



ISE 220 – Engineering Economics



University of Economics

Halil POSACI

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homes.ieu.edu.tr/hposaci
HalilPOSACI.com

- Graduated from METU -1978
- MBA – Planning & Org. DEU -1995
- IT Manager Tarişbank -2000
- IT Coordinator – Smart Ticketing System 2000-2010
- Part time instructor in IUE 2003-
- IT Consultancy training – Meta-USA, Germany
- Solar system design training – SMA Germany 2010



Agenda

- Decision Making
- Engineer's Role in Decision Making
- To Invest or Not to Invest
- Money Money Money
 - Time value
 - Money today – Money tomorrow
- Resolving Problems
 - Basic notation, Cash flow Tables & Diagrams
- Simple versus Compound
 - Interest and Inflation
- Example, Class Work, Homework



Decision Making

- Function Of Management
 - POLC
 - Analyze
 - Build alternatives
 - Select Best (Try to Approach Ideal)
 - Who does the job
 - Top managers OR .. Engineers

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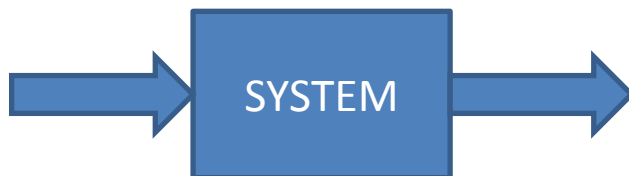
IDEAL System - Can It Be Real

AVAILABLE SYSTEM

- Some Cost
- Some Production
- Some Service

IDEAL SYSTEM

- Zero Cost
- Infinite Production
- Infinite Satisfaction



We need BRIGHT IDEAS

AND

MONEY to invest

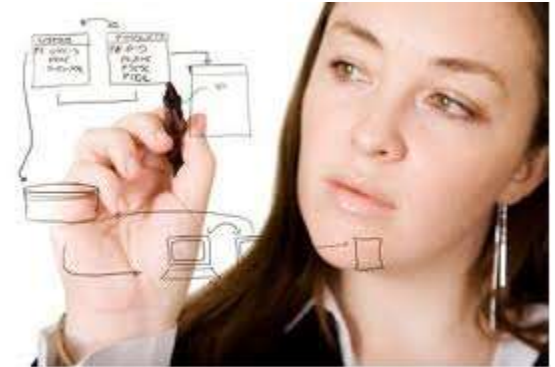


Better System

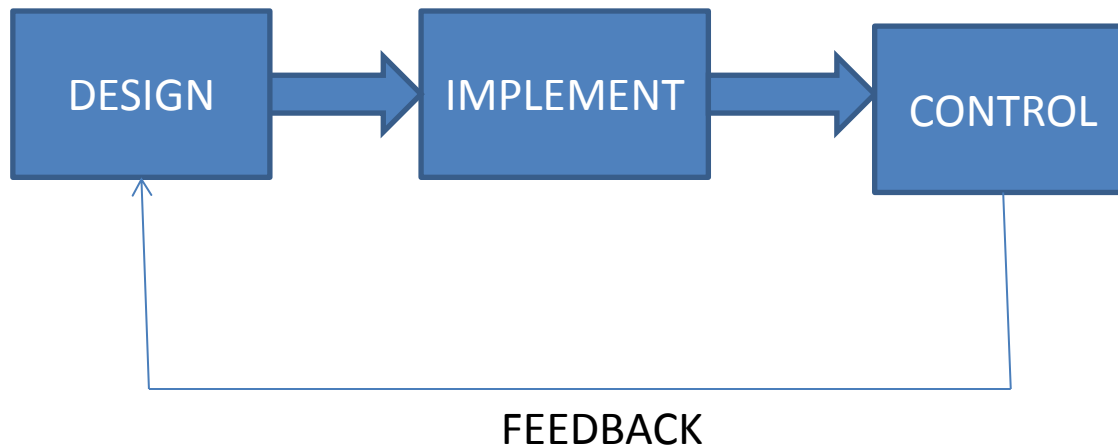
- Invest Money



Stake Holders

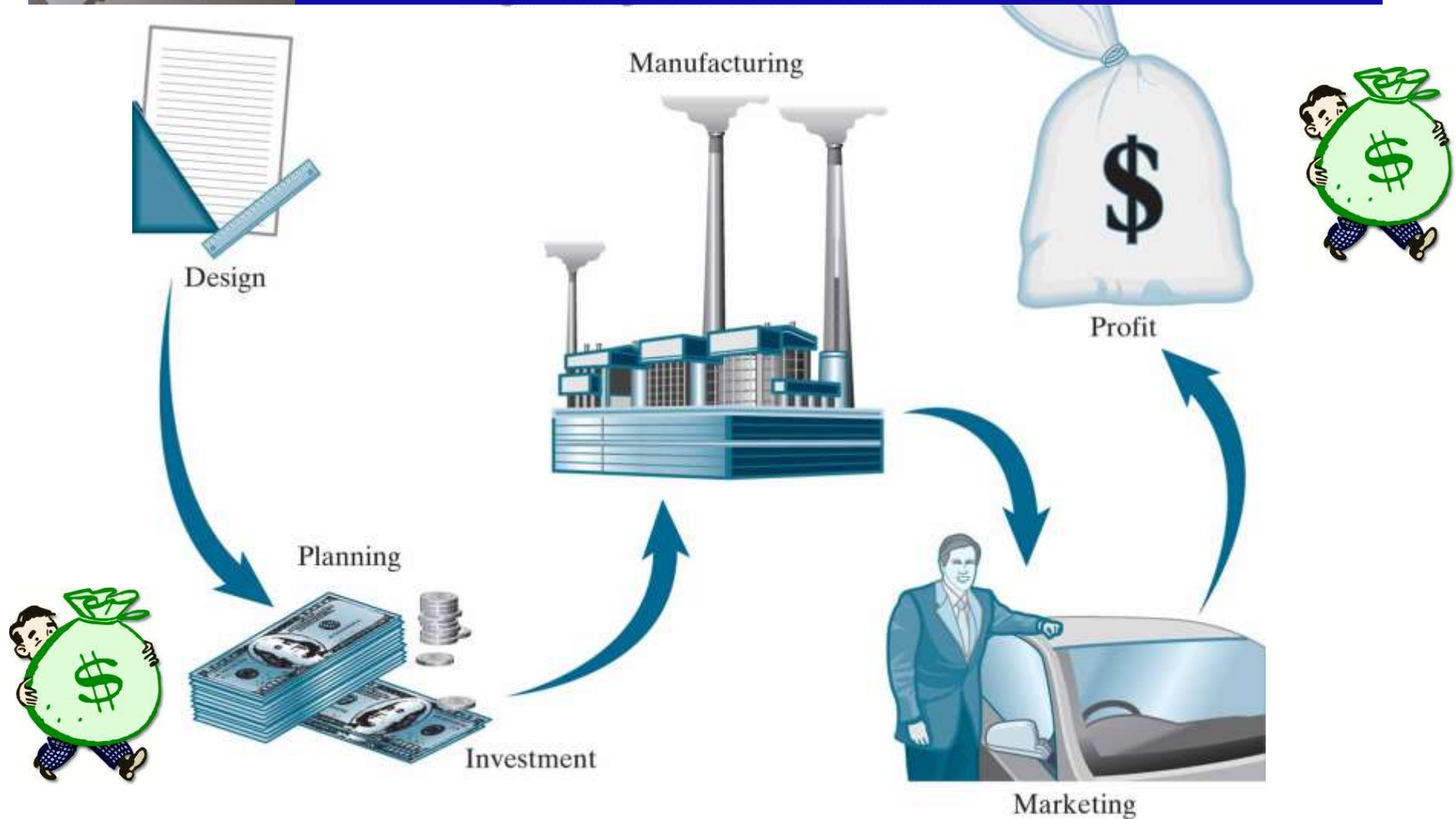


Engineers





Engineering Economic Decisions





Engineering Economic Decisions

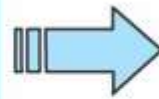
Create & Design

- Engineering Projects



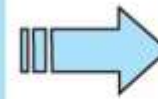
Analyze

- Production Methods
- Engineering Safety
- Environmental Impacts
- Market Assessment



Evaluate

- Expected Profitability
- Timing of Cash Flows
- Degree of Financial Risk



Monitor

- Impact on Financial Statements
- Firm's Market Value
- Stock Price





Sample: Production System



Assembling with white gloves.

Easy access to tools

Visual alarm that indicates problems.



Engineers Role

- Create Projects – Solve problems
- Motivate stake holders
- Implement



Assembling with white gloves.

Easy access to tools

Visual alarm that indicates problems.



To Invest or Not TO



- Depends on

$P, F, A_n, i, ROI, ROR, MARR > f$



Money Money Money



P Value of the Money at year 0

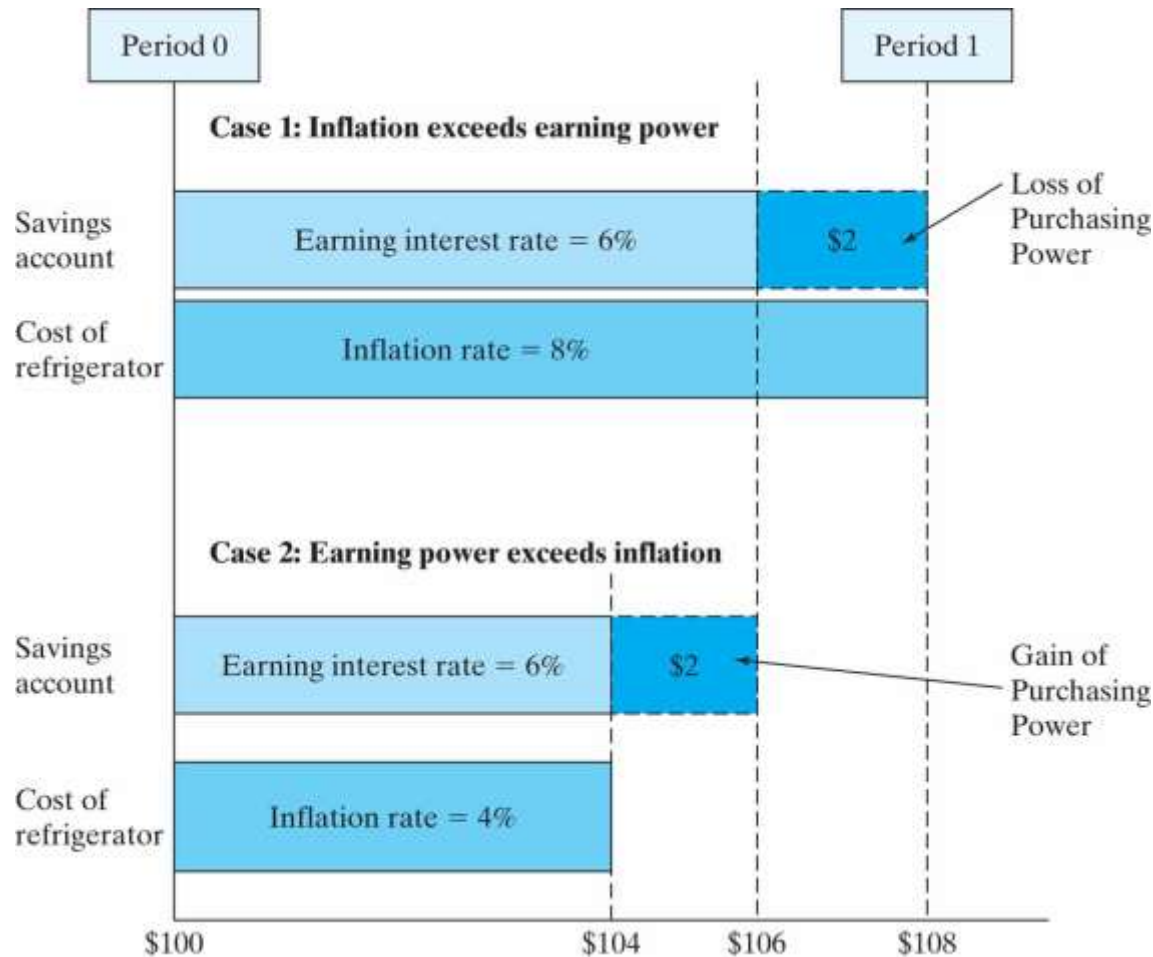
F Value of the Money at year N

Which Money is better



Which Money is Better

Money Today – Money Tomorrow





Money Today – Money Tomorrow

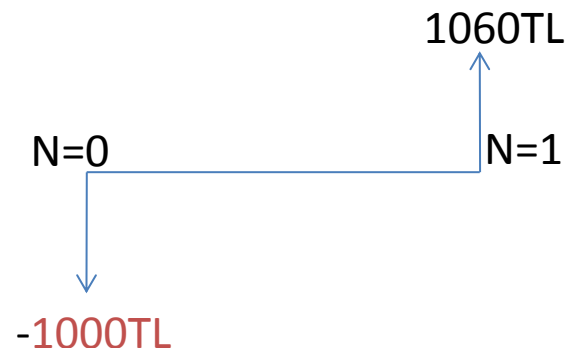
1000 TL today is (In year 0)

if $i = 6\%$ which is market interest rate

1060 TL in year 1

1060 is **Actual TL** (Inflation is reflected).

if $f = 4\%$ **Real TL** $\sim = 1020$ TL





Cash Flow Diagrams & Tables

- You have received 30,000TL loan for a Toyota Yaris. Initiation fee is 300. You will pay back 7000 each year for the next 5 years.
- Analyze (Dissect the problem)
- Draw Diagram and Table



No question and solution yet



Dissect into Notation

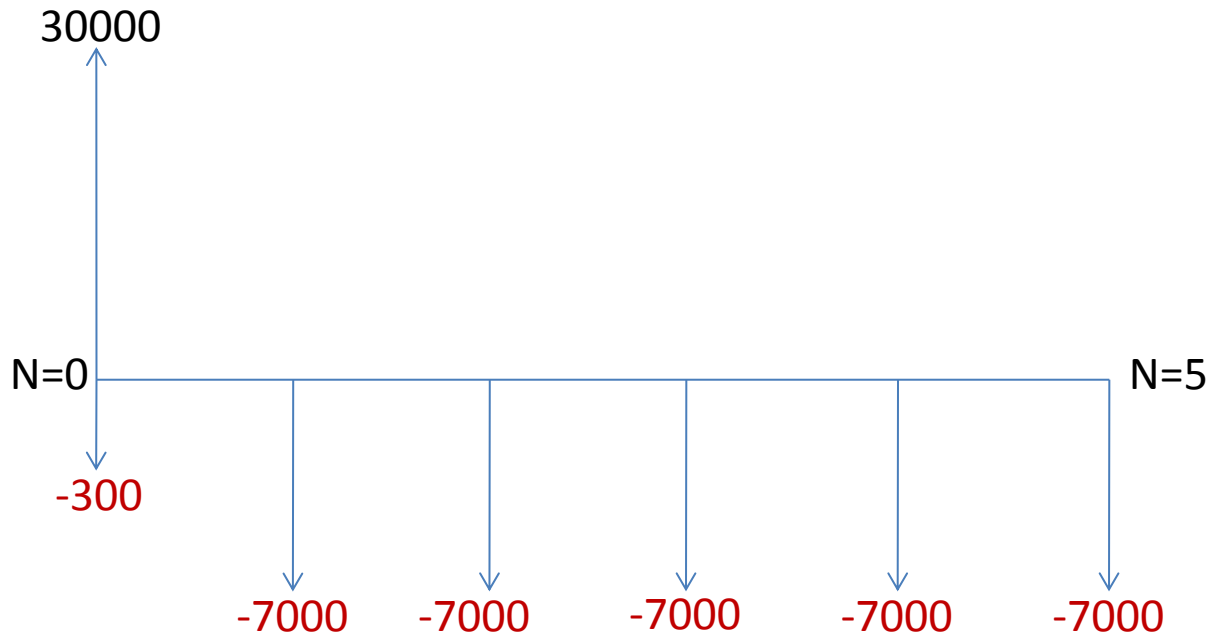
$$P = 30000 - 300 = 29700$$

$$A_n = -7000 \text{ (} n = 1 \text{ to } N\text{)}$$

$$N = 5$$



Show in Diagram





Show in Table

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	A	B	C
1	TABLE ISE220-1-1		
2	Year (n)	Receipt	Payment
3	0	29,700.00TL	
4	1		-7,000.00TL
5	2		-7,000.00TL
6	3		-7,000.00TL
7	4		-7,000.00TL
8	5		-7,000.00TL

Or you may simply download the document and open in
<http://docs.google.com>



Questions

Questions?

532 2877127

hposaci@quiztechnology.com