

Subprime mortgage lending

Recognising its potential and managing its risk.

Edoardo Turano

- Definitions and dimensions
- The Risk Based Pricing approach
- Conclusions

Subprime lenders offer mortgages to people who represent a higher level of risk than borrowers who meet standard prime underwriting guidelines

Three main categories of applicants fall into this segment:

- 1) Borrowers with poor credit histories who seek home purchase and refinance mortgages
- 2) Borrowers who cannot document all of the underwriting information in their application
- 3) Borrowers, with good credit histories, seeking high loan-to-value (LTV) mortgages.

The applicant level of risk is generally assessed considering:

- 1) Credit bureau score
- 2) Loan to value (LTV)
- 3) Mortgage history (in case of refinancing)

Applicants are then assigned to a risk range. A common classification is:

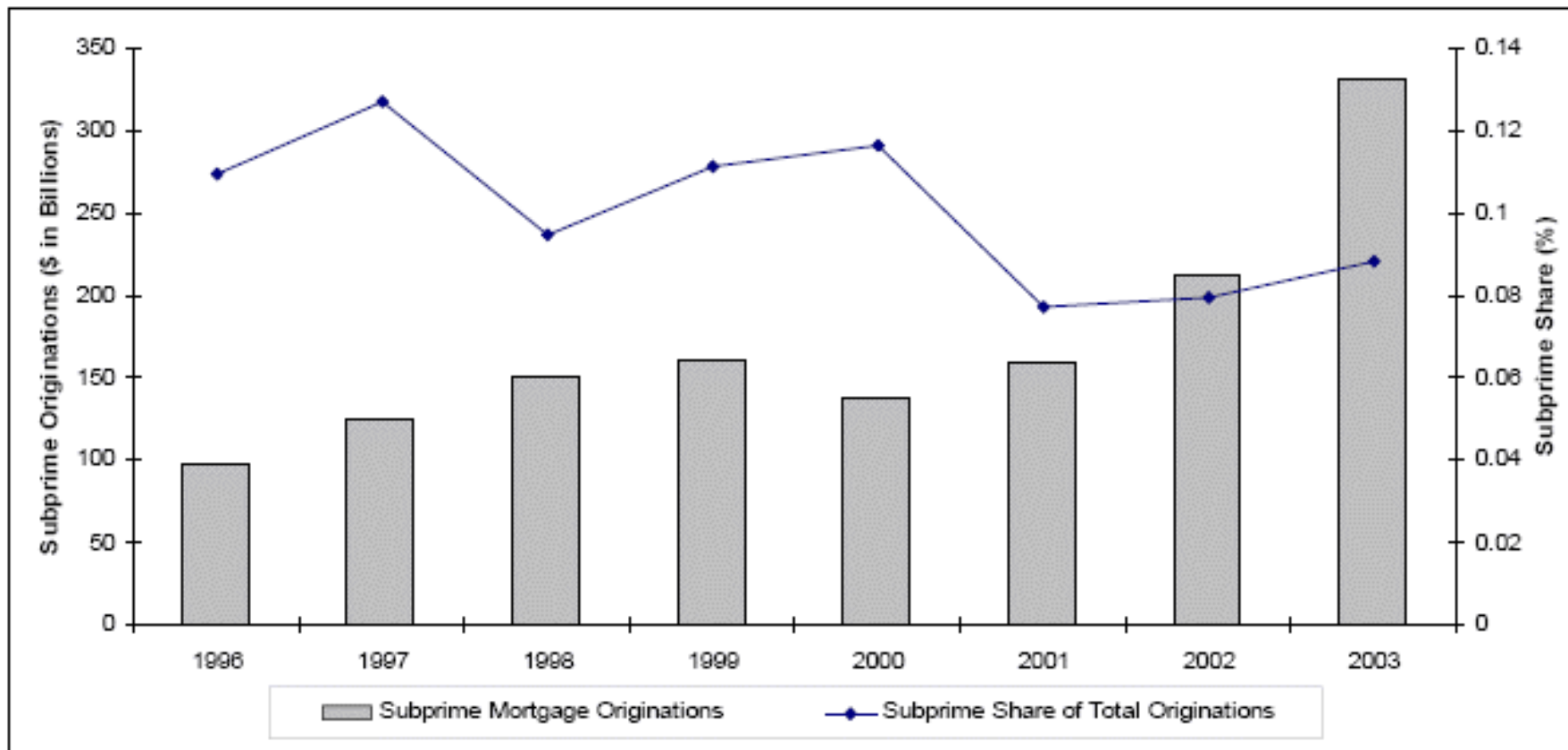
A	less risky customers who constitute the prime lending market. They have access to the lowest interest rates
⁽¹⁾ Aalt A- B C	more risky customers who constitute the subprime lending market. They are rejected by normal lenders but may borrow from subprime lenders at higher interest rates

⁽¹⁾ Applicants with good credential but providing limited documentation

USA SUBPRIME MORTGAGE MARKET SHARE EQUALED 9% OF TOTAL ORIGINATIONS IN 2003

Approximately 20% CAGR between 1996 and 2003 (vs 24% for prime segment)

Approximately 44% CAGR between 2001 and 2003 (vs 30% for prime segment)



Source: Inside B&C lending, 2003

There is an untapped mortgage demand of over €500 billion in the European residential mortgage market.

This figure could reach as high as €1,600 billion in potential new mortgage lending across Europe in the medium term, depending on regulatory and house price developments.

Over 80% of growth potential is most likely to be in higher risk lending products:

- High Loan to Value
- High Debt to Income
- Borrowers with Previous Credit Problems

SUBPRIME SERIOUS DELINQUENCY RATES ARE ALMOST 20 TIMES HIGHER THAN FOR PRIME SEGMENT BUT...

	All Prime Conventional	FHA	Subprime						
			Alt-A or A-Minus			B	C	CC or D	All Subprime
			AA+	AA	A				
Market Share and Pricing									
Share of All 2001 Single Family Mortgage Originations*	82.32	9.43	0.47	3.42	1.94	0.87	0.66	0.89	8.25
30-Year, Fixed APR Interest Rate**	6.14	6.11	7.20	9.10	9.40	10.60	11.80	12.75	9.83
Denial Rate on Loan Applications***	20.14	11.05	--	--	--	--	--	--	53.63
Performance****									
30-Day Delinquency Rates	1.73	7.02	1.86	5.12	7.73	10.15	11.75	10.88	7.35
60-Day Delinquency Rates	0.31	2.02	0.43	1.41	2.09	2.74	3.57	2.62	2.02
90-Day Delinquency Rates	0.28	2.69	0.42	2.06	3.93	6.39	8.45	9.95	4.04
Foreclosure Rates	0.27	1.76	0.94	3.82	6.26	9.44	12.55	13.61	6.40
Serious Delinquency Rate (90 days DLQ+FCL)	0.55	4.45	1.36	5.88	10.19	15.83	21.00	23.56	10.44
REO Rate	0.15	0.79	0.53	1.44	1.87	3.21	3.92	4.19	2.14
Loss Rate (% of original UPB)	0.01	0.29	0.05	0.51	1.05	1.64	2.80	2.62	1.10

Source: On the economics of subprime lending (2003)

...delinquency rates vary considerably among the different categories into which subprime loans are generally classified according to credit scores and LTV ratios. If an effective classification is employed, the less risky segments can be profitably targeted

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- Mortgage Insurance

- Risk transfer option
- Common for high loan to value ratios

- Risk based pricing

- A higher interest rate is offered to compensate for the higher risk
- The appropriate interest rate can be determined analytically according to different criteria (e.g. maximisation of returns, or risk adjusted measures)

Flat pricing

Applicant knows price
Complete application details
Application is assessed
If approved by bank → contract

Risk based processing

Applicant knows price
Complete application details
Application is assessed
Risk is adjusted to match the price (terms, amount, guarantees, fees, deposit)

- Low quality applicants
 - ◆ Proof of address
 - ◆ Proof of income
 - ◆ Burden reduces take up rates
- High quality applicants
 - ◆ No proof
 - ◆ Reduce data capture need

If approved by bank → contract

Risk based pricing

Applicant knows typical rate (*) but not final price
Complete application details
Application is assessed
If approved by bank → applicant can accept or decline offer at that price

Example : self certification mortgages reduce need of income certification but at the cost of a higher price. Ideal for self-employed or multiple job holders

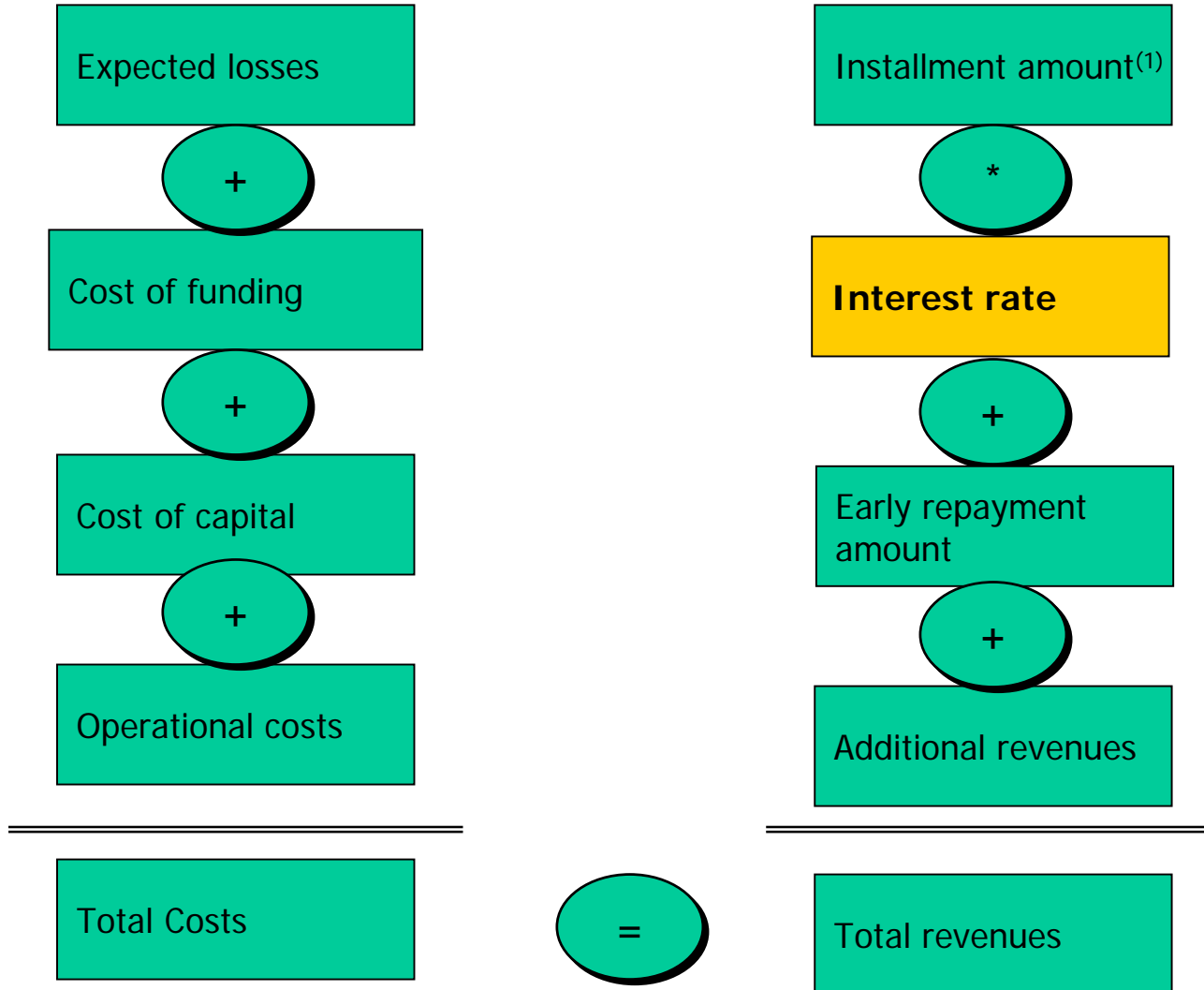
Possibility to avoid adverse selection

(*) Typical rate: the median rate. Rate at which 50% or more of the borrowers get that or lower rates

- Risk based pricing (RBP) can guarantee an appropriate return on regulatory and economic capital and avoids the adverse selection effect
- RBP allows for a differentiated set of strategies to be implemented (i.e. access to credit to previously rejected applicants, retention strategies for good customers)

RISK BASED PRICING FOR MORTGAGE PRODUCTS

In it's basic form it consists in determining an interest rate such that the expected costs equal expected revenues



(1) Costs and revenues need to be actualised when necessary considering an appropriate discount rate

EXPECTED LOSSES DEPEND ON PD, LGD AND EAD

Expected losses

Probability of default (PD)



Exposure at default (EAD)



Loss given default (LGD)

Traditional application scoring just considers that...

...other scoring models can assess EAD and LGD

Quantile PD	%
1	5
2	10
3	12
4	15
5	20
6	25
7	30
8	35
9	40

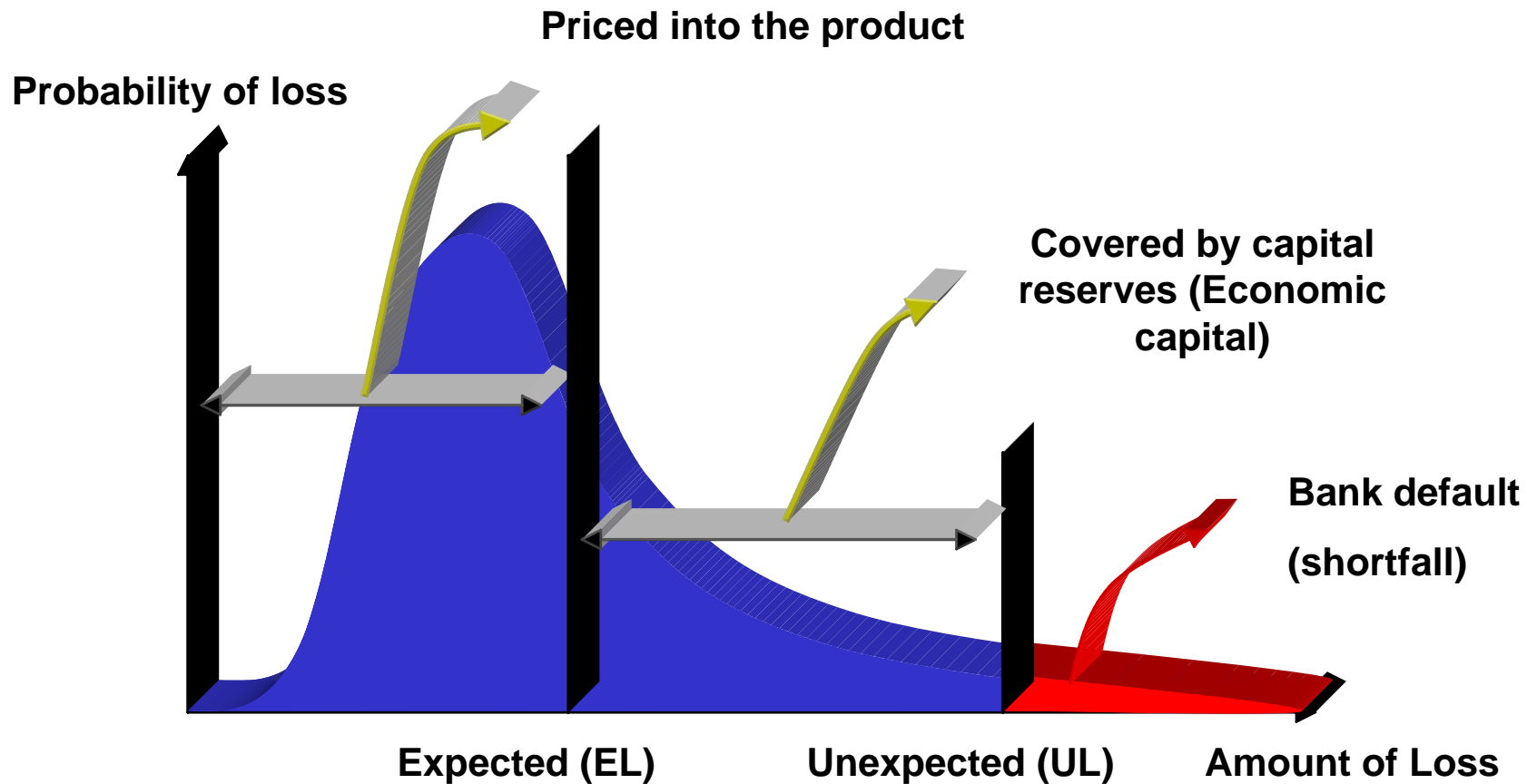


Quantile EAD	%
1	50
2	58
3	65
4	68
5	70
6	72
7	74
8	78
9	80



Quantile LGD	%
1	10
2	30
3	40
4	42
5	48
6	57
7	60
8	68
9	73

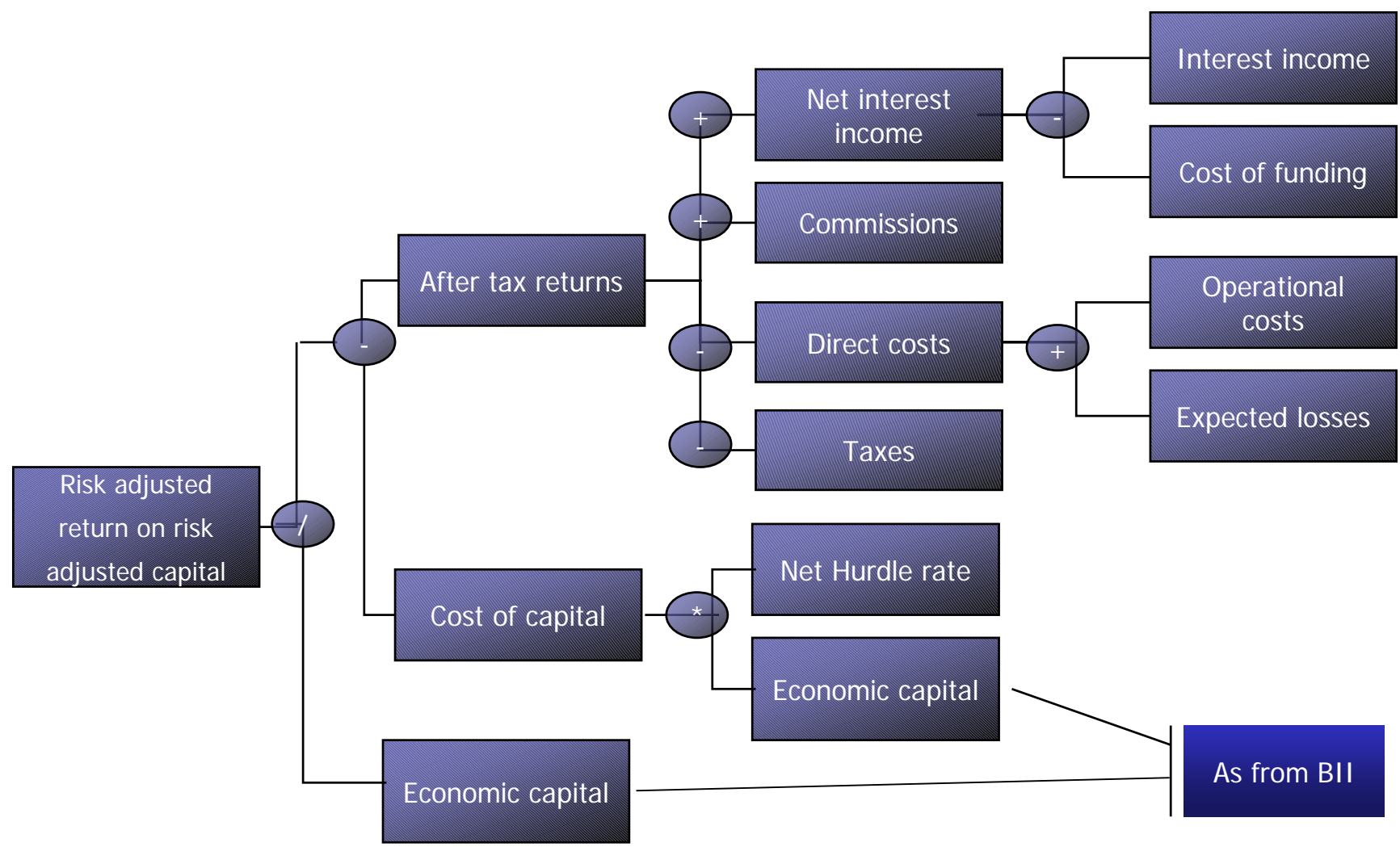




Currently, economic and regulatory capital can be very different; the New Basel Capital Accord purpose is to better align the regulatory capital with economic risk.

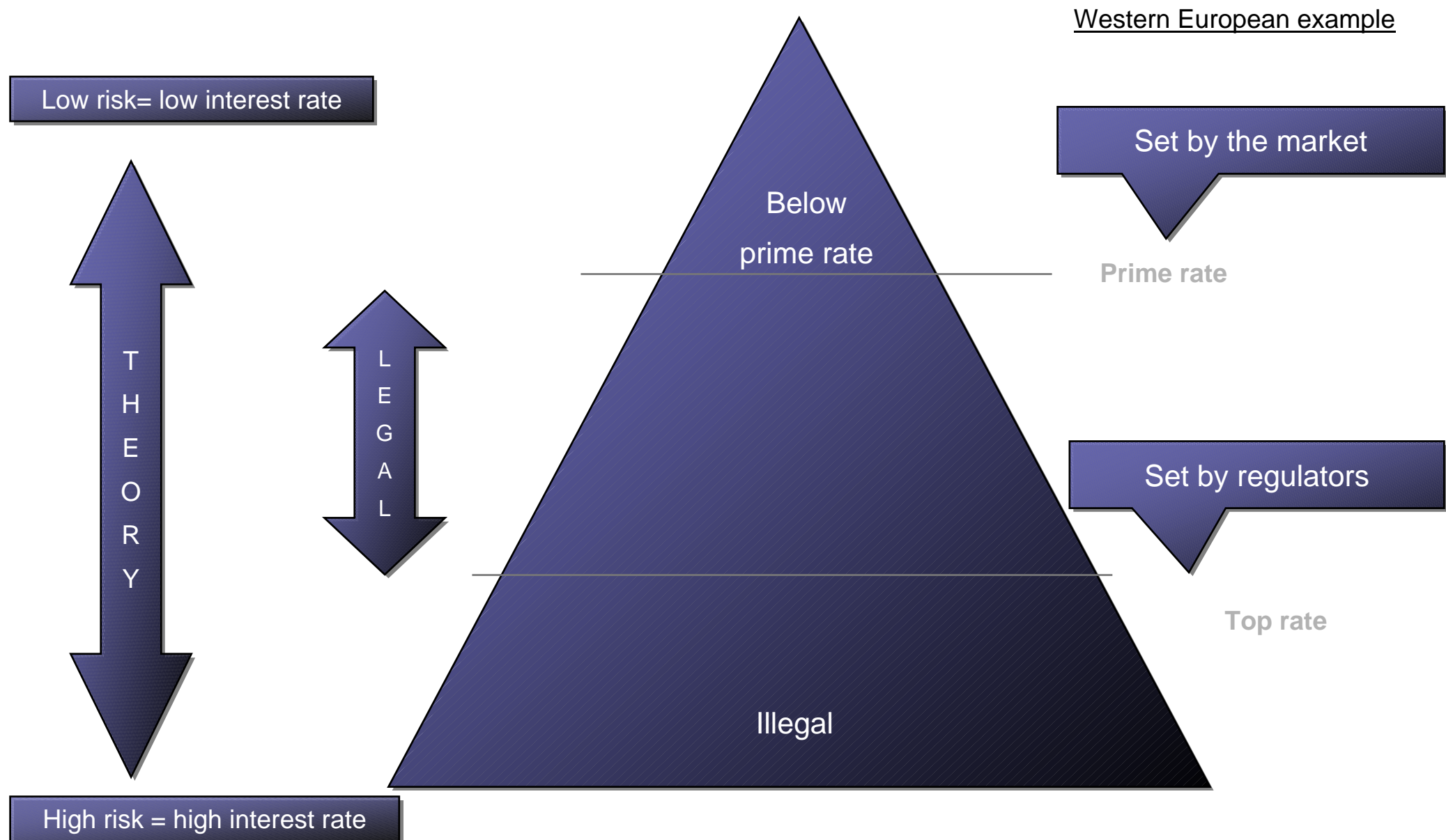
A MORE SOPHISTICATED APPROACH TO RBP TAKES INTO CONSIDERATION RISK ADJUSTED VARIABLES SUCH AS RARORAC

Determine the interest rate for which the Risk Adjusted Return on Risk Adjusted Capital is >0



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THE APPLICABILITY OF RBP IS CONSTRAINED BY THE LIMITS SET BY REGULATORS ON THE MAXIMUM INTEREST RATE



CREDIT BUREAU SCORES AND LTV ARE THE MAIN DRIVERS OF PRICE

Both conditions need to be satisfied

30-Year Fixed-Rate Mortgage Pricing for Subprime Loans

Denomination is not standard

Credit Grade	Credit Score	Mortgage History	Loan-to-Value Ratio						
			65%	70%	75%	80%	85%	90%	95%
AA	680	<80% LTV and [1x30 days late last 12 months or 3x30 days late last 24 months] or <80% LTV and 1x30 days late last 12 months	7.45	7.60	7.85	8.10	8.60	9.20	9.80
	650		7.75	7.90	8.15	8.40	8.90	9.49	10.10
	620		8.20	8.35	8.60	8.85	9.35	9.90	10.30
	600		8.49	8.65	8.90	9.15	9.65	10.15	10.49
A	580	<80% LTV and [2x30 days late last 12 months and 0x60 days late last 24 months] or <80% LTV and 2x30 days late last 12 months	8.65	8.80	9.05	9.30	9.80	10.25	
	660		8.20	8.35	8.60	8.85	9.35	9.95	
	620		8.45	8.60	8.85	9.10	9.60	10.20	
	580		8.85	9.00	9.25	9.60	10.00	10.60	
B	560	<80% LTV and [4x30 days late last 12 months or 1x60 days late last 24 months] or <80% LTV and 4x30 or 2x30 or 1x60 days late last 12 months]	9.05	9.20	9.45	9.70	10.49	11.30	
	640		8.70	8.85	9.10	9.45	9.95		
	600		9.05	9.20	9.45	9.80	10.30		
	580		9.30	9.49	9.70	10.05	10.49		
C	540	6x30 or 1x60 or 1x90 days late last 12 months	10.10	10.30	10.49	10.90			
	600		10.15	10.40	10.90				
	570		10.49	10.75	11.25				
	540		11.15	11.40	11.90				
CC	520	Exceeds "C"	11.35	11.60	12.10				
	580		11.60						
	550		12.05						
	530		12.35						
	500		13.05						

Source: Option One Mortgage Corporation

CREDIT BUREAU SCORES ARE EXCELLENT PREDICTORS OF DEFAULT RATES

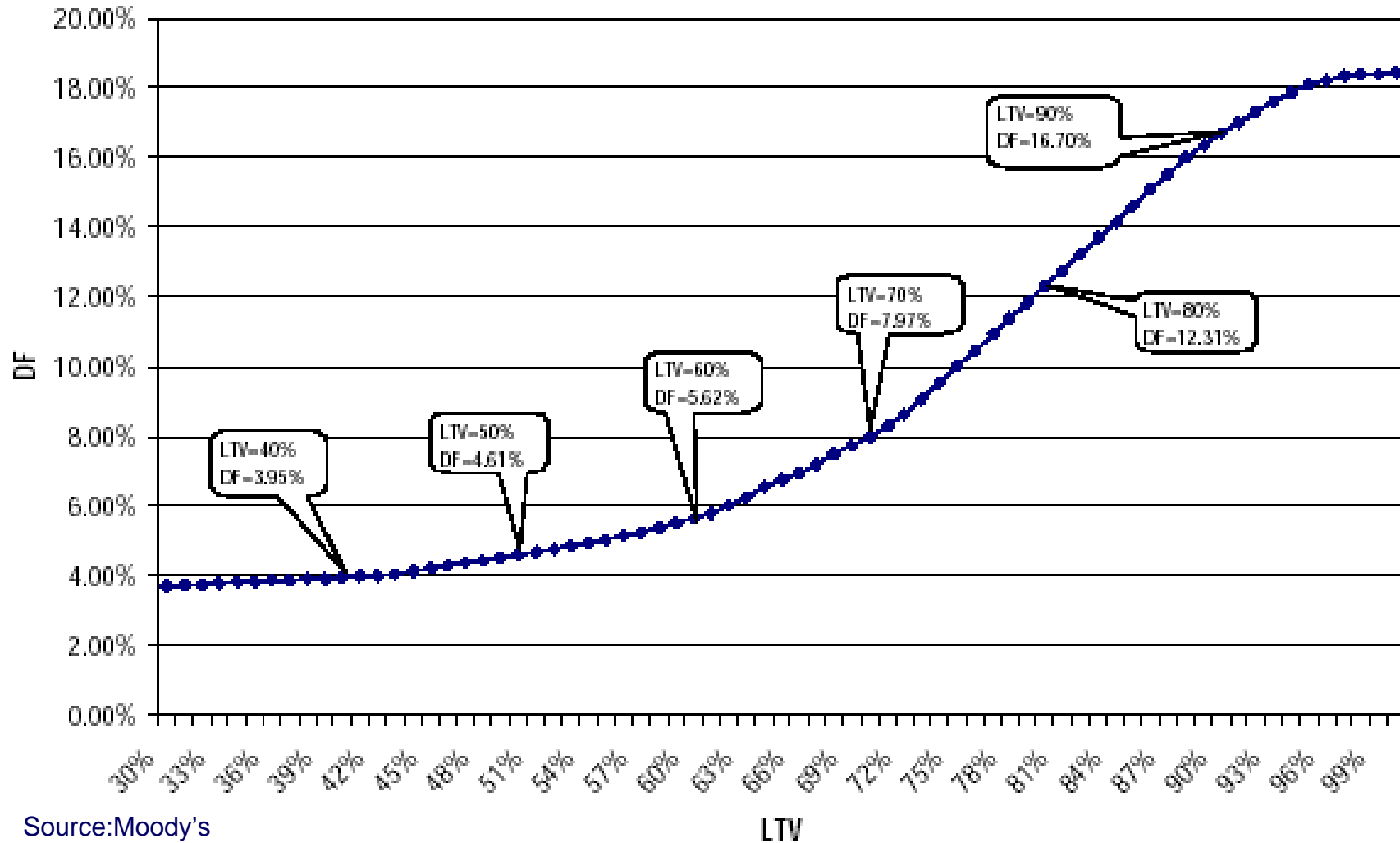
In this example Credit Bureau Scores are used with Loan to Value and an indicator of house appreciation rates. Other macroeconomic variables can be used such as unemployment

		Credit Bureau Score			
House price appreciation	LTV	< 620	>620 <=660	>660 <=720	>720
Low	>90%	22.53	11.51	9.58	7.15
	80-90%	26.95	17.69	12.55	9.35
Medium	>90%	27.39	13.15	8.27	3.51
	80-90%	24.12	14.74	9.45	4.56
High	>90%	20.35	9.46	6.02	3.48
	80-90%	15.45	10.13	7.33	6.33

Default rates for subprime mortgages from LoanPerformance.com

DEFAULT RATES ARE HIGHLY CORRELATED WITH THE LOAN TO VALUE RATIO

In fact Moody's mortgages securitisation methodology is based on linking the LTV ratio with the default frequency



Source: Moody's

Subprime lending is a big opportunity to make money in a very competitive mortgage market

The main challenges are in funding and risk management

With the right tools the first movers have a chance to acquire a dominant position in these markets

EXPERIAN CREDIT BUREAUS OPERATIONS



- Negative Credit Bureau used by banks and non banks institutions
- Migration to positive and negative data sharing in progress
- Planned Credit Bureau score implementation at the beginning of 2007
- Fully compliant with local Data Protection legislation
- Integrated with application processing system module for Mortgages (Ingegno)

- Positive and negative Credit Bureau
- Live since late 2005
- Integrated with external data sources
 - Bulstat register
 - Social Security Institute Information
- Credit Bureau score to be implemented in late 2006
- Fully compliant with local Data Protection legislation

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