer takes 60 days to pay you due to testing of the first large shipment.

days after delivery

- Follow the balance sheet and "think like a banker".

Assumptions:

(sales)

$\frac{60}{30} \times 25K$

regular sales	25k/month		receivables	60 days	50K$
payables	72 days	30K$	Inventory	48 days	40K$

COGS. $\frac{72}{30} \times 25K/\text{month} \times (1 - CM)$

$= 30K$

Contribution Margin (%)

50% in this case

$\frac{48}{30} \times 25 = 40K$

Sales

In Class Balance Sheet

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In Class Balance Sheet	$(000)	M0 [0]		
Assets			**Liabilities**	
Current Assets:			Current Liabilities:	
Cash		$ -	Short Term Credit Line	$ 15
Receivables	60 days	$ 50	Accounts Payable	$ 30
Short Term Investments		$ -	Accrued Expenses	$ -
Inventory		$ 40	Taxes Payable	$ -
Prepaid Expenses		$ -	Cur.Por. of L T Debt	$ -
< 1 yr		$ 90		$ 45
Fixed Assets:			Long Term Debt:	
Land, Bld.& Equip. @ Cost	$ 400	$ 400	Repayable Grants	$ -
Less Acc. Depreciation [4]		$ 40	Long Term Debt	$ -
Net		$ 360		
			Shareholders Equity:	
Long Term Investments		$ -	Capital Shares	$ 500
Goodwill		$ -	Retained Earnings	-$ 95
Total Assets		$ 450	**Total Liab. and Equity**	$ 450
			Working Capital	$ 45
			Working Capital Ratio	2.00

450
+95
-500
45

Month 1 – Material Arrival

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CM = 500

90%

1M × 50% × 90%

= 450K

In Class Balance Sheet M1[1]

Assets		
Current Assets:		
Cash	$	-
Receivables	$	50
Short Term Investments	$	-
Inventory	$	490
Prepaid Expenses	$	-
	$	540
Fixed Assets:		
Land, Bld.& Equip. @ Cost	$	400
Less Acc. Depreciation [4]	$	44
Net	$	356
Long Term Investments	$	-
Goodwill	$	-
Total Assets	$	896

Liabilities		
Current Liabilities:		
Short Term Credit Line	$	11
Accounts Payable	$	480 ← 450
Accrued Expenses	$	-
Taxes Payable	$	-
Cur.Por. of L T Debt	$	-
	$	491
Long Term Debt:		
Repayable Grants	$	-
Long Term Debt	$	-
Shareholders Equity:		
Capital Shares	$	500
Retained Earnings	-$	95
Total Liab. and Equity	$	896
Working Capital	$	49
Working Capital Ratio		1.10

896
+ 95
− 500
491

Month 2 – Labor Incurred, Material Paid

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$1m × 50% × 10%

= $50K

In Class Balance Sheet M2 [2]

Assets

Current Assets:		
Cash	$	-
Receivables	$	50
Short Term Investments	$	-
Inventory	$	540
Prepaid Expenses	$	-
	$	590
Fixed Assets:		
Land, Bld.& Equip. @ Cost	$	400
Less Acc. Depreciation [4]	$	48
Net	$	352
Long Term Investments	$	-
Goodwill	$	-
Total Assets	$	942

Liabilities

Current Liabilities:		
Short Term Credit Line	$	507
Accounts Payable	$	30
Accrued Expenses	$	-
Taxes Payable	$	-
Cur.Por. of L T Debt	$	-
	$	537
Long Term Debt:		
Repayable Grants		
Long Term Debt		
Shareholders Equity:		
Capital Shares	$	500
Retained Earnings	-$	95
Total Liab. and Equity	$	942
Working Capital	$	53
Working Capital Ratio		1.10

Month 3 – Product delivered, labor due, wait for customer payment (not due)

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In Class Balance Sheet M3[3]

Assets

Current Assets:		
Cash	$	-
Receivables	$	1,050
Short Term Investments	$	-
Inventory	$	40
Prepaid Expenses	$	-
	$	1,090

+1m

500

COGS

Fixed Assets:		
Land, Bld.& Equip. @ Cost	$	400
Less Acc. Depreciation [4]	$	52
Net	$	348
Long Term Investments	$	-
Goodwill	$	-
Total Assets	$	1,438

Liabilities

Floating

Current Liabilities:		
Short Term Credit Line	$	453
Accounts Payable	$	80
Accrued Expenses	$	-
Taxes Payable	$	-
Cur.Por. of L T Debt	$	-
	$	533

50K

Long Term Debt:		
Repayable Grants		
Long Term Debt		

Shareholders Equity:		
Capital Shares	$	500
Retained Earnings	$	405
Total Liab. and Equity	$	1,438
Working Capital	$	557
Working Capital Ratio		2.05

+500
−95

Month 4 – Labor Cost Paid

In Class Balance Sheet M4

Assets			**Liabilities**		
Current Assets:			Current Liabilities:		
Cash	$	-	Short Term Credit Line	$	499
Receivables	$	1,050	Accounts Payable	$	30
Short Term Investments	$	-	Accrued Expenses	$	-
Inventory		40	Taxes Payable	$	-
Prepaid Expenses	$	-	Cur.Por. of L T Debt	$	-
	$	1,090		$	529
Fixed Assets:			Long Term Debt:		
Land, Bld.& Equip. @ Cost	$	400	Repayable Grants		
Less Acc. Depreciation [4]	$	56	Long Term Debt		
Net	$	344			
			Shareholders Equity:		
Long Term Investments	$	-	Capital Shares	$	500
Goodwill	$	-	Retained Earnings	$	405
Total Assets	$	1,434	**Total Liab. and Equity**	$	1,434
			Working Capital	$	561
			Working Capital Ratio		2.06

-50K

Month 5 – Payment Received

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liquid funds

In Class Balance Sheet M5

Assets		
Current Assets:		
Cash	$	505
Receivables	$	50
Short Term Investments	$	-
Inventory	$	40
Prepaid Expenses	$	-
	$	595
Fixed Assets:		
Land, Bld.& Equip. @ Cost	$	400
Less Acc. Depreciation [4]	$	60
Net	$	340
Long Term Investments	$	-
Goodwill	$	-
Total Assets	$	935

1M

Liabilities		
Current Liabilities:		
Short Term Credit Line	$	~~-~~ 0
Accounts Payable	$	30
Accrued Expenses	$	-
Taxes Payable	$	-
Cur.Por. of L T Debt	$	-
	$	30
Long Term Debt:		
Repayable Grants		
Long Term Debt		
Shareholders Equity:		
Capital Shares	$	500
Retained Earnings	$	405
Total Liab. and Equity	$	935
Working Capital	$	565
Working Capital Ratio		19.83

499

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Fixing a Working Capital Deficiency:

- The problem is "above the line": not enough current assets (what will become cash in less than 12 months) to service cash obligations.
- Any change "above the line", e.g. collecting receivables or reducing inventory, **does not change working capital, because the security for the debt is reducing just as fast as the debt!** The lender focuses on the shortfall, which doesn't change.
- Hence the saying: "you can't change an above the line problem above the line": the fix is more equity or more long term debt (refinancing).

One Solution

Rare Second ~~solution~~ → $507 magic loan

Debt and Leverage:

- Return (i.e. growth in wealth) is more volatile (more "levered") as debt goes up and equity goes down.

- This arises because the risk in the project is being concentrated onto a smaller base of equity. The debt gets a fixed (and hopefully lower!) return than equity, but it ranks ahead of equity; it must be serviced first.

- Debt ratio measures leverage.
- Debt ratio = Total debt / Total Assets

Leverage up equals leverage down.