

**Simulation business game**  
**«Emperor Palace»**



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## Game targets

### To obtain practice knowledge and skills in strategic finance

- ❖ What is more important profit or cash ?
- ❖ How much costs “frozen” warehousing goods?
- ❖ How to calculate first cost of the goods?
- ❖ In which case you can sell the goods lower their cost?
- ❖ How to read P&L and cash flow reports?
- ❖ What does it mean: First cost calculation?

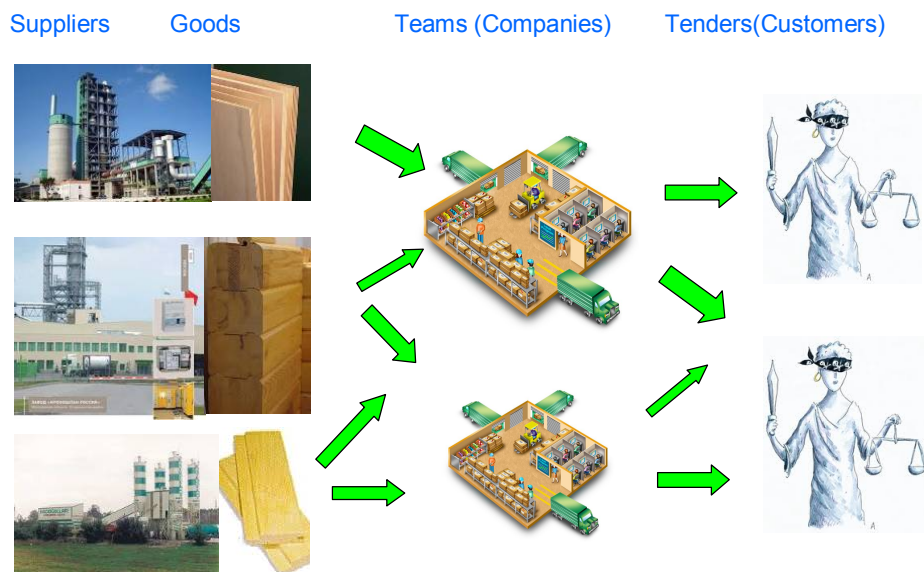
## Terms

- **Gross profit** – difference between sales and cost of goods sold
- **Operational profit (EBIT)** – difference between gross profit and operational expenditures.
- **Net profit** – difference between operational profit and finance expenditures and taxes.
- **First cost of the good** – amount of all expenditures before good arrived to warehouse.
- **Cost of goods sold** – first cost of goods delivered in current period.
- **Gross margin** – gross profit to sales ratio
- **Net margin** – net profit to sales ratio

## Terms (continuation)

- **Capital employed** – assets and amount of non-interest liabilities (accounts payable) difference.
- **ROCE** – profitability of capital employed, EBIT to capital employed ratio
- **Warehouse turnover (in days)** – average warehouse balance to monthly cost of goods sold ratio x number of days in the month.
- **Cash flow** – Cash income and outcome difference.
- **Operational cash flow** – Cash income from sales and outcome of operational activity difference.
- **Financial cash flow**– Financing cash income and outcome difference
- **Овердрафт** – like a 'safety net' on your current account; bank allows you to borrow up when there's no money in your account and can be use to cover short term cash flow problems (but overdraft interest, as a rule, is higher then normal loan interest)

## Game environment



# Tender for a fall

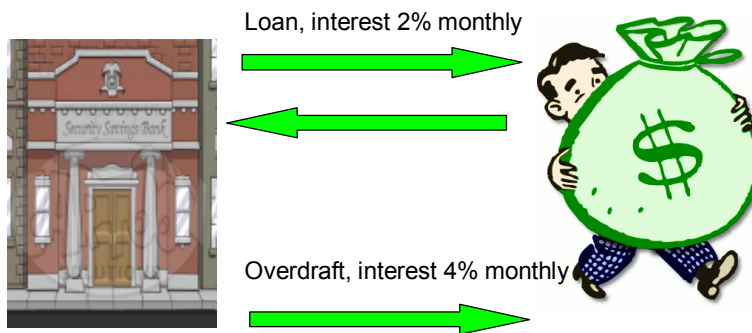
## Why the request can not be accepted?

- Competitors price is lower
- You haven't enough volume of the good in corresponding warehouse
- The requested volumes of the good more than the balance in corresponding warehouse
- The requested price is more than maximum

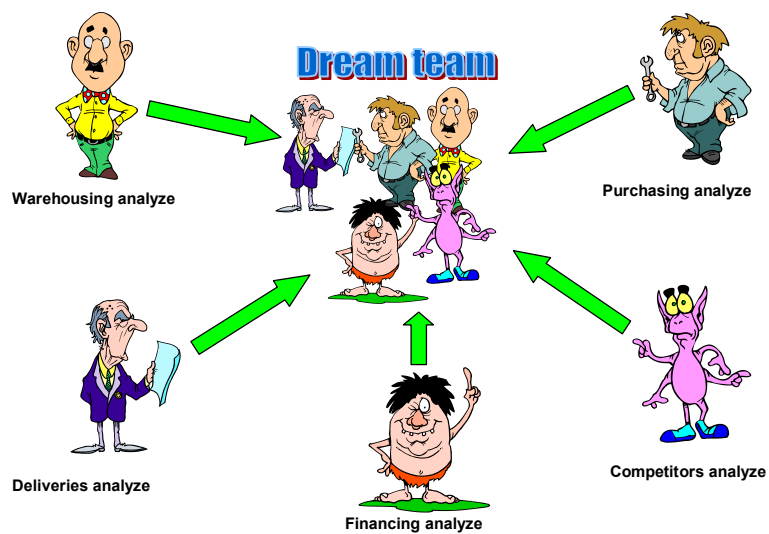
## Expenditures



# Financing



# Team work – effectiveness guarantee



## Goods

|                                | Plywood | Plank | Deal board | Beam  | Fibreboard | Chipboard |
|--------------------------------|---------|-------|------------|-------|------------|-----------|
| Purchasing price Rub/m3        | 18000   | 7000  | 25000      | 12000 | 8000       | 12000     |
| Volume of the lot, m3          | 20      | 30    | 35         | 35    | 25         | 25        |
| Delivery, rub/lot              | 8000    | 8000  | 8000       | 8000  | 8000       | 8000      |
| Order expences, rub/order      | 9600    | 12400 | 7200       | 12600 | 9500       | 6900      |
| Period of delivery, months     | 1       | 0,5   | 2          | 1     | 0,5        | 0         |
| Average sales volume, m3/month | 210     | 200   | 150        | 300   | 150        | 190       |
| Discount, % for 10 lots        | 2%      | 3%    | 1,0%       | 1%    | 2%         | 1,5%      |
| 10 lots, m3                    | 200     | 300   | 350        | 350   | 250        | 250       |

## Warehouses

|                               | Wh-1  | Wh-2 |
|-------------------------------|-------|------|
| Expences, rub/m3              | 90    | 70   |
| Expences overcapacity, rub/m3 | 180   | 140  |
| Capacity, m3                  | 1 000 | 500  |

## Delivery to customer

|             | Wh-1  | Wh-2  |
|-------------|-------|-------|
| rub per lot |       |       |
| Tender 1    | 20000 | 4000  |
| Tender 2    | 24000 | 3000  |
| Tender 3    | 12000 | 25000 |
| Tender 4    | 6000  | 24000 |

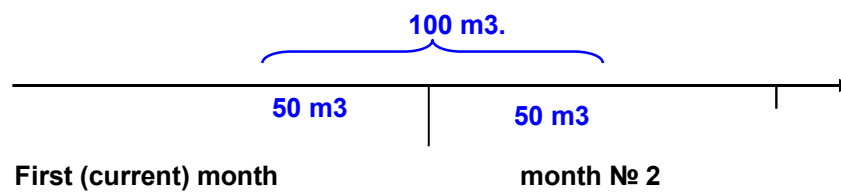
## General and administrative expenditures

500 000 rub per month

## Delivery time calculation

**Example:**

**Plank delivery time 0,5 months, order 100 m3**



## Bank

Loan interest - 2% in a month

Overdraft interest - 4 % in a month

Loan amount is not limited, but should be ordered in the beginning of the month

Overdraft is given out automatically to cover shortage of working capital

## Бланк для заполнения

|  |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
|--|-------------------|---------|------------|------|------------|-----------------------------|-------------|---------|-------|-----------|------|-----|-----|
| Месяц                                  |                   | Команда |            |      |            |                             |             |         |       |           |      |     |     |
| 1. Заявка на закупку товаров на склады |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| Склад 1, м3                            |                   |         |            |      |            |                             | Склад 2, м3 |         |       |           |      |     |     |
|  | Plywood           | Plank   | Deal board | Beam | Fibreboard | Chipboard                   | Total       | Фанера  | Доска | Вагонка   | Брус | ДВП | ДСП |
|  |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| 2. Заявка на участие в тендерах        |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
|  | Предлагаемая цена |         |            |      |            |                             |             |         |       |           |      |     |     |
|  | Фанера            | Доска   | Вагонка    | Брус | ДВП        | ДСП                         |             |         |       |           |      |     |     |
| Тендер 1                               |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| Тендер 2                               |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| Тендер 3                               |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| Тендер 4                               |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| В том числе со склада 1, м3            |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| Фанера                                 | Доска             | Вагонка | Брус       | ДВП  | ДСП        | В том числе со склада 2, м3 |             |         |       | Приоритет |      |     |     |
|  |                   |         |            |      |            | Фанера                      | Доска       | Вагонка | Брус  | ДВП       | ДСП  |     |     |
|  |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
|  |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
|  |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| 3. Заявка на выдачу (гашение) кредита. |                   |         |            |      |            |                             |             |         |       |           |      |     |     |
| Кредит                                 |                   |         |            |      |            |                             |             |         |       |           |      |     |     |

## Example of completed form

|                       |                 |            |            |            |            |                       |                 |            |        |            |           |            |           |       |
|-----------------------|-----------------|------------|------------|------------|------------|-----------------------|-----------------|------------|--------|------------|-----------|------------|-----------|-------|
| Month                 | 2               | Company    | Восход     |            |            |                       |                 |            |        |            |           |            |           |       |
| 1. Purchasing order   |                 |            |            |            |            |                       |                 |            |        |            |           |            |           |       |
| Warehouse 1, m3       |                 |            |            |            |            |                       | Warehouse 2, m3 |            |        |            |           |            |           |       |
|                       | Plywood         | Plank      | Deal board | Beam       | Fibreboard | Chipboard             | Total           | Plywood    | Plank  | Deal board | Beam      | Fibreboard | Chipboard | Total |
|                       | 120             |            | 60         |            |            | 90                    | 270             | 50         | 40     |            | 80        | 120        | 140       | 430   |
| 2. Tenders request    |                 |            |            |            |            |                       |                 |            |        |            |           |            |           |       |
|                       | Requested price |            |            |            |            |                       |                 |            |        |            |           |            |           |       |
|                       | Plywood         | Plank      | Deal board | Beam       | Fibreboard | Chipboard             |                 |            |        |            |           |            |           |       |
| Tender 1              | 21 500          | 22 500     |            |            |            |                       |                 |            |        |            |           |            |           |       |
| Tender 2              |                 | 23 000     | 37 500     |            |            |                       |                 |            |        |            |           |            |           |       |
| Tender 3              |                 |            | 37 500     | 37 500     |            |                       |                 |            |        |            |           |            |           |       |
| Tender 4              | 21 500          |            |            |            |            |                       |                 | 12 000     | 15 000 |            |           |            |           |       |
| From warehouse 1, cbm |                 |            |            |            |            |                       |                 |            |        |            |           |            |           |       |
| Plywood               | Plank           | Deal board | Beam       | Fibreboard | Chipboard  | From warehouse 2, cbm |                 |            |        | Priority   |           |            |           |       |
| 83                    | 79              |            |            |            |            | Plywood               | Plank           | Deal board | Beam   | Fibreboard | Chipboard |            |           |       |
|                       | 100             | 92         |            |            |            |                       | 50              |            |        |            |           |            | 1         |       |
|                       |                 | 100        | 100        |            |            |                       |                 | 50         | 50     |            |           |            | 2         |       |
| 100                   |                 |            |            | 100        | 100        | 50                    |                 |            |        | 50         | 50        |            | 1         |       |
| 3. Loan request       |                 |            |            |            |            |                       |                 |            |        |            |           |            |           |       |
| Loan                  | 10 000 000      |            |            |            |            |                       |                 |            |        |            |           |            |           |       |



## Tenders results

[illegible]

## Company report

| Financial report, month 1           | Vostok           |
|-------------------------------------|------------------|
| <b>Sales</b>                        | <b>1 440 500</b> |
| Delivery to the customer            | 40 000           |
| <b>Net sales</b>                    | <b>1 400 500</b> |
| Cost of goods sold                  | 1 206 000        |
| <b>Gross profit</b>                 | <b>194 500</b>   |
| Warehousing 1                       | 54 000           |
| Warehousing 2                       | 21 000           |
| General and administrative expenses | 500 000          |
| <b>Operational profit (EBIT)</b>    | <b>-380 500</b>  |
| Loan interest                       | 460 000          |
| Overdraft interest                  | 0                |
| <b>Net profit</b>                   | <b>-840 500</b>  |
| <b>Profitability ratios</b>         |                  |
| Gross margin                        | 13,5%            |
| Net margin                          | -58,3%           |
| <b>Capital employed</b>             |                  |
| Average inventory balance           | 14 262 675       |
| Average advances to suppliers       | 8 485 425        |
| Total capital employed              | 22 748 100       |
| <b>ROCE</b>                         | <b>-20,1%</b>    |
| Average inventory balance           | 14 262 675       |
| Cost of goods sold                  | 1 206 000        |
| <b>Inventory turnover</b>           | <b>355</b>       |

|                                     |                    |
|-------------------------------------|--------------------|
| <b>Cash flow report</b>             |                    |
| Cash balance in the beginning       | 0                  |
| Cash income                         | 1 440 500          |
| <b>Payments</b>                     |                    |
| Delivery to the customer            | 40 000             |
| Purchasing                          | 21 580 000         |
| Deliveries to the warehouse         | 464 000            |
| Order expenses                      | 58 200             |
| Warehousing 1                       | 54 000             |
| Warehousing 2                       | 21 000             |
| General and administrative expenses | 500 000            |
| Loan interest                       | 460 000            |
| Overdraft interest                  | 0                  |
| <b>Total payments</b>               | <b>23 177 200</b>  |
| <b>Operational cash flow</b>        | <b>-21 736 700</b> |
| <b>Financial cash flow</b>          |                    |
| Loans                               | 23 000 000         |
| Overdraft                           | 0                  |
| <b>Cash balance in the end</b>      | <b>1 263 300</b>   |
| <i>For information</i>              |                    |
| <i>Loan balance in the end</i>      | <i>23 000 000</i>  |
| <i>Interim result</i>               | <i>11 459 500</i>  |

## Competitors report

|        | Month 1 | Purchasing, cbm |            |      |            |           |       |
|--------|---------|-----------------|------------|------|------------|-----------|-------|
|        |         |                 |            |      |            |           |       |
|        | Plywood | Plank           | Deal board | Beam | Fibreboard | Chipboard | Total |
| Vostok | 200     | 400             | 300        | 300  | 250        | 250       | 1 700 |
| Zapad  | 160     | 160             | 160        | 160  | 160        | 160       | 960   |
| Cosmos | 120     | 0               | 100        | 150  | 100        | 0         | 470   |
| Trust  | 0       | 0               | 280        | 170  | 0          | 80        | 530   |
| Truck  | 160     | 100             | 80         | 90   | 0          | 300       | 730   |

## Products cost calculation report

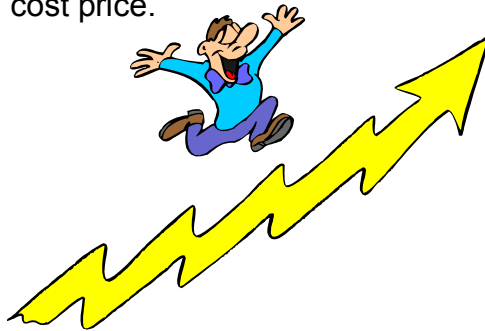
|                          |                  |         |            |           |            |           |           |
|--------------------------|------------------|---------|------------|-----------|------------|-----------|-----------|
| Vostok                   | Warehouse 1, cbm |         |            |           |            |           |           |
|                          | Plywood          | Plank   | Deal board | Beam      | Fibreboard | Chipboard | Total     |
| Sales                    | 0                | 432 000 | 800 000    | 5 775 000 | 0          | 0         | 7 007 000 |
| Delivery to the customer | 0                | 12 000  | 8 000      | 40 000    | 0          | 0         | 60 000    |
| Net sales                | 0                | 420 000 | 792 000    | 5 735 000 | 0          | 0         | 6 947 000 |
| First cost               | 0                | 190 775 | 505 280    | 2 023 286 | 0          | 0         | 2 719 342 |
| Gross profit             | 0                | 229 225 | 286 720    | 3 711 714 | 0          | 0         | 4 227 658 |
| Warehousing              | 18 180           | 34 830  | 0          | 10 440    | 9 000      | 9 000     | 81 450    |
| Profit before general ex | -18 180          | 194 395 | 286 720    | 3 701 274 | -9 000     | -9 000    | 4 146 208 |
| Delivery, cbm            | 0                | 27      | 20         | 165       | 0          | 0         | 212       |

## Other terms

1 cycle = 1 month

Number of cycles – 5

The inventories, will not sell until the end of last (5th) cycle and advances to suppliers at the end of the game will sell as non-liquids at a 80% cost price.



# Results analyze

# Results analyze

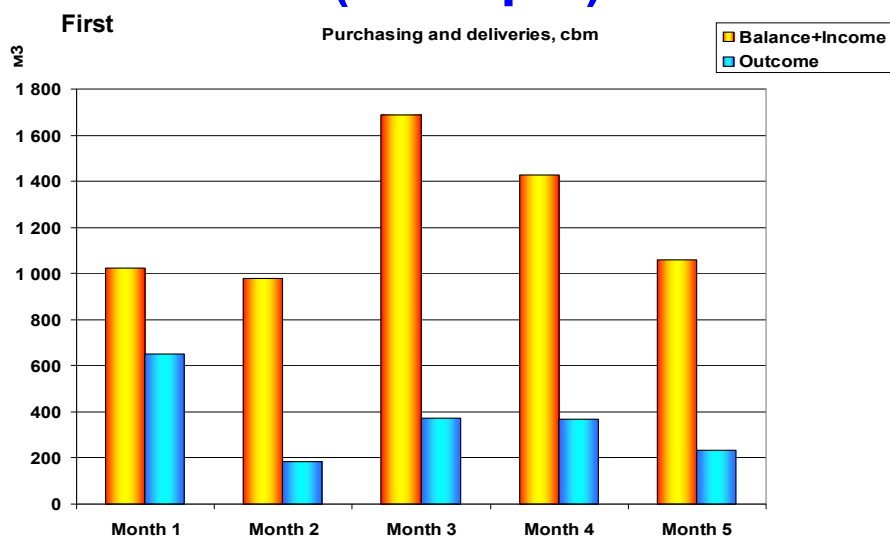
## Game results

- Capital employed profitability analyze (ROCE)
- Profit and profitability analyze
- Inventories validity analyze
- Warehousing expenditures analyze

## Decisions analyze

- How to determine purchasing volumes?
- How to calculate tender price?
- How to minimize warehousing expenditures?
- Is it reasonable to take advantage of suppliers discount ?

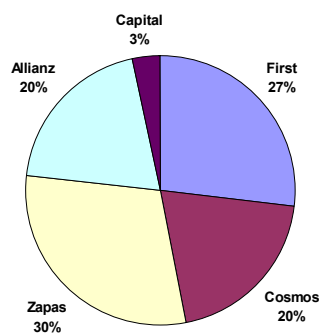
## Inventories validity analyze (example)



## Inventories validity analyze

1. Theoretical inventory optimum is equal in monthly sales volume. But quite understandable, that in terms of tight price competition, this optimum is unachievable.
2. We can accept, that month's reserve of inventory is sufficient. (Balance + income – outcome = average monthly sales volume)
3. All teams purchased actively in months 2 and 3. As a result, almost all companies had stocks, exceeded the volume of total monthly sales (market volume -1200 cbm)
4. In this situation, team Allianz demonstrated more rationally strategy. This team had minimum stock, among of all.
5. Subsequent dumping and lower cost sales has been as the result of excessive purchasing. Finally all the teams revealed the losses.

## Market shares analyze



Obviously, maximum market share capture not guaranteed of financial success.

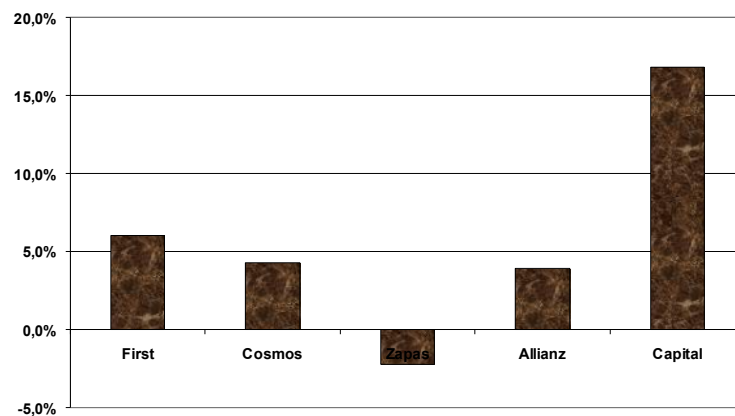
Teams First and Allianz, showed the best profit and cash flow result, were inferior to team Zapas in sales volume, because Zapas purchased excess volume of goods and was forced to sell it by below cost price. (see profitability diagram)

## Анализ использования капитала

Поскольку операционная прибыль отрицательная, анализ использования капитала смысла не имеет.

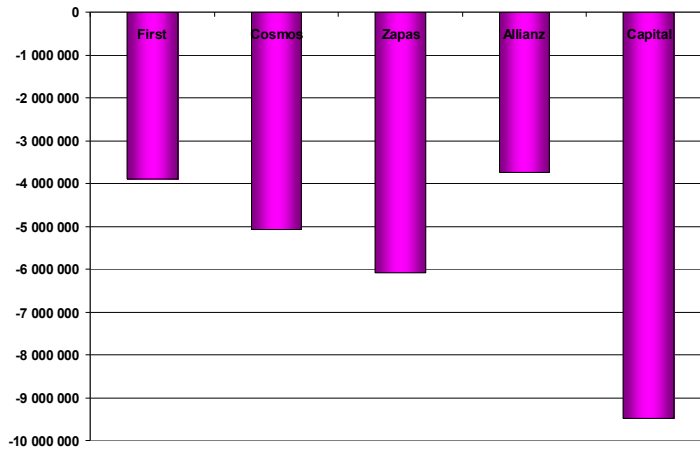
## Profitability analyze

Gross margin for 5 months



In spite of high profitability, team Capital showed the worse results in profit and cash, because sales volume was low, but expenditures level was high, including warehousing and interests. Team First achieved higher profitability and bigger sales volume, but was inferior to team Allianz, only because Allianz used borrowed capital more economically.

## Net profit



Limited sales volumes and price dumping resulted in all teams finished the game with losses - typical situation for crisis times.

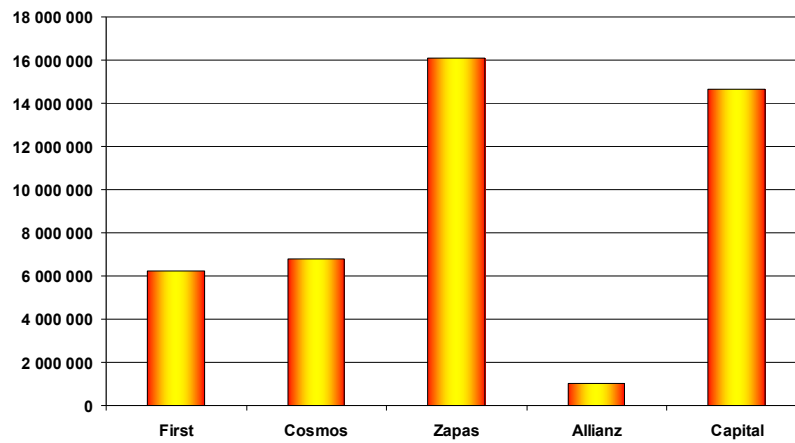
## Financial strategy analyze

Cash deficit can be covered by bank's loan. Necessary amount can be calculated as follows:

- + Cash in the beginning of the month
- + Cash receivable from previous periods sales
- + Cash receivable from current month sales
- Production expenditures
- Interest expenses
- = Loan needed

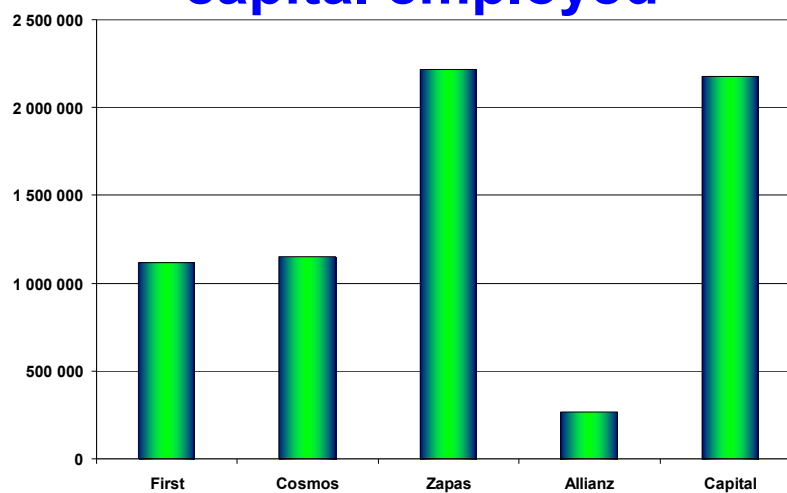
As it is impossible to calculate exactly the amount of cash receivable from current month sales, we can disregard this cash amount. In this case we can calculate maximum loan amount needed. To exceed this amount means pay additional interest to bank only.

## Average loan balance, rub.



Rational borrowing policy was a secret of success. The teams using minimum loans achieved the best result.

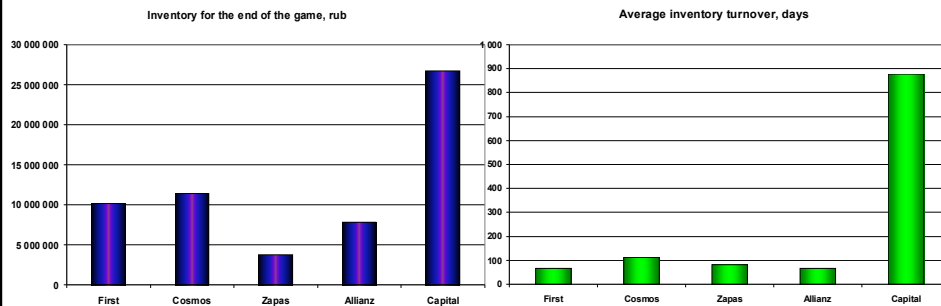
## Expenditures for financing of capital employed



The progress of Allianz team was determined of limited purchasing and, accordingly, economically using of warehousing area.

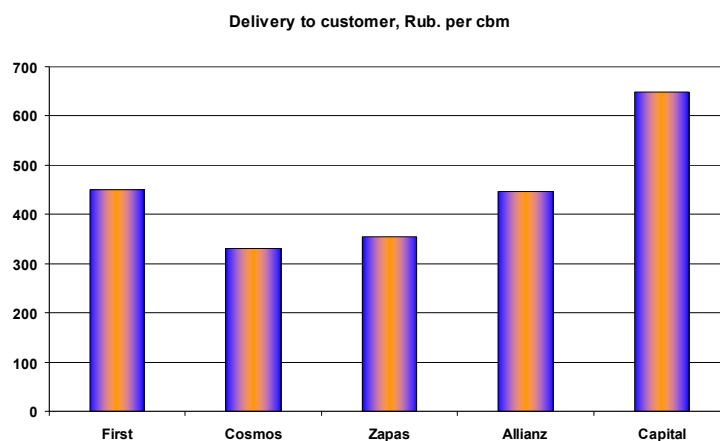


## Inventory validity analyze



Teams achieved minimum inventories balance obtained the best result, except for the team Zapas, has sold the goods with lower cost price.

## Logistic delivery scheme analyze



Team Cosmos very rationally chose warehouses for saving goods, and they achieved minimal delivery costs per cbm of goods sold.

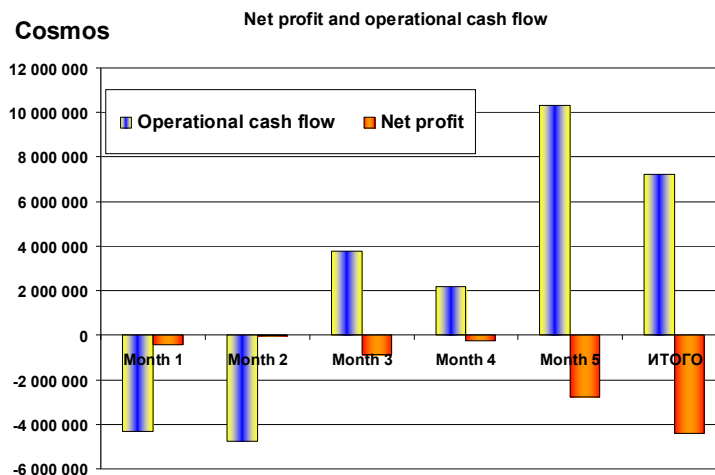
## Small lots sales

|                                 | Allianz, month 4 | First, month 4 |
|---------------------------------|------------------|----------------|
|                                 | Deal board       | Plywood        |
| Sales                           | 76 950           | 20 101         |
| Delivery to customer            | 3 000            | 6 000          |
| Net sales                       | 73 950           | 14 101         |
| Cost of goods sold              | 75 804           | 18 449         |
| <b>Gross profit</b>             | <b>-1 854</b>    | <b>-4 348</b>  |
| Warehousing                     | 210              | 12 240         |
| <b>Profit befor gen. expen.</b> | <b>-2 064</b>    | <b>-16 588</b> |
| <b>Delivery, cbm</b>            | <b>3</b>         | <b>1</b>       |

Small lots sales are very unprofitable, because gross profit was not covered even delivery costs.

Transportation cost is not depend of loaded goods volume .

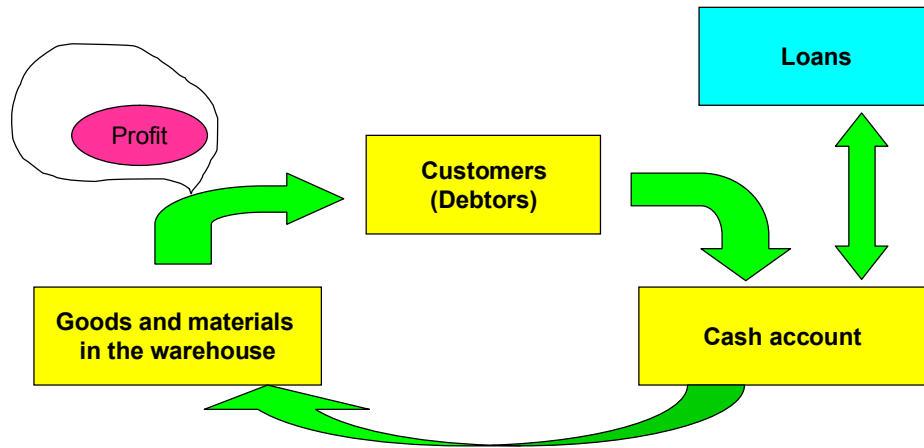
## Cash flow and net profit correlation (example)



The accumulated cash flow in the end of the game is equal with accumulated net profit minus inventory in the beginning of the game, because we finished the game to sell all inventory and to repay all loans.

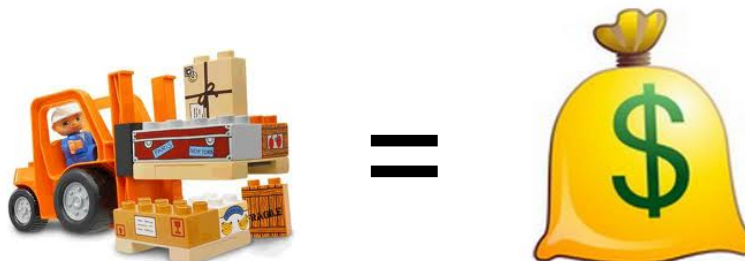
## Cash and Profit

### 3. Cash and profit are not the same



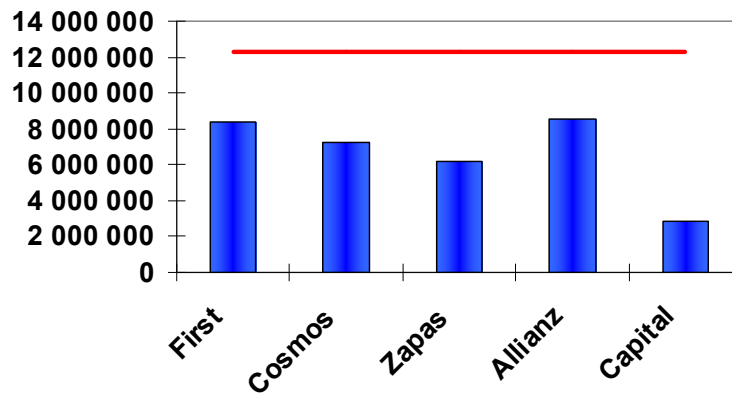
## How much costs to save the goods in the warehouse?

Frozen capital costs (Warehousing + Interest)



## Allianz is the winner!

Accumulated cash flow, rub



The team Allianz won with minimal difference (135 thous. rub. only).  
Second place - First, third - Cosmos!

## Resume

**Frozen capital (inventory) causes of direct and indirect expenditures.**

**Increasing inventory turnover speed is the way to profit growth.**

**Rational management leads to cost of goods reduction and competitiveness improving.**

**In terms of crisis and sales reduction, the best companies makes business economically and optimizes inventories' stock.**