

The Framework of Risk Management in A Real Estate **Development Project With A Focus on Macroeconomics** Aspects: A Case of Mixed-Use Real Estate Project in Ankara **Province**

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• "Risk, which is mathematically related to concepts of probability and impact, is a potential event or situation that has negative or positive impacts on the project targets" (PMI, 2000, Demir 2010).





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- Risk Management is a process which involves
 - Planning,
 - Identifying,
 - Analyzing,
 - Responding,
 - Controlling
- Aim of the risk management
 - *maximize* the results of positive risks
 - *minimize* the consequences of negative events







- Risk management important because
 - Cost of risks varies over the project life cycle
 - Project success



Figure from "Project Management" by Gray and Larson



Risk Types?



- Economical
- Social
- Political
- Financial
- Environmental
- Project Specific
 - Development
 - Appraisal
 - Usage
 - Location











	Interest rate	Degree of impacts due to increment of loan rate (%)	Sagalyn (1990); FSA (2005); Nabarrol & Keys, (2005); FSB (2007); Frodsham (2007)		
	Property type	Degree of location concentration (%)	Adair & Hutchison (2005); Frodsham (2007)		
	Market liquidity	Selling rate of same kind of properties in the local market (%)	Adair & Hutchison (2005)		
	Currency conversion	Degree of impacts due to exchange rate fluctuation	Morledge, et al. (2006); FSA (2005); FSB (2007)		
Economic risks	Demand and Supply	Degree of regional competitiveness (%)	Adair & Hutchison (2005)		
	Purchaseability	Degree of affordability to the same kind of properties (%)	http://www.statistics.gov.uk/		
	Brand visibility	Degree of Developer's reputation in specific development (%)	D&B (2007); Adair & Hutchison (2005); Gibson & Louragand, (2002)		
	Capital exposure	Rate of estimated lifecycle cost per 1 billion pound (%)	Blundell, et al. (2005); Moore (2006)		
	Lifecycle value	5-year property depreciation rate (%)	Lee (2002); Adair & Hutchison (2005)		
	Area accessibility	Degree of regional infrastructures usability (%)	Adair & Hutchison (2005)		
	Buyers	Expected selling rate (%)	Frodsham (2007)		
	Tenants	Expected annual lease rate (%)	Booth, et al. (2002)		
	Investment return	Expected capitalization rate (%)	Sagalyn (1990); Watkins, et al. (2004)		

Source: Khumpaisal etc. (2010)





- Lots of studies about profitability and risk analyses for real estate development in scientific literature such as:
 - Croen etc.-1999, De Marko 2001, Fikirkoca -2003, Wolski et al. – 2007, Kleczyk – 2008, Brown – 2009, Demir 2010, Hayunga et al. - 2011, Hardin et al. – 2012, Sitek -2013
- Scenario analysis method is used by
 - Kucharska 2006, Demir et al. 2010



The Risk Management Process







Risk Identification: reveals what, where, when, why, and how something could happen and potential effects on the objectives.

Risk Identification Tools:

- Brainstorming
- Checklists
- Interviewing
- SWOT Analysis (strengths, weaknesses opportunities, threats)
- Delphi Technique (anonymous consensus building)
- Diagramming Techniques
 - Cause & effect
 - Flow Charts
 - Influence Diagrams
- Documentation Reviews
- Information Gathering Techniques
- Assumption Analysis
- Expert Judgment





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Risk Analysis



 Risk Analysis: Establish probability and potential outcomes of each risk. What are the potential affect goals and objectives?

• Qualitative Risk Analysis Tools:

- Risk probability and impact statement
- Probability and impact matrix
- Risk data quality assessment
- Risk categorization
- Risk urgency assessment
- Expert Judgment

• Quantitative Risk Analysis Tools

- Data gathering and representation techniques
- Quantitative risk analysis and modeling (Sensitivity, *Scenario*, Simulation, Decision Tree, Expected Monetary Value Analysis (EMV) etc.)
- Expert Judgment





- *Risk Response:* Planning what shoulr do if the risks occurs
- Risk Response Tools:
 - Strategies for negative risks or threats
 - Strategies for positive risks or opportunities
 - Contingent response strategy
 - Expert Judgment



Risk Response Planning



- Techniques/Strategies:
 - Negative Risks (or Threats)
 - Avoid Eliminate
 - Transfer Share
 - Mitigate Reduce probability or impact of it
 - Accept Do nothing
 - Positive Risks (or Opportunities)
 - Exploit
 - Share
 - Enhance
 - Acceptance





 Risk Monitoring & Control: Assess each identified risk regularly to decide whether or not it is becoming less or more probable and whether the effects of the risk have changed. Must discuss outcomes with management level.

• Tools:

- Risk reassessment
- Risk audits
- Variance and trend analysis
- Technical performance measurement
- Reserve analysis
- Status meetings



Case Study



- The project started 2010, construction was completed 2014 in Ankara Province, Turkey
- Located over two plots
- Selected project area is 232,000 meter squares
- It lies between the Bayındır Hospital and the Ufuk University Hospital in the Balgat Neighborhood, opposite the Armada Business and Shopping Center, at the intersection of Ankara Eskisehir Road and Konya Road.









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Risk Identification - SWOT Analysis



	Opportunities	Threats
Strengths	Location	Project area has not yet become a living space
	High demand for office	4 Inconsistencies in the Turkish economy, possible risks in
	Under ground transportation opportunity	political and economic terms (interest rates, cost,
	Mix project (office, residence, retail)	revenue, production, etc.)
	Being an original architectural concept	Recent opportunities in the second hand market
	# Functions that facilitate life (lounge, restaurant, sports cl	ub, 🖇 Being unconventional project mix
	shopping center, entertainment areas, parking area etc.)	
	Price is going up	
	4 Economic conditions	
	Easy connection two main roads	
Weaknesses	Investment opportunities	4 Poor construction of existing hospital buildings in
	First residence project in Ankara province	surrounding parcels
	Not stable announced price	4 Traffic
		4 Housing and office block are close togetherPasifik
		İnşaat'ın ilk geliştirdiği projesi olması
		No brand awareness in the industry
		No data for planning
		Do not address family life

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Expected to be high dues





According to The Risk Perception Survey Result, Which macro economic series play role for risk management?







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What are the risk analysis methods used by your company? (Multiple selections are possible.)









Define Key Factors

Future Projection

Determining Scenarios

Result Analysis





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Turkey Macro Economic Depict(s)









GDP by Income Approach-Current Prices (TURKSTAT)(Quarterly, TRY Thousand) riginal Frequency, DISCRETE, Original Observation



Gross Domestic Product (Purchaser's Price)

Turkey Macro Economic Depict(s)







Financial Ratios							
Discount Rate for retail section of the		11.50%					
Risk-free rate		6.00%	10 years Turkey Treasury Eurobond simple interest rate				
Industry premium		0.00%	Potential real estate buyer's profit forecast * Risk of liquidation of real estate				
Risk of low liquidity		3.00%					
Operational risks	2.50%		Business and management risk				
Cap Rate 8,5	50%						
Discount Rate for office and residance of th	e 8.						
project							
Risk-free rate		5.00%	2 years Turkey Treasury Eurobond simple interest rate				
Industry premium		0.00%	Potential real estate buyer's profit forecast *				
Risk of low liquidity		2.00%	Risk of liquidation of real estate				
Operational risks		1.50%	Business and management risk				







Scenario Analysis Result – Base Case



Mix RED Project based two plots (for big and small plots)											
Years	0	1	2	3	4	5	6	7	8	9	Total
Retail											
Rent	\$0	\$0	\$13,333	\$13,733	\$14,145	\$14,569	\$15,006	\$15,457	\$15,920	\$16,398	\$118,561
Retail Period End Value	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$182,656	\$182,656
Total Cost and Expenses	\$15,167	\$17,615	\$1,368	\$350	\$359	\$367	\$376	\$385	\$394	\$404	\$36,785
Retail Cash Flows	-\$15, 167	-\$17,615	\$11,965	\$13,383	\$13,786	\$14,202	\$14,630	\$15,071	\$15,526	\$198,650	\$264,431
N et	-\$15,167	-\$15,798	\$9,624	\$9,654	\$8,919	\$8,241	\$7,614	\$7,034	\$6,499	\$74,579	\$101,200
										Retail NPV	\$101,200
Office (big plot)											
Sales	\$44,711	\$72,432	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$117,143
Total Cost and Expenses	\$11,311	\$16,166	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$27,478
Office Cah Flows	\$33,400	\$56,266	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$89,665
N et	\$30,783	\$47,795	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$78,579
										Office N PV	\$78,579
Residance											
Sales	\$12,263	\$29,501	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,763
Total Cost and Expenses	\$6,285	\$9,424	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,708
Recidance Cash Flows	\$5,978	\$20,077	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$26,055
N et	\$5,510	\$17,055	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$22,564
									Res	idanceN PV	\$22,564
Office (small plot)											
Revenues	\$22,916	\$37,124									\$60,040
Cost and Expenses	\$5,604	\$7,918									\$13,522
Gross Operating Profit	\$17,312	\$29,206									\$46,518
N et	\$15,956	\$24,809									\$40,765
										Office NPV	\$40,765
Land Cost	\$6,987	\$17,467	\$20,961	\$24,454	\$0	\$0	\$0	\$0	\$0	\$0	\$69,868
Net	\$6,987	\$16,099	\$17,805	\$19,145	\$0	\$0	\$0	\$0	\$0	\$0	\$60,036
										plot N PV	\$60,036
										Total N PV	\$183,071

Source: Colliers Feasibility Report, 2010













Scenario Analysis – Pessimistic Case If some variables go worse together.....









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Scenario Analysis Result – Pessimistic Case



Mix RED Project base	d two plots	s (for big a	and small	plots)							
Years	0	1	2	3	4	5	6	7	8	9	Total
Retail											
Rent	\$0	\$0	\$13,333	\$13,733	\$14,145	\$14,569	\$15,006	\$15,457	\$15,920	\$16,398	\$118,561
Retail Period End Value	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$182,656	\$182,656
Total Cost and Expenses	\$15,167	\$17,615	\$1,368	\$350	\$359	\$367	\$376	\$385	\$394	\$404	\$36,785
Retail Cash Flows	-\$15, 167	-\$17,615	\$11,965	\$13,383	\$13,786	\$14,202	\$14,630	\$15,071	\$15,526	\$198,650	\$264,431
N et	-\$14,409	-\$14,615	\$8,670	\$8,470	\$7,620	\$6,856	\$6,168	\$5,549	\$4,993	\$55,791	\$75,092
										Retail N PV	\$75,092
Office (big plot)											
Sales	\$44,711	\$72,432	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$117,143
Total Cost and Expenses	\$11,311	\$16,166	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$27,478
Office Cah Flows	\$33,400	\$56,266	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$89,665
N et	\$28,457	\$42,995	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$71,453
										Office N PV	\$71,453
Residance											
Sales	\$12,263	\$29,501	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,763
Total Cost and Expenses	\$6,285	\$9,424	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,708
Recidance Cash Flows	\$5,978	\$20,077	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$26,055
N et	\$5,093	\$15,342	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$20,435
									Res	idanceN PV	\$20,435
Office (small plot)											
Revenues	\$22,916	\$37,124									\$60,040
Cost and Expenses	\$5,604	\$7,918									\$13,522
Gross Operating Profit	\$17,312	\$29,206									\$46,518
N et	\$14,750	\$22,318	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$37,068
										Office NPV	\$37,068
Land Cost	\$6,987	\$17,467	\$20,961	\$24,454	\$0	\$0	\$0	\$0	\$0	\$0	\$69,868
N et	\$7,336	\$16,449	\$17,703	\$18,523	\$0	\$0	\$0	\$0	\$0	\$0	\$60,011
										plot N PV	\$60,011
· · · · · · · · · · · · · · · · · · ·										Total NPV	\$144,036















Scenario Analysis – Optimistic Case If some variables go best together.....





Scenario Analysis Result – Optimistic Case



Mix RED Project base	d <u>t</u> wo plots	(for big a	and small	plots)							
Years	0	1	2	3	4	5	6	7	8	9	Total
Retail											
Rent	\$0	\$0	\$13,333	\$13,733	\$14,145	\$14,569	\$15,006	\$15,457	\$15,920	\$16,398	\$118,561
Retail Period End Value	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$182,656	\$182,656
Total Cost and Expenses	\$15,167	\$17,615	\$1,368	\$350	\$359	\$367	\$376	\$385	\$394	\$404	\$36,785
Retail Cash Flows	-\$15,167	-\$17,615	\$11,965	\$13,383	\$13,786	\$14,202	\$14,630	\$15,071	\$15,526	\$198,650	\$264,431
N et	-\$15,925	-\$17,047	\$10,672	\$11,002	\$10,445	\$9,917	\$9,416	\$8,940	\$8,488	\$100,095	\$136,002
										Retail N PV	\$136,002
Office (big plot)											
Sales	\$44,711	\$72,432	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$117,143
Total Cost and Expenses	\$11,311	\$16,166	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$27,478
Office Cah Flows	\$33,400	\$56,266	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$89,665
Net	\$33,242	\$53,080	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$86,322
										Office NPV	\$86,322
Residance											
Sales	\$12,263	\$29,501	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$41,763
Total Cost and Expenses	\$6,285	\$9,424	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$15,708
Recidance Cash Flows	\$5,978	\$20,077	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$26,055
N et	\$5,950	\$18,940	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$24,890
									Res	idanceN PV	\$24,890
Office (small plot)											
Revenues	\$22,916	\$37,124									\$60,040
Cost and Expenses	\$5,604	\$7,918									\$13,522
Gross Operating Profit	\$17,312	\$29,206									\$46,518
Net	\$17,230	\$27,552	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$44,782
										Office N PV	\$44,782
Land Cost	\$6,987	\$17,467	\$20,961	\$24,454	\$0	\$0	\$0	\$0	\$0	\$0	\$69,868
Net	\$6,638	\$15,729	\$17,891	\$19,784	\$0	\$0	\$0	\$0	\$0	\$0	\$60,041
										plot N PV	\$60,041
										Total NPV	\$231,954













- Using historical data for planning is important
- Inputs are changeable, do not assume they are constant
- Sensivity analysis is not suitable for changing more variables
- The project has an expected present cash flows as NP 183,071 million dollar
- NPVs of the project varies in interval of (144,036 to 231,955) with large range of possible outcomes
- At the end of construction completed (in 2014) real NPV outcome of the Project was calculated as 229,037 million dollar
- What are the difference and why
- At the end project manager is successful or not





Thanks for your attention and partition









