Portfolio Risk Management

Module 8

Rural Finance – Module 8 Agenda

Block 1
- Introduction
- Risk analysis of agriculture and rural loan portfolio: the art of risk analysis
- Type of risks
- Portfolio risk management

Block 2
- Measuring portfolio quality: Portfolio quality ratios

Coffee Break

Block 3
- Strategies for active loan portfolio management

Block 4
- Credit Enhancements and Credit Guarantees
- Guarantee Funds

Block 5
- Review of the day by a participant volunteer
- Daily evaluation
- Readings for next day

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Risk Analysis of Agriculture and Rural Loans

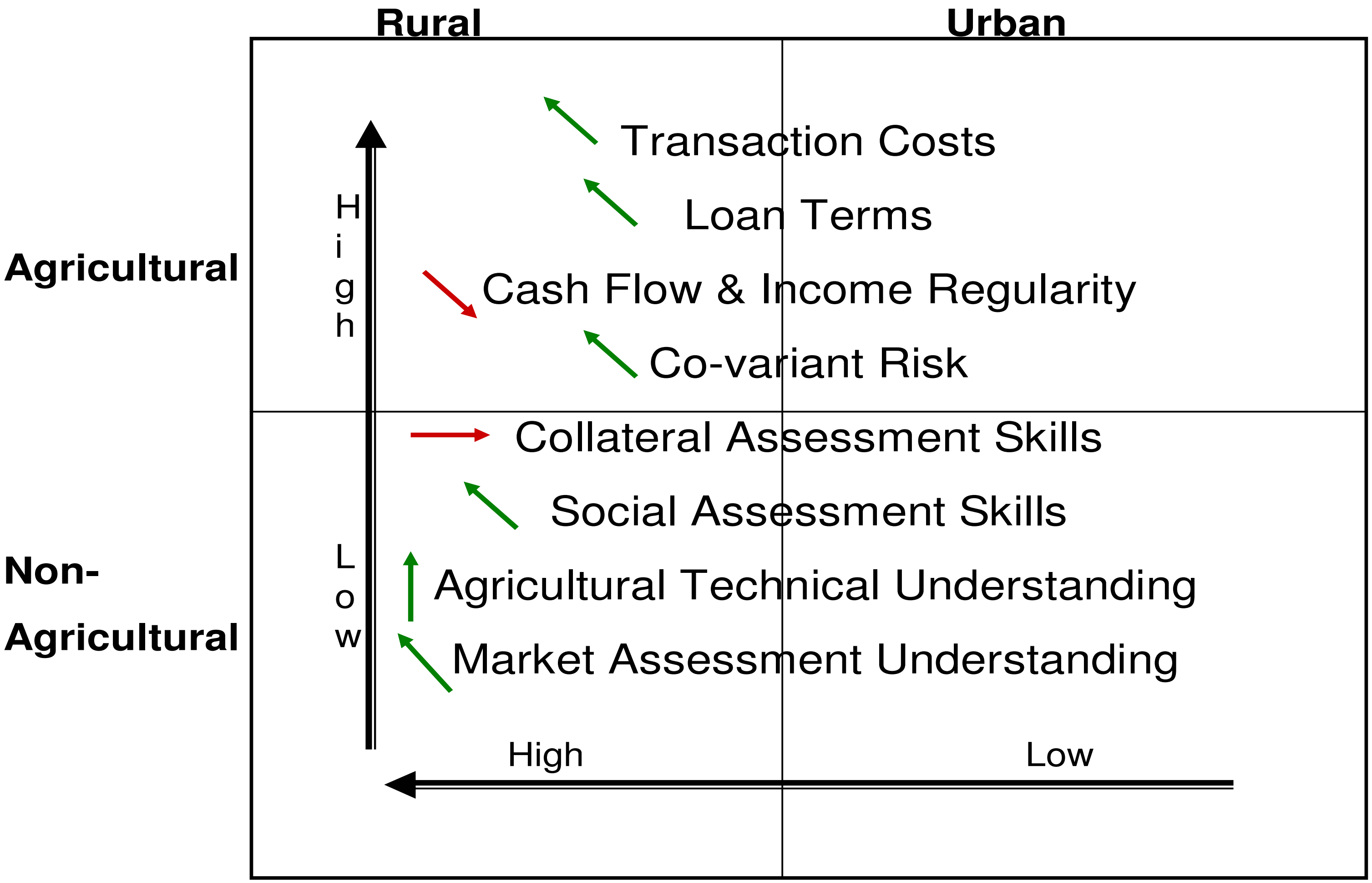
The Art of Risk Analysis

The 5 Cs are Important Factors for Analyzing Credit Risk, but –

- The "art" is much more than knowing how to do calculations! It is smelling, intuition and emotional intelligence!

- Good risk management depends on knowing which, when and how to apply analysis indicators and also how to analyze the social and personal factors of the borrower.

Rural and Agricultural Costs and Risks



Managing Client Credit Risk

Financial investment outcomes are uncertain – they can be relatively safe, unsure or risky

- Certainty is when only one outcome is possible, or the outcomes are known
- Uncertainty refers to an expected future outcome which is unknown even though the probability of occurrence and the actual magnitude are known
- Risk identify the existence of the probability of an adverse outcome

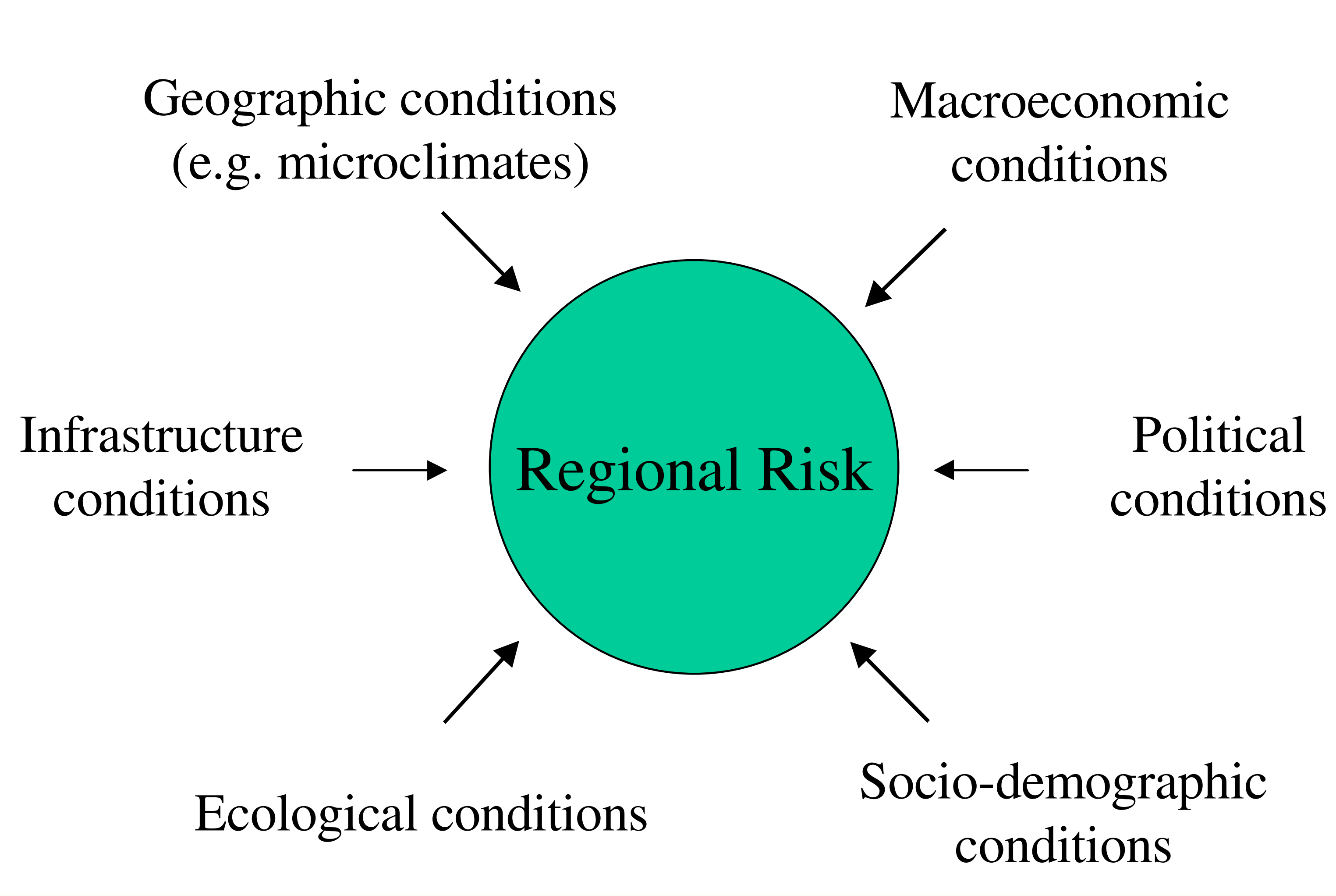
Portfolio Risk Management

- **Portfolio Risk Categories** (source: Ag.Toolkit ch.4)

Risk category	Source of information on the risk profile	Source of information for the risk exposure of the financial institution
Regional risk	Reports from provincial government	Past performance per region
Sector risk	Ministry of Agriculture, Ministry of Small Industries, Chambers of Commerce, Agricultural Extension Services Internal information sources	Past performance per sector and product
Loan terms concentration risk	Internal information sources Long term analyses of financial sectors	Past performance per loan term category

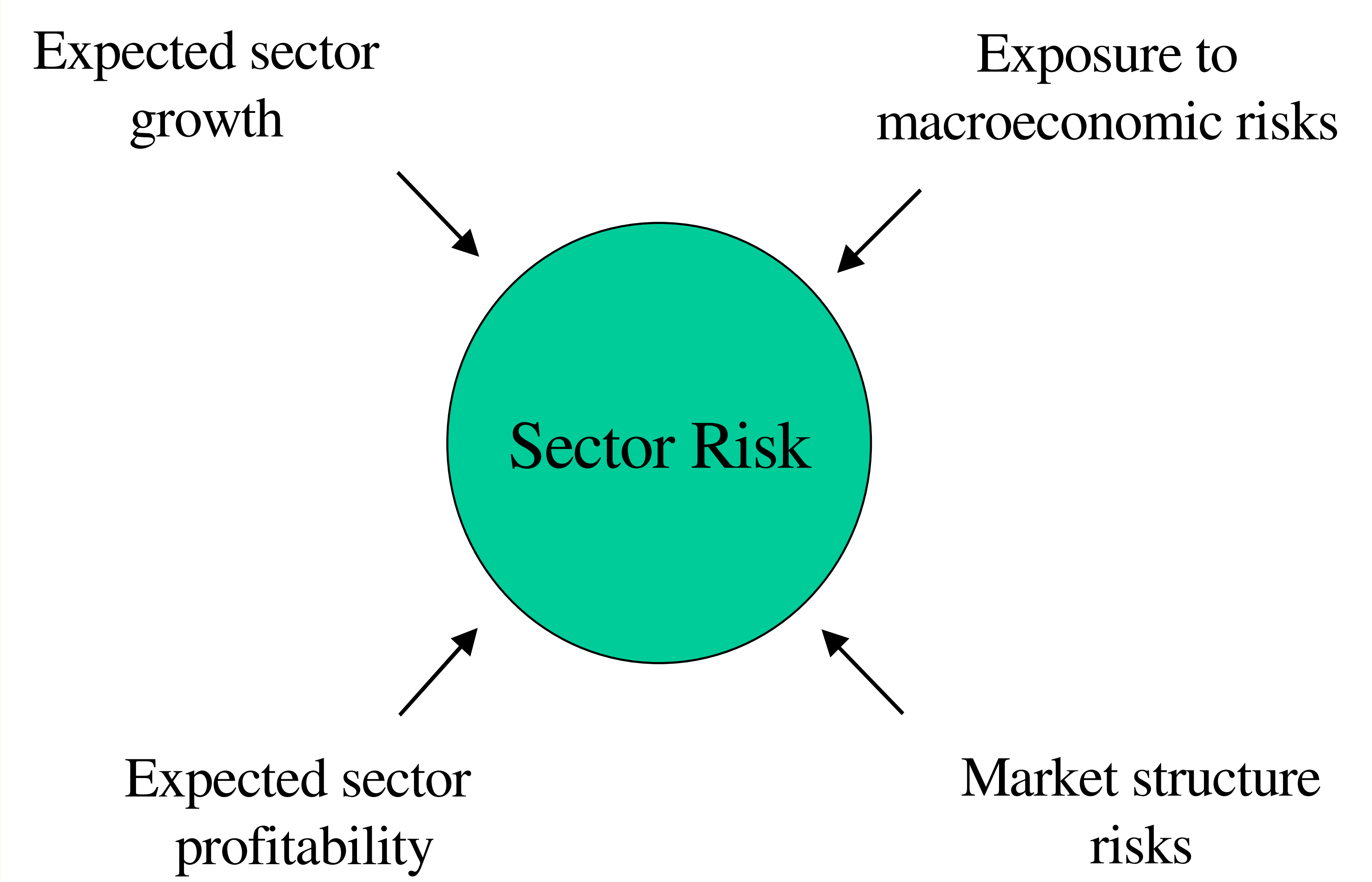
Regional Risk

- **Factors influencing regional risk**



Sector Risk

- **Factors influencing Sector risk**



Loan Concentration Risk

- The loan concentration risk primarily refers to the risk that the loan portfolio is concentrated in very **few**, **large** loans
- If one loan fails, this would have a very strong overall impact on the loan portfolio quality
- By the same token, allowing that a considerable portion of the loan portfolio is comprised of loans with similar features (e.g. all loans fall due in the same month), can also represent a considerable loan concentration risk

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Block 2

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Coffee Break

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Measuring Loan Portfolio Quality

Loan Portfolio at Risk

- The loan portfolio at risk is defined as the value of the outstanding balance of all loans in arrears (principal). The Loan Portfolio at Risk is generally expressed as a percentage rate of the total loan portfolio currently outstanding.

$$\frac{\text{Total outstanding balance of overdue loans}}{\text{Total outstanding loan portfolio}}$$

Loan Portfolio at Risk and Sector Distribution

example (Ag. Toolkit ch. 4)

In USD or %	Total Outst. Loans	%	Loan Portfolio at Risk	%
Coffee	284.000	14,2%	40.775	23,3%
Wheat	278.000	13,9%	22.225	12,7%
Rice	214.000	10,7%	19.600	11,2%
Maize	106.000	5,3%	16.450	9,4%
Vegetable	326.000	16,3%	14.875	8,5%
Cattle	196.000	9,8%	26.775	15,3%
Pigs	62.000	3,1%	5.600	3,2%
Poultry	48.000	2,4%	4.025	2,3%
Services	126.000	6,3%	8.575	4,9%
Trade	360.000	18,0%	16.100	9,2%
TOTAL	**2.000.000**	**100,0%**	**175.000**	**100,0%**

Measuring Loan Portfolio Quality

Loan Loss Rate

- The loan loss rate refers to the amount of loans that has actually been written off during a specific period of time. These are explicit losses that an institution has acknowledged because there is no possibility to recover or enforce the loan. In a large number of institutions, the loan loss rate is calculated on an annual basis.

$$\frac{\text{Amount written off during period n}}{\text{Average outstanding loan portfolio during period n}}$$

Loan Loss Rate and Sector Distribution

example (Ag. Toolkit ch. 4)

- The following table summarises the loan loss ratios as percentages of each sector portfolio.

% of av. sector loan p.	**1997**	**1998**	**1999**	**2000**	**2001**
Coffee	3,2%	3,1%	3,0%	5,1%	5,9%
Wheat & Rice	2,9%	2,4%	2,2%	2,2%	2,1%
Maize	5,3%	5,4%	16,0%	5,1%	5,3%
Vegetable	0,8%	0,7%	0,6%	0,6%	0,6%
Cattle, Pigs & Poultry	1,5%	1,3%	1,4%	1,5%	1,3%
Services & Trade	0,2%	0,2%	0,1%	0,1%	0,2%
TOTAL	**2,3%**	**2,2%**	**3,1%**	**2,4%**	**2,5%**

Measuring Loan Portfolio Quality

- **Portfolio quality**: SEEP ratios (example)

R9	Portfolio at Risk (PAR) Ratio Adjusted PAR Ratio	PAR > 30 Days + Value of Renegotiated Loans Gross Loan Portfolio PAR > 30 Days + Value of Renegotiated Loans Adjusted Gross Loan Portfolio	The most accepted measure of portfolio quality. The most common international measurements of PAR are > 30 days and > 90 days. The adjusted PAR reduces the Gross Loan Portfolio by the Write-off Adjustment.
R10	Write-off Ratio Adjusted Write-off Ratio	Value of Loans Written Off Average Gross Loan Portfolio Value of Loans Written Off + Write-off Adjustment Average Adjusted Gross Loan Portfolio	Represents the percentage of the MFI's loans that has been removed from the balance of the gross loan portfolio because they are unlikely to be repaid. MFIs' write-off policies vary; managers are recommended to calculate this ratio on an adjusted basis.
R11	Risk Coverage Ratio Adjusted Risk Coverage Ratio	Impairment Loss Allowance Portfolio at Risk > 30 Days Adjusted Impairment Loss Allowance Adjusted Portfolio at Risk > 30 Days – Write-off Adjustment	Shows how much of the portfolio at risk is covered by the MFI's Impairment Loss Allowance. The adjusted ratio incorporates the Impairment Loss Allowance Adjustment and the Write-off Adjustment.

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Block 2

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Coffee Break

Block 3

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Strategies for Active Loan Portfolio Management

- Exclusion of certain regions and economic sectors from accessing loans
- Inclusion of certain sectors or regions only under specific conditions
- Sector and regional limits

Strategies for Active Loan Portfolio Management:

-Sector and regional limits-

Let's see how **AGLEND** has defined the upper and lower limits for various economic sectors (example in AgToolkit ch. 4)

Crops	Lower limit	Upper limit
Coffee	5%	10%
Wheat	10%	20%
Rice	10%	15%
Maize	5%	10%
Vegetable	10%	20%
Cattle	5%	10%
Pigs	2%	5%
Poultry	2%	5%
Services	5%	15%
Trade	10%	30%

Strategies for Active Loan Portfolio Management

- Delegation of loan decision-making to higher levels
- Preference to loan renewals
- Stricter borrower selection criteria
- Increased collateral requirements

Strategies for Active Loan Portfolio Management

- Risk premium
- Limits for individual loans
- Write-off policies
- Differentiated loan monitoring
- Provisioning
- Credit derivatives

Strategies for Active Loan Portfolio Management: -Provisioning-

The **provisioning rates** normally take into account:

- The number of **days in arrears**
- The **loan maturity** and **repayment frequency**
- The **quality of collateral**

Strategies for Active Loan Portfolio Management: -Provisioning-

- **AGLEND** applies the following **loan provision policy** (example in AgToolkit ch. 4)

	Days with overdue payments	Provisions
I. Normal	0 days	**2-5%**
II. Watch	< 30 days	25%
III. Sub-Standard	30 – 90 days	50%
IV. Doubtful	90 - 180 days	75%
V. Loss	> 180 days	100%

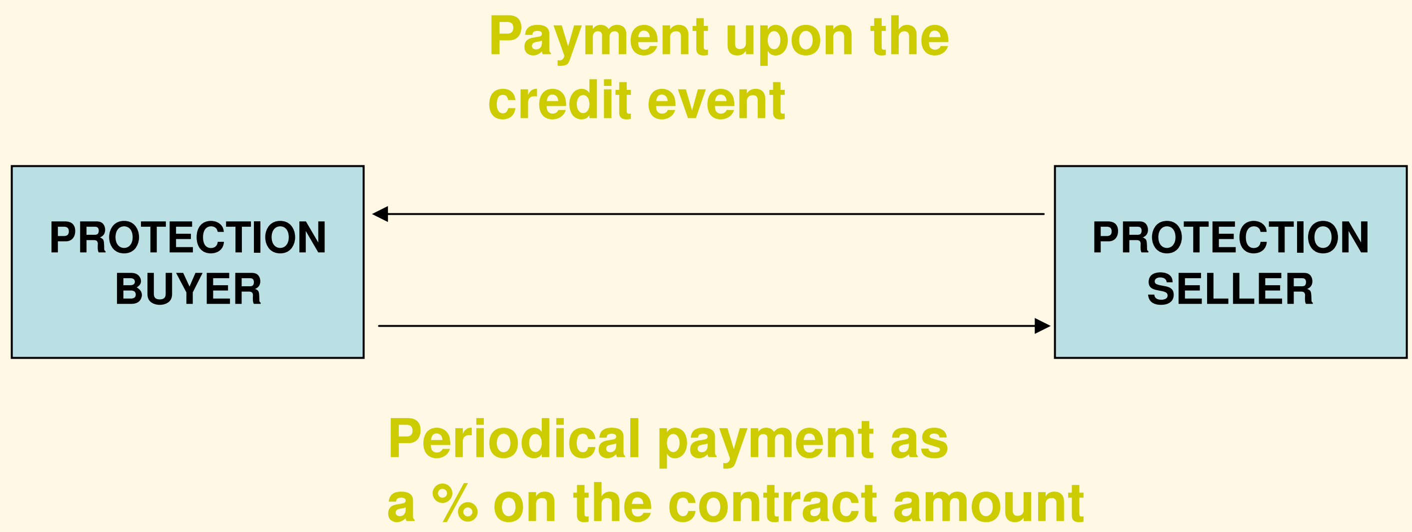
Portfolio Diversification: Credit Derivatives

The *protection buyer* sells the credit risk inherent a certain obligation (*reference obligation*) to a third party (*protection seller*) without transferring the ownership of the credit title.

Types of Credit Derivatives

- Credit default swaps
- Credit spread products
- Total Rate of Return Swaps
- Credit linked structured notes

Credit Default Swap:



Strategies for Active Loan Portfolio Management

EXERCISE:

- **Rabobank** credit control: an example
- **Rabobank** exposure management paper: an example and application to a bank report

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Coffee Break

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Credit Enhancements and Credit Guarantees

Definitions

Credit Enhancement:

The process of reducing credit risk by requiring collateral, insurance, guarantees or other agreements to provide the lender with reassurance that it will be compensated if the borrower defaulted.

Credit Guarantee:

A promise made by a third party to pay in the event of default by the borrower

Credit Enhancements and Credit Guarantees

Glossary point

A **guarantee** is a promise to pay. **Collateral** is a pledge of goods to ensure payment. A guarantee may be collateralized, or may be unsecured.

In several languages **guarantee** is used interchangeably to mean collateral as well as a promise to pay.

Credit Enhancements and Credit Guarantees

Reasons for Providing Credit Guarantees

- Promote private sector lending – reduce credit risk
- Build lending capacity and potential for sustained activity
- Leverage funding from private sources
- Address market imperfections, not distort markets

Guarantee Funds: The Relevant Theory

- Guarantee funds **help banks in the process of approaching market segments** which they are not used to work with and they consider too risky.
- This perception of high risk often derives from a **lack of knowledge** of these segments by the banks.
- Typical case: **rural entrepreneurs**

Some Questions

How should a guarantee fund work? (GROUP WORK)

- Who should take the risk?
- In which percentage?
- Who should evaluate the risk?
- How much would the protection cost?
- Who should be the owner of a g.f.?
- How do I measure the effects?

The Basic Scheme

Borrower	Guarantee fund	Bank
Operating costs	Risk identification	←
	Risk analysis and evaluation	←
	Pricing	←
	Control	←
Risk premium	Risk taking	←
Risk free cost of funds		Funding

Masini, 2004

Guarantee Funds: The Typology

- individual models/retail
- portfolio models
- wholesale/intermediation models: the fund guarantees the loans that a bank grants to a micro-finance intermediary
- constitution, in a bank, of a deposit account covering certain types of loans
- mutual agreements among producers
- public and private institutions, domestic or international

Guarantee Funds: The Relevant Theory

- Banks go through a **learning process** in their relationships with new customers
- Guarantee funds can be considered as "**knowledge facilitators**".

Guarantee Funds: The Relevant Theory

The **effects** of guarantee funds may be:

- an increase in the offer of bank loans to the
- target sector (**additionality**);
- **better conditions** on the loans
- a **reduction in collateral** requirements

Guarantee Funds: The Relevant Theory

Main criticisms:

- **transaction costs** which can be increased rather than reduced;
- the guarantee fund is a form of **subsidy** which distorts the market;
- **moral hazard** (on the bank and on the borrower);
- a **duplication of functions** between the fund and the bank
- a problem of **sustainability** of the funds

Lessons From The Practice

BEST PRACTICES

TARGETS	better performances are found if among beneficiaries, start-ups and young firms are a minority.
LIMITS OF INTERVENTION	The fund coverage should represent 60% to 80% of the loan The percentage must also be applied in a flexible way on different customers in order to consider the different characteristics of any single customer.
CONDITIONS FOR THE INTER-VENTION	They should be precisely clarified between the bank and the guarantee organisation.
SUSTAINABILITY	Opening fee of 1-2%; annual premium of 0.5 – 4% on the guaranteed amount (on average it amounts to 2% and it usually represents 20-30% of the real interest rate).
CLAIM RATES	A claim rate of 2-3% is advised. It the ratio is 0, the fund is probably too conservative; if it is more than 5% a remedial action must be taken.
LEVERAGE	Leverage of 2 or 3 to 1; 5/1 after five years; 7-8/1 after 10 years.
PARTECIPANT BANKS	The participation of a high number of competitive banks should be encouraged.
ADDITIONALITY	A minimum additionality of 60%, and preferably from 80 to 90%, should be recorded.
DONORS' ASSISTANCE	Only if the perspectives of additionality are higher than 60%. International contributions, however, should not crowd-out internal resources

Adapted from Doran and Levitsky , 1997

Lessons Learnt And Recommendations

- Role of the guarantee fund is not to complement the collateral but, rather, to *encourage banks to get to know a market segment*
- If the information gap is the major problem, once banks get to know this sector, they should *not need the guarantee system any longer*
- This is the *real additionality* effect that should be expected from a guarantee fund.
- Banks should be willing to *build long-lasting relationships* with new market segments, as a part of their strategy.
- If this expansion is imposed (social objectives pursued by the Government), more risk of *moral hazard*

Lessons Learnt and Recommendatins

the percent coverage should vary according to the responsibility taken by the bank and should not be uniform on all customers

the fund must offer a *real advantage* to the beneficiary but risk of moral hazard if the beneficiary is aware of the guarantee

Some Further Analysis

Functions of guarantee fund:

- Support the bank in risk evaluation (perform credit analysis)
- Insurer (does not perform credit analysis)
- Advice, rating, training

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Thanks for the attention!!

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