

The background features several abstract, organic shapes in shades of purple and blue. A large, irregular shape dominates the right side, with a smaller circle above it and another shape in the bottom right corner.

Investment Analysis – Case Studies

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Introduction

This project consolidates four major case studies from my Investment Analysis course. Each task applies different capital budgeting techniques (NPV, IRR, PI, Payback, ROI), while also considering inflation, financing structure, risk, and sensitivity analysis. Through this project, I developed advanced Excel modeling skills and strengthened my ability to evaluate real-world investment decisions.

Skills:

- Capital Budgeting (NPV, IRR, PI, Payback)
- Sensitivity & Risk Analysis
- Inflation Adjustment & Real vs Nominal Rates
- Excel Financial Modeling
- Investment Decision-Making

Task 1 – Capital Budgeting with Loan Financing

Evaluating an Investment Project with NPV, IRR, Payback, and ROI under Loan Financing

In this task, I analyzed a 6-year investment project considering growth in production, prices, fixed costs, and depreciation. The project was financed with a mix of equity and debt (25% loan at 28%). Key capital budgeting techniques such as NPV, IRR, Payback Period (PP), Discounted Payback (DPP), ROI, and PI were applied to evaluate financial feasibility.

Results:

NPV \approx 22.4M,

IRR \approx 84%,

PI \approx 3.51,

ROI \approx 1.01,

Payback \approx 1 year 129 days.

Conclusion: The project is highly profitable and efficient, showing rapid payback and strong returns.

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Task 2 – Investment Analysis under Inflation

Assessing Project Efficiency under Inflationary Conditions

This task evaluated an investment project while incorporating inflation effects on product prices, variable costs, and fixed costs. Using a 5-year horizon, the straight-line depreciation method, and tax implications, I analyzed real vs nominal values to calculate the project's profitability and efficiency.

Focus: Demonstrated the impact of inflation on NPV, cost structure, and real vs nominal discount rates.

Results: Inflation reduced profitability compared to nominal estimates.

Conclusion: Inflation significantly affects long-term projects and must be incorporated into investment analysis.

Indicators	1	2	3	4	5		Investment	680000
Quantity	34000	40800	48960	58752	70502,4		Nominal Rate	0,1073
P	10,5	10,5	10,5	10,5	10,5		Real Rate	0,0466
P(i)	11,025	11,5763	12,1551	12,7628	13,401		Inflation Rate	0,058
Revenue	357000	428400	514080	616896	740275		After tax	0,862
Revenue(i)	374850	472311	595112	749841	944800			
VCU	6,3	6,3	6,3	6,3	6,3			
VCU(i)	6,552	6,81408	7,08664	7,37011	7,66491			
TVC	214200	257040	308448	370138	444165			
TVC(i)	222768	278014	346962	433009	540395			
FC	13600	13600	13600	13600	13600			
FC(i)	14416	15281	16197,8	17169,7	18199,9			
DC	136000	136000	136000	136000	136000			
EBIT	-6800	21760	56032	97158,4	146510			
EBIT(i)	1666	43015,6	95952	163663	250205			
NP	-6800	18757,1	48299,6	83750,5	126292			
NP(i)	1666	37079,4	82710,6	141077	215677			
CF	129200	154757	184300	219751	262292			
CF(i)	137666	173079	218711	277077	351677			
DCF	123447,3533	141283	160762	183150	208872	817514		
DCF(i)	124325,5232	141160	161091	184304	211257	822138		
NPV	137514,0173							
NPV(i)	142138,009							
PI	1,202226496							
PI(i)	1,209026484							
DPP 4years 125days	124,6971306							
DPP (i) 4years 119days	119,4208226							
IRR	-680000	129200	154757	184300	219751	262292		
IRR	10,85%							
IRR(i)	-680000	137666	173079	218711	277077	351677		
IRR(i)	17,49%							

Task 3 – Sensitivity Analysis: Fixed vs Variable Costs

NPV Sensitivity Analysis of an Investment Project (“Pearl of the East” Case)

A case study was conducted on purchasing a new production line worth \$200,000, with a 5-year service life. Depreciation was calculated using the production method. Through sensitivity analysis, I compared how a 20% increase in variable costs vs fixed costs impacts NPV.

Results:

- Base NPV (no risk): Very high profit (NPV_0).
- With +20% fixed costs: Profit decreases ($NPV_2 < NPV_0$).
- With +20% variable costs: Profit decreases more significantly ($NPV_1 < NPV_2 < NPV_0$).

Conclusion: Variable costs growth has a stronger negative impact than fixed costs.

Indicators	1	2	3	4	5			
Quantity	160000	150000	120000	130000	120000	680000		
Price	11700	11700	11700	11700	11700			
Revenue	1872000000	1755000000	1404000000	1521000000	1404000000			
VCU	8424	8424	8424	8424	8424		<i>Investment</i>	<i>200000</i>
TVC	1347840000	1263600000	1010880000	1095120000	1010880000		<i>Tax</i>	<i>14,5</i>
FC	670000	670000	670000	670000	670000		<i>After tax</i>	<i>0,855</i>
DC	47058,82	44117,65	35294,12	38235,29	35294,12		<i>Per unit</i>	<i>0,29</i>
EBIT	523442941,18	490685882,35	392414705,88	425171764,71	392414705,88		<i>DR</i>	<i>0,2</i>
NP	447543714,7	419536429,4	335514573,5	363521858,8	335514573,5			
CF	447590773,53	419580547,06	335549867,65	363560094,12	335549867,65			
DCF	372992311,3	291375379,9	194183951,2	175327977,5	134849966,1	1168729586		
NPV 1	1168529586							

Indicators	1	2	3	4	5				
Quantity	160000	150000	120000	130000	120000	680000			
Price	11700	11700	11700	11700	11700				
Revenue	1872000000	1755000000	1404000000	1521000000	1404000000				
VCU	7020	7020	7020	7020	7020		<i>Investment</i>	<i>200000</i>	
TVC	1123200000	1053000000	842400000	912600000	842400000		<i>Tax</i>	<i>14,5</i>	
FC	804000	804000	804000	804000	804000		<i>After tax</i>	<i>0,855</i>	
DC	47058,82	44117,65	35294,12	38235,29	35294,12		<i>Per unit</i>	<i>0,29</i>	
EBIT	747948941,18	701151882,35	560760705,88	607557764,71	560760705,88		<i>DR</i>	<i>0,2</i>	
NP	639496344,7	599484859,4	479450403,5	519461888,8	479450403,5				
CF	639543403,53	599528977,06	479485697,65	519500124,12	479485697,65				
DCF	532952836,3	416339567,4	277480149,1	250530538,3	192694548	1669997639			
NPV 2	1669797639								

Indicators	1	2	3	4	5			
Quantity	160000	150000	120000	130000	120000	680000		
Price	11700	11700	11700	11700	11700			
Revenue	1872000000	1755000000	1404000000	1521000000	1404000000			
VCU	7020	7020	7020	7020	7020		<i>Investment</i>	200000
TVC	1123200000	1053000000	842400000	912600000	842400000		<i>Tax</i>	14,5
FC	670000	670000	670000	670000	670000		<i>After tax</i>	0,855
DC	47058,82	44117,65	35294,12	38235,29	35294,12		<i>Per unit</i>	0,29
EBIT	748082941,18	701285882,35	560894705,88	607691764,71	560894705,88		<i>DR</i>	0,2
NP	639610914,7	599599429,4	479564973,5	519576458,8	479564973,5			
CF	639657973,53	599643547,06	479600267,65	519614694,12	479600267,65			
DCF	533048311,3	416419129,9	277546451,2	250585790	192740591,1	1670340273		
NPV 0	1670140273							
NPV 1	1168529586							
NPV 2	1669797639							
Conclusion	If there is no risk here, we will make a big profit (NPV0). But if FC increases to 20%, there will be profit (NPV2) less than (NPV0), $NPV2 < NPV0$. So if VCU increases to 20%, there will be a less profit (NPV1), $NPV1 < NPV2 < NPV0$.							

Task 4 – Risk-Based Comparison of Two Projects

Comparing Mutually Exclusive Projects under Risk and Probability Assessment

This task analyzed two mutually exclusive projects (A and B), each with an investment of 20M soums and a 3-year period. Using probability-weighted scenarios (pessimistic, realistic, optimistic), expected NPV values were calculated for each project.

Focus: Risk-adjusted decision-making between two competing projects using probabilistic NPV (NPVp, NPVr, NPVo).

Results:

- Project A: Higher stable returns
- Project B: Higher optimistic outcome but riskier

Conclusion: Choice depends on risk preference , so Project A is safer, Project B offers higher upside under favorable conditions.

Project A					Investment	20	
Indicators	1	2	3		DR	0,1	
NCF p	6	6	6		pessimistic	0,1	
NCF r	8,5	8,5	8,5		realistic	0,6	
NCF o	9,1	9,1	9,1		optimistic	0,3	
DCF p	5,455	4,959	4,508	14,921			
DCF r	7,727	7,025	6,386	21,138			
DCF 0	8,273	7,521	6,837	22,630			
NPV p	-5,078888054						
NPV r	1,138241923						
NPV o	2,630353118						
Project B					Investment	20	
Indicators	1	2	3		DR	0,1	
NCF p	4	4	4		pessimistic	0,5	
NCF r	9	9	9		realistic	0,7	
NCF o	11	11	11		optimistic	0,25	
DCF p	3,636	3,306	3,005	9,947			
DCF r	8,182	7,438	6,762	22,382			
DCF 0	10,000	9,091	8,264	27,355			
NPV p	-10,05259204						
NPV r	2,381667919						
NPV o	7,355371901						

Conclusion

Across all four tasks, the project applied multiple investment analysis techniques in practical scenarios. I developed skills in capital budgeting, sensitivity analysis, risk assessment, and inflation adjustment. The results highlight the importance of integrating risk and real-world variables into financial decision-making.