

Everything you always wanted to know about Basel II in 15 minutes

(a real estate perspective)

Erik Kersten

Senior Policy Advisor

Supervisory Policy – Quantitative Risk Management

Views and opinions expressed in this presentation are those of the author and do not necessarily reflect the position of the Nederlandsche Bank.



Outline

- Overview of Basel II
- Real estate issues under Basel II

Capital requirements under Basel I

Loans	100	Owners equity	8
(Risk weight 100%)		Deposits	92
	100		100

“Worst case”

Performing Loans	92	Owners equity	0
Loans losses (8)		Deposits	92
	92		92

•Required Capital = (Risk Weight * Exposure value)*8%

Capital requirements under Basel I

Mortgage Loans	100
(Risk weight 50%)	
	100

Owners equity	4
Deposits	96
	100

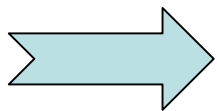
“Worst case”

Performing Loans	96
Loan losses (4)	
	96

Owners equity	0
Deposits	96
	96

Mortgage collateral under Basel I

- Residential mortgages: if LtV is lower than threshold: lower risk weight, less capital
- No recognition in capital of commercial real estate (with some exceptions)



- No realistic assumptions
- Capital treatment fuelled MBS-market

Purposes of the new capital accord

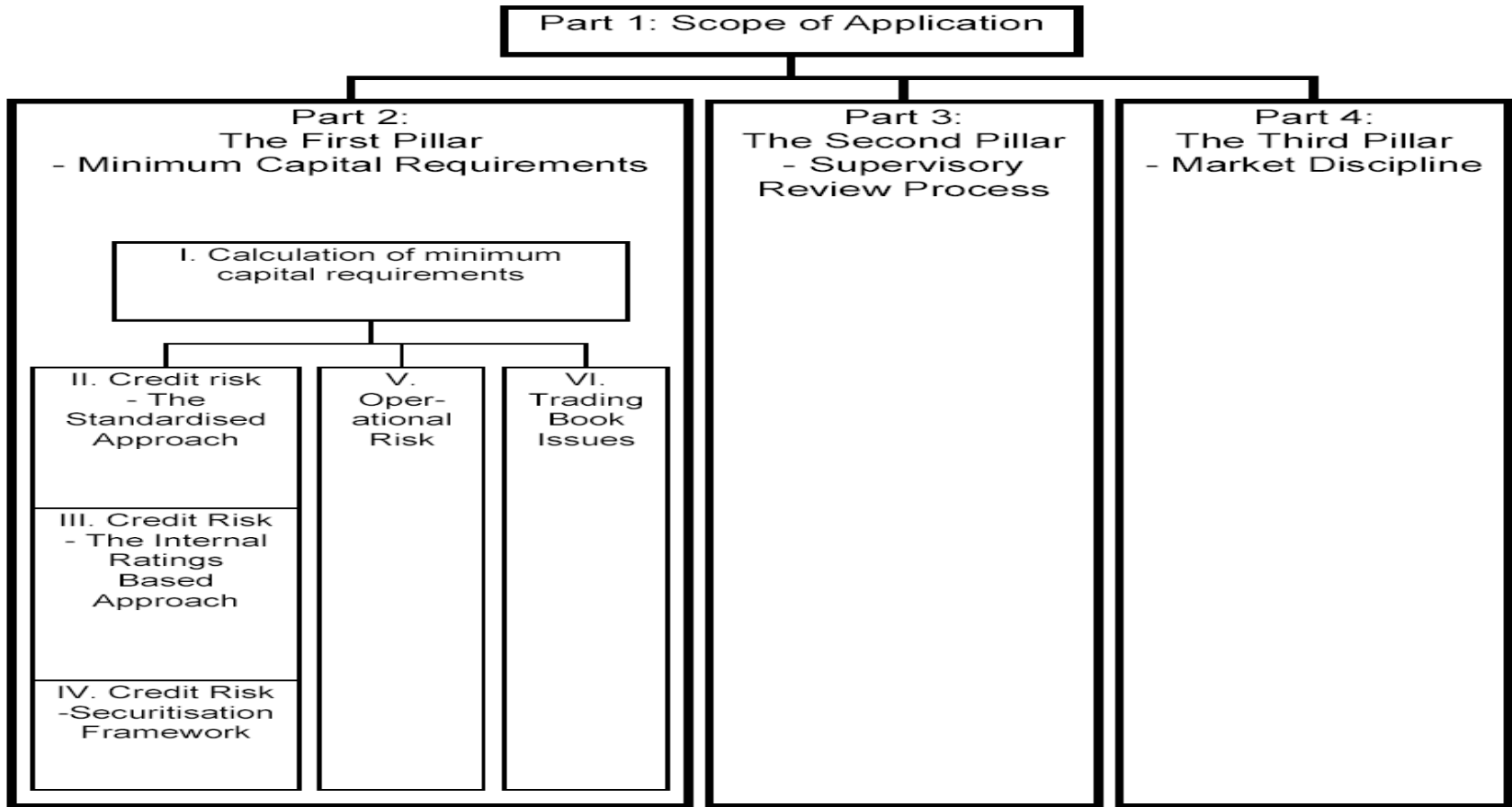
- a comprehensive approach to addressing risks
- Risk sensitive capital requirements
- Promote soundness and safety of the financial system
- Enhance competitive equality
- Accommodate industry best practice

Result:

⇒ Widen acceptance of collateral types used in practise
and

⇒ widen acceptance of internal models to Credit risk &
Oprisk

Structure of Basel II



Menu of approaches (pillar 1)

- For measuring **Credit Risk**:
 - Standardised Approach
 - Foundation Internal Ratings-based Approach
 - Advanced Internal Ratings-based Approach
- For measuring **Operational Risk**:
 - Basic Indicator Approach
 - Standardised Approach
 - Advanced Measurements Approach
- For measuring **Market Risk**:
 - Standardised Approach
 - Internal Models Approach

Credit risk (Pillar I)

- The risk of loss due to the fact that an obligor will not meet its credit obligations in full
 - Required Capital = $(RW * \text{Exposure value}) * 8\%$
(no change!)
- Standardised approach
 - RW Based on External ratings (Moody's, S&P, local rating agencies)
- Internal ratings based approach
 - RW based on Internal ratings (banks own assessment)

Internal Ratings Based Approach

- Capital requirements for an exposure based on VaR and function of: PD, LGD, EAD and M
- These functions are given by Accord

IRB: the formulae

$$K = LGD \times \left(\Phi \left[\underbrace{\frac{\overbrace{\text{look up PD}}^{\Phi^{-1}(PD)}}{\sqrt{1-R}} + \sqrt{\frac{R}{1-R}}}_{\text{account for correlation}} \times \underbrace{\Phi^{-1}(0.999)}_{\text{look up 99.9\% in the normal distribution}} \right] - \underbrace{PD}_{\text{account for EL}} \right) \times \underbrace{\left(\frac{1}{1-1.5 \times b} \right) \times \left(1 + \left(M - \underline{2.5} \right) \times b \right)}_{\text{correct for maturity}} \times 1,06$$

calculate PD stressed at 99.9%

$$RW = K * 12,50$$

$$\text{Correlation (R)} = 0.12 \times \left(\frac{1 - e^{-50 \times PD}}{1 - e^{-50}} \right) + 0.24 \times \left[1 - \left(\frac{1 - e^{-50 \times PD}}{1 - e^{-50}} \right) \right]$$

For Corporates, Banks & Sovereigns
SME correction : R ranging from 0.08 to 0.20

Retail :
Mortgages : R = 0.15;
credit cards : R = 0.04
and other retail : R ranging from 0.03 to 0.16

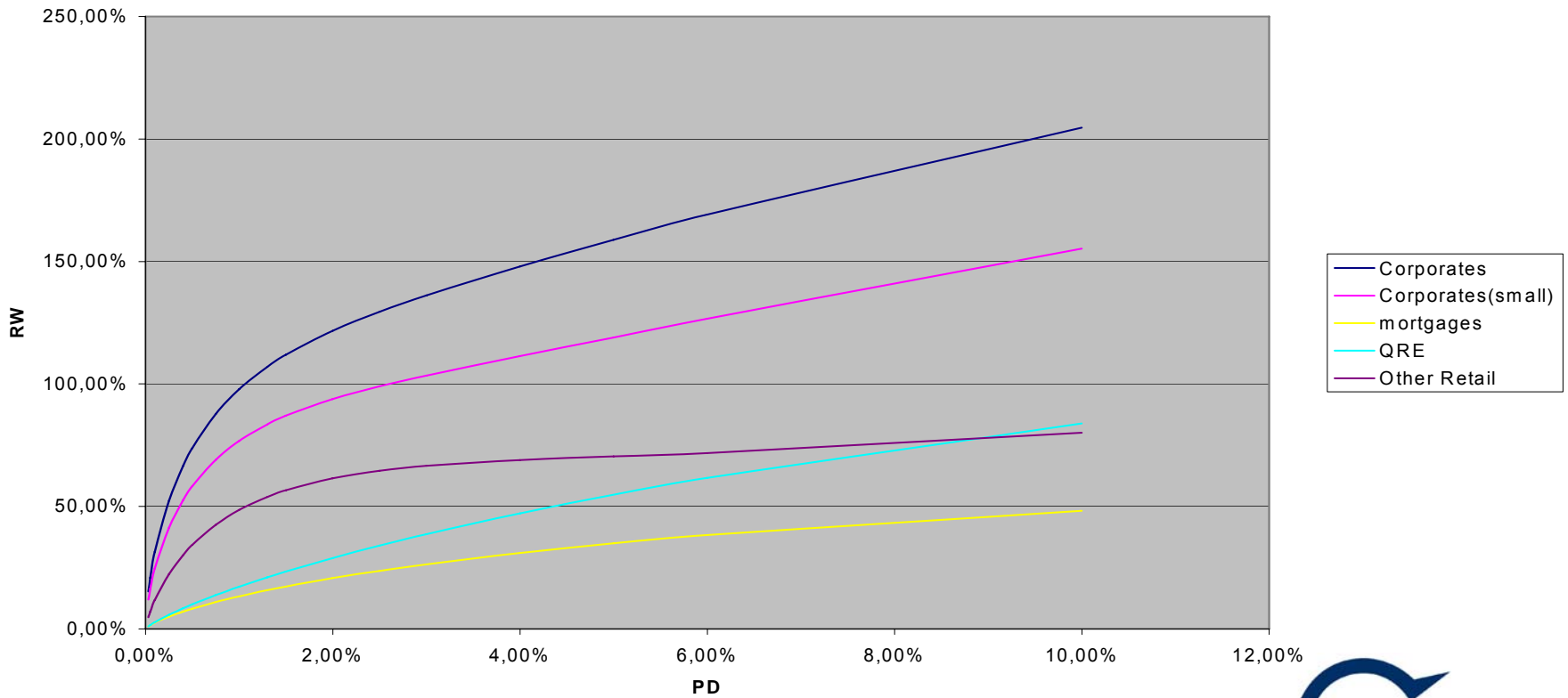
Maturity adjustment (b) = $(0.11852 - 0.05478 \times \ln(PD))^2$
Only for Corporates, Banks & Sovereigns

'internal' refers to the inputs

	Foundation IRB	Advanced IRB
Probability of default		Own estimates
Loss Given Default	Supervisory formula	Own estimates
Exposure at Default	Supervisory formula	Own estimates
Maturity	Bank's own estimates or 2.5 yrs	Own estimates

RW vs PD

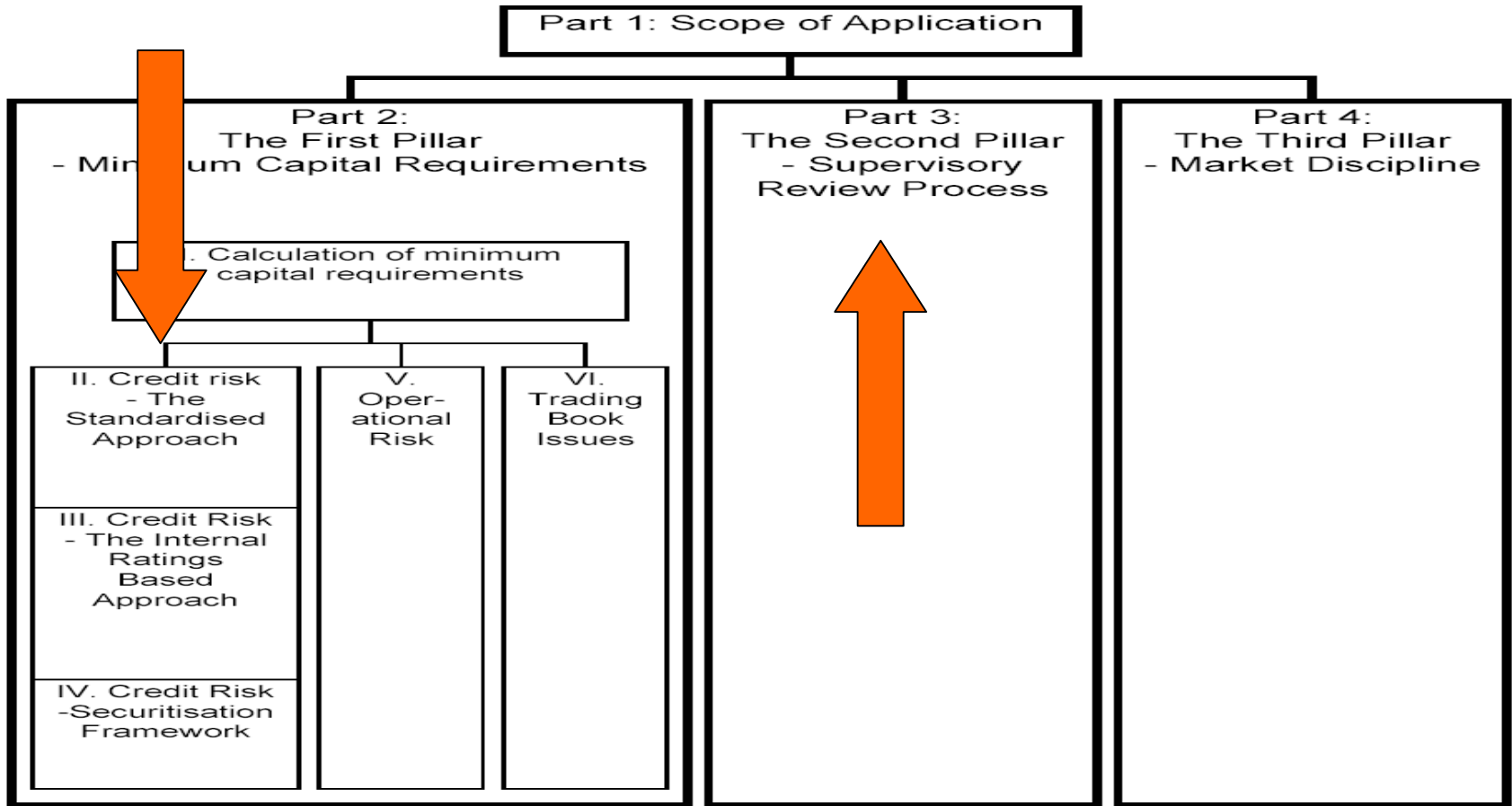
RW-curves (PD tot 10%)
(LGD=45%, Mortgages LGD= 10% M=2,5)



Conclusion

- IRB is a more risk sensitive way of calculating capital requirements
- based on statistical properties of portfolio
- and enhances internal management of loans

Real estate in Basel II



Approaches in pillar 1

- Measuring **Credit Risk in mortgage lending**
 - **Residential real estate:**
 - Standardised Approach
 - RW down from 50% to 35%
 - Monitoring LtV-ratio's (at least every 3 years)
 - Advanced Internal Ratings-based Approach
 - banks now have to estimate PD, LGD & EAD for their retail mortgages (NB collateral management conditions, e.g. LtV-monitoring process)

Approaches in pillar 1

- Measuring **Credit Risk in mortgage lending**
 - **Commercial real estate:**
 - Standardised Approach
 - RW based on external rating (non-rated => RW 100%)
 - Commercial real estate eligible as collateral (NB conditions: e.g. yearly LtV monitoring)
 - Foundation Internal Ratings-based Approach
 - RW based on internal estimates of PD
 - Commercial real estate eligible as collateral (NB collateral management conditions, e.g. yearly LtV-monitoring process!)
 - Advanced Internal Ratings-based Approach
 - RW based on internal estimates of PD, LGD, EAD (&M)
 - Commercial real estate eligible as collateral (NB same conditions, but more freedom in way of meeting those conditions)

Approach in Pillar 2

- Banks are free to develop their own models
- Ensuring sound internal processes to assess risks and capital adequacy
- Active dialogue between banks and their supervisors,
 - Identify deficiencies
 - Take prompt and decisive action

Focus on IRB

- Most mortgages will probably be subject to IRB-regime
- (Bigger banks use IRB)

What information do we need?

- How good is the obligor
 - Probability of default; PD
- What determines a PD?
- Relation between PD and LtV (low LtV tend to have lower PD?)

What information do we need?

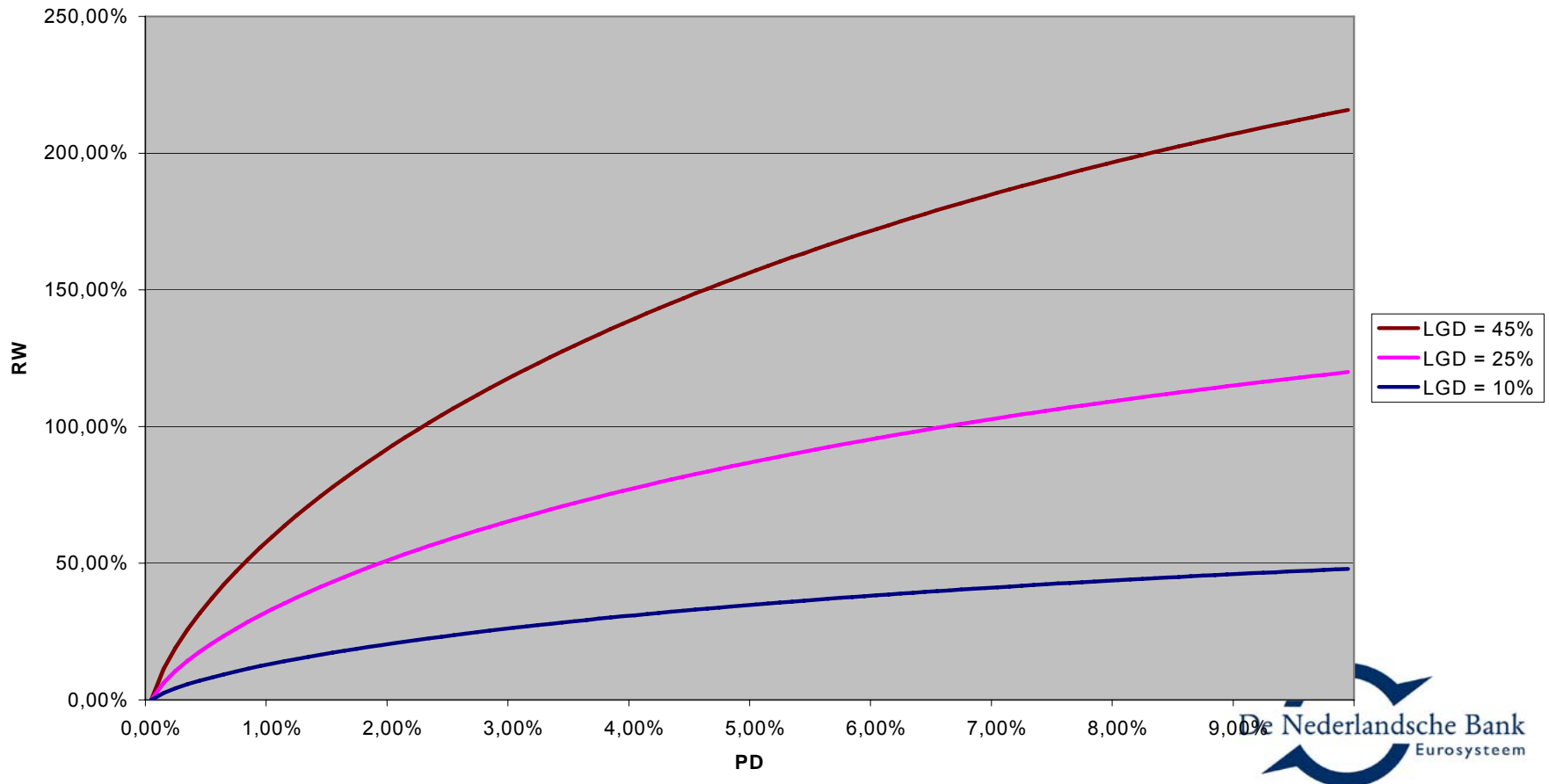
- How much will we recover after default
 - Loss given default; LGD
- What determines a LGD?
- Relation between LGD and LtV
- LGD is more than Loans – Current Market Value!
 - economic loss: recovery value, time & costs,
 - down turn effect (remember, we're talking UL)

What information do we need?

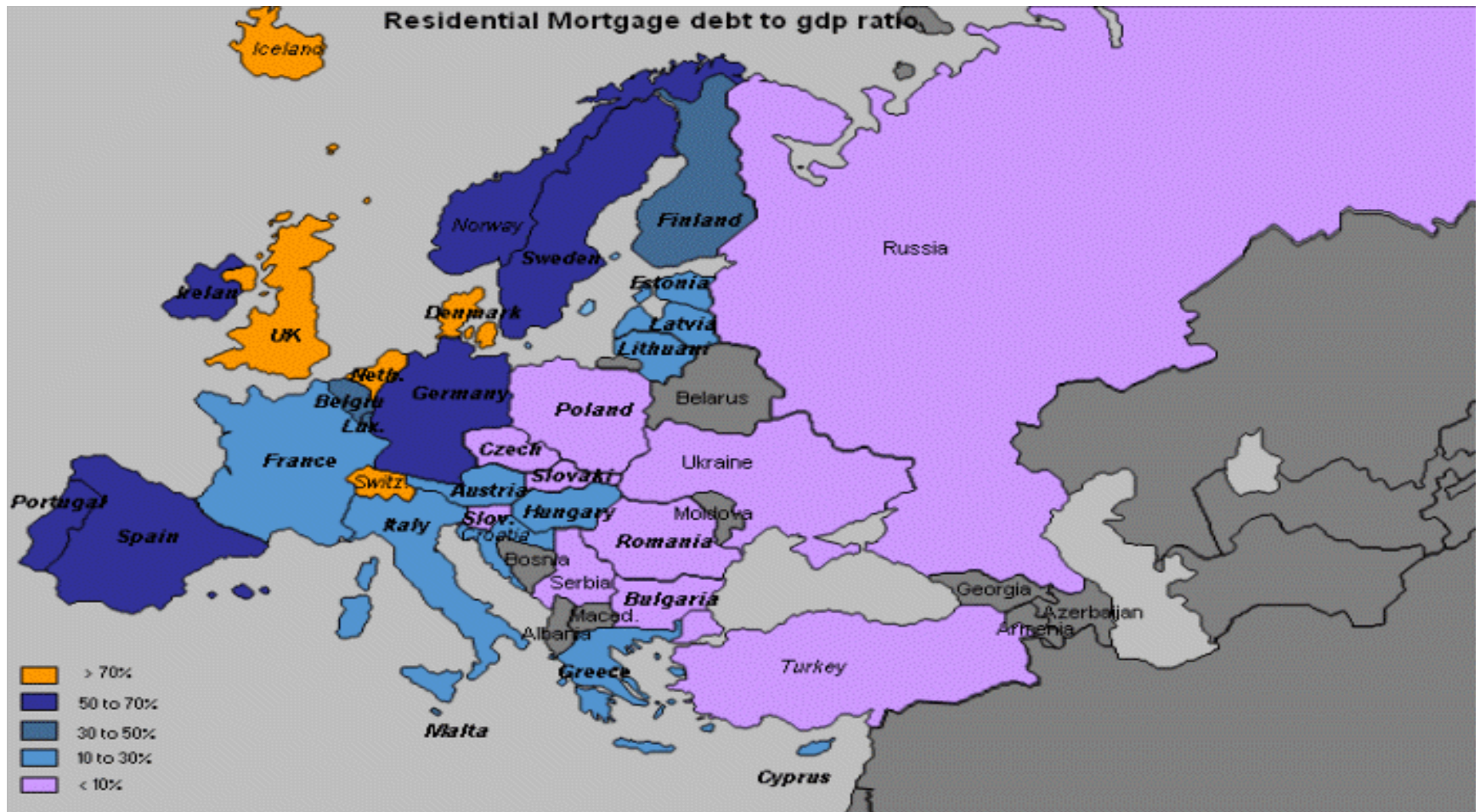
- How much money is the obligor likely to owe us when a default occurs
 - Exposure at default; EAD (Credit Conversion Factor)
- What determines an EAD?
- All kind of 'options' with mortgage-lending

LGD: strong effect on RW

- $LGD \uparrow \Rightarrow RW \uparrow$ Mortgage RW vs PD, at different LGD levels

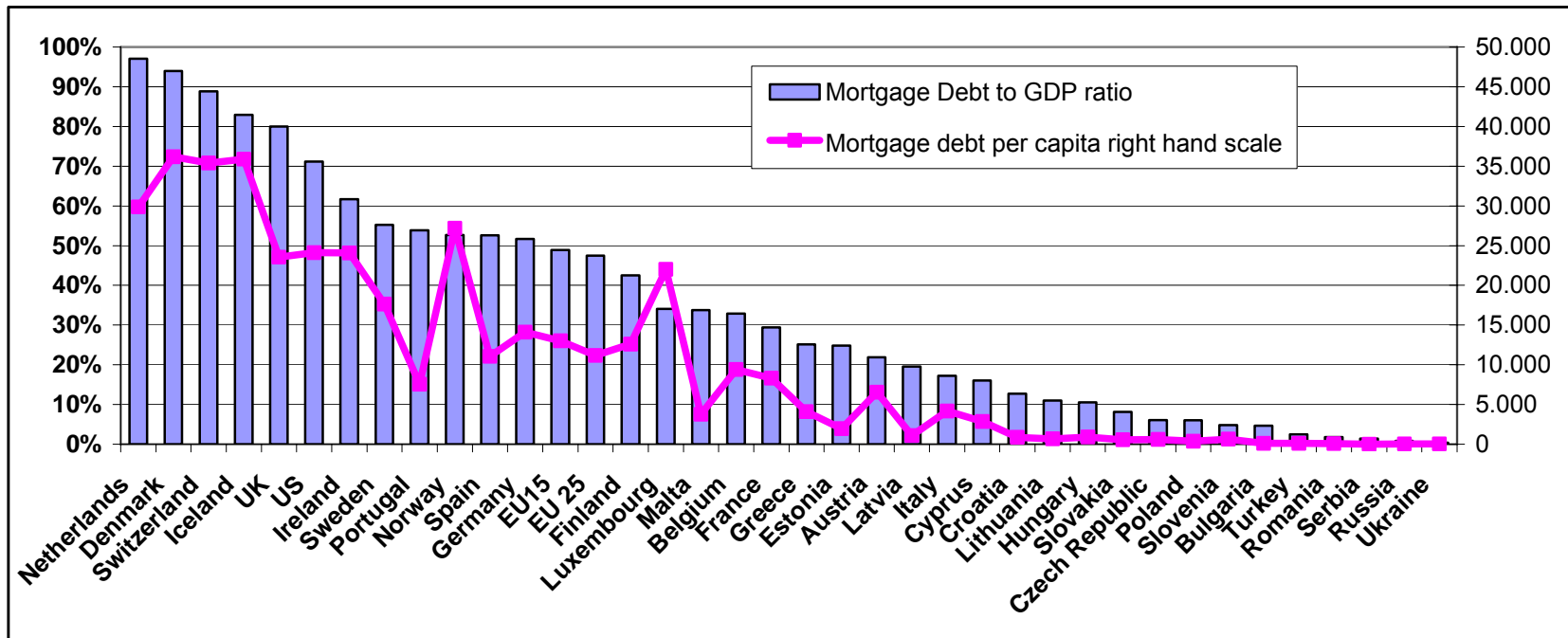


Importance?

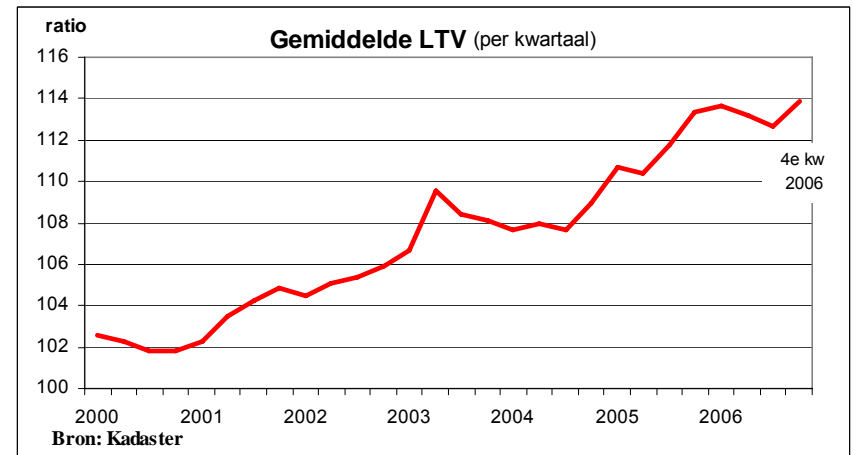
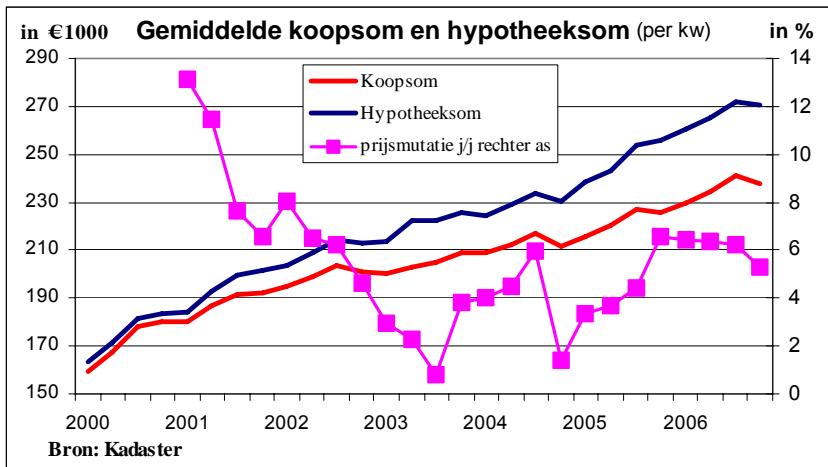


Importance?

Overview of EU residential mortgage markets 2005



Importance?



Mortgage lending important?

Yes