MICROFINANCE CENTRE

European Commission

How to Build a Corporate Immune System in Response to COVID-19

Stress test for success

15/04/ 2020

Webinar house keeping rules

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- Please swith off your microphone during the presentation
- Please write your questions in the chatbox

The webinar is **recorded**

It will be available at mfc.org.pl

EaSI Technical Assistance to the European Microcredit Sector

European Commission

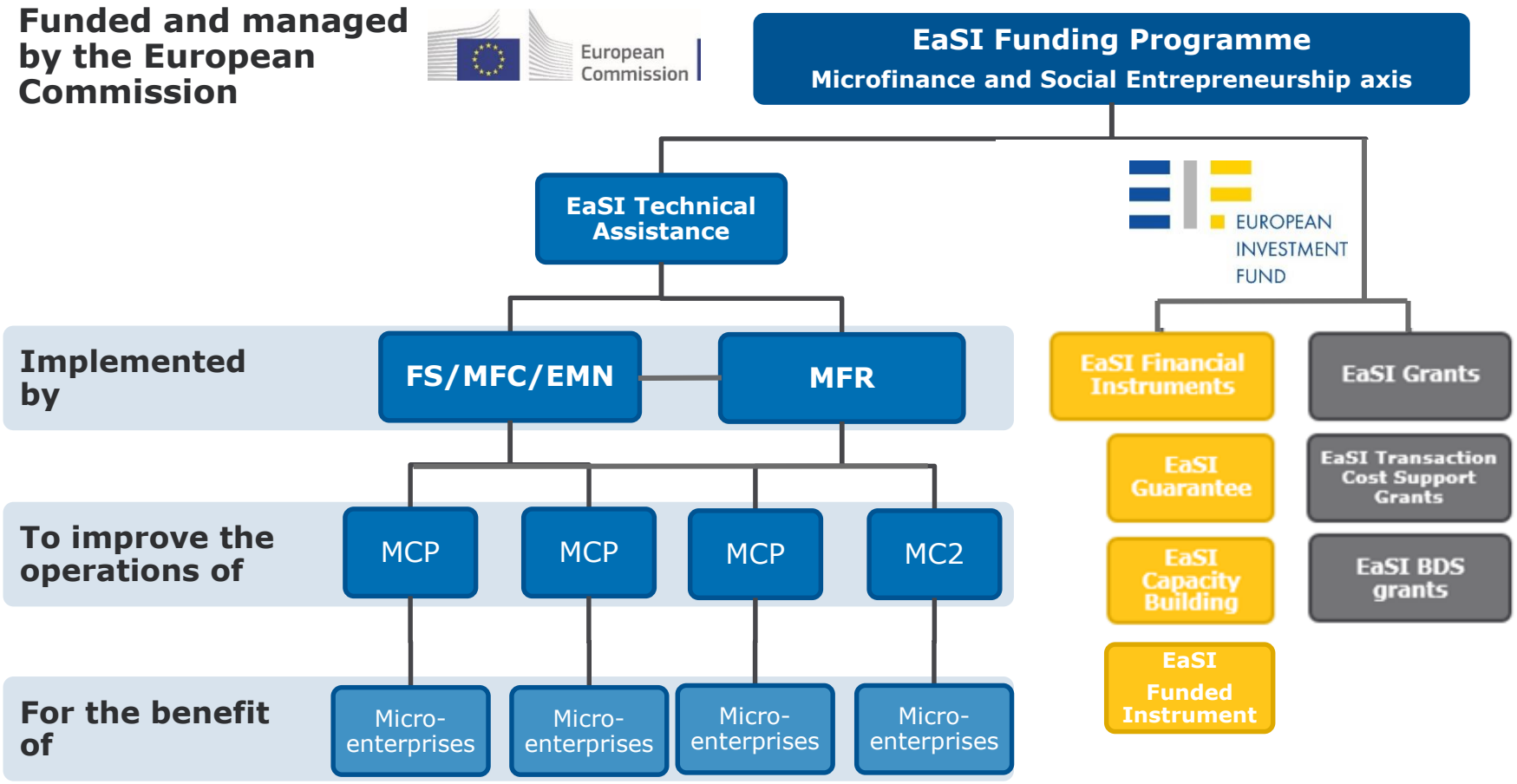
DG Employment, Social Affairs and Inclusion

Programme Snapshot 2019

European Commission

This project has received financial support from the European Union Programme for Employment and Social Innovation "EaSI" (2014-2020).

EaSI Technical Assistance within the EU Programme for Employment and Social Innovation (EaSI)



The EaSI Technical Assistance Service Providers

Service Providers

Technical Assistance:

- Frankfurt School of Finance and Management gGmbH (FS) – Consortium Leader for the Technical Assistance Services
- Microfinance Centre (MFC) – Consortium Partner
- European Microfinance Network (EMN) – Consortium Partner

Assessment, Evaluation and Ratings:

- MF Rating – Provider of Institutional Assessments, Rating and Evaluations

Project Beneficiaries and Geographic Coverage

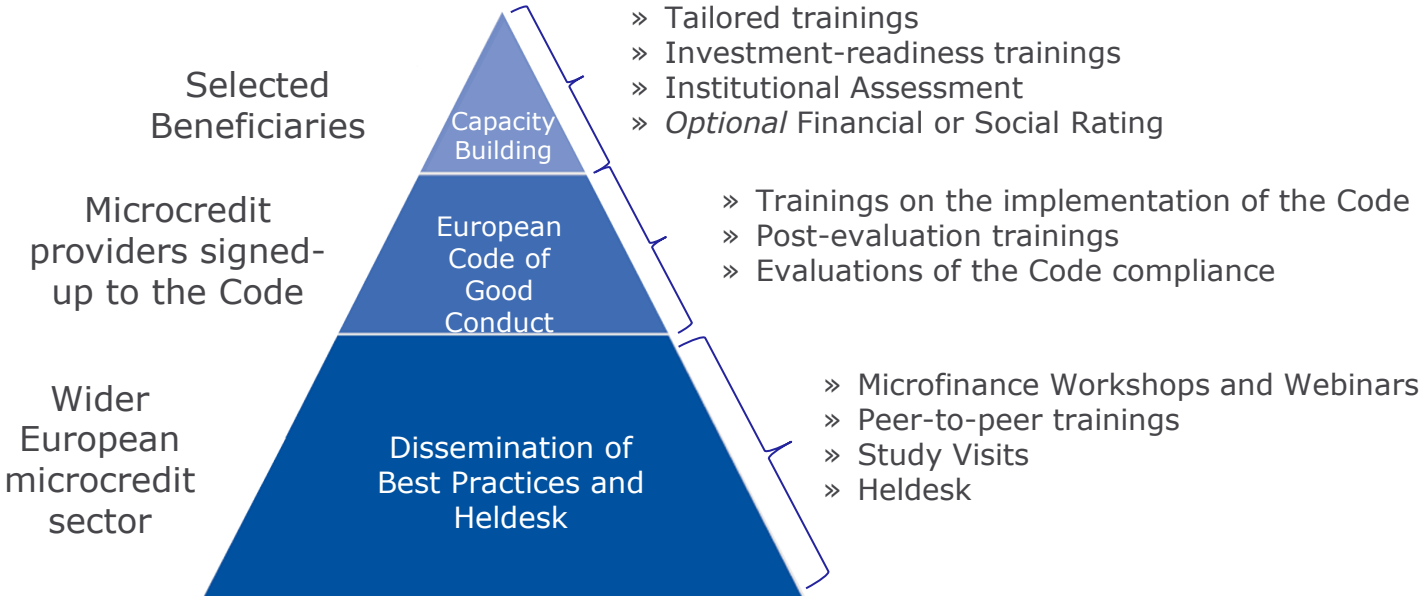
- Public and private financial intermediaries (greenfield microfinance institutions, non-bank microcredit providers, fintechs, licensed banks and guarantee granting entities) in all Member States of the European Union, as well as providers from Albania, North Macedonia, Iceland, Montenegro, Norway, Serbia and Turkey may respond to dedicated Calls for Expression of interest to request EaSI Technical Assistance.

How to Apply for Technical Assistance?

- Before applying eligible microcredit providers must first sign-up to or endorse the European Code of Good Conduct for microcredit provision.
- To apply respond to open Calls for Expression of Interest published on the ec.europa.eu/social/easi webpage.

EaSI Technical Assistance Overview

What is offered to whom?



July 2018 — July 2022

Project Duration – 4 years

European Commission

EaSI Technical Assistance

For more information, about:

Technical Assistance, contact:
easi.ta@fs.de

Ratings and Evaluations, contact:
easi.ta@mf-rating.com

The EaSI Programme, visit:
ec.europa.eu/social/microfinance

This project has received financial support from the European Union Programme for Employment and Social Innovation "EaSI" (2014-2020).

The author of this presentation takes full responsibility for its contents. The opinions expressed do not necessarily reflect the view of the European Commission.

How to Build a Corporate Immune System in Response to COVID-19 – webinar series

- 16.04, 9:30 – 11:00 CET - Loan restructuring and refinancing policies and agreements
- 22.04, 13:00 – 14:30 CET - Amendments to lending policy for new products and online channels
- 23.04, 11:00 – 12:30 CET - Risk management for beginners and back-up staff
- 29.04, 11:00 – 12:00 CET - Financial planning and financial modelling

Please check www.mfc.org.pl for the webinars recordings

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EaSI Technical Assistance

Stress test for success

Webinar 2

Artur Munteanu, MBA

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15/04/2020,
online Zoom

Stress test for success Agenda

Key drivers/causes/factors of business success and failure

Understanding data availability

Adjusting the financial model

Multifactor stress test

Consolidating the results

Team work

In conclusion

Terminology

Stress testing definition 1

In car, transportation, IT industries: Load testing *ensures that a given function, program, system, equipment, machinery can simply handle what it's designed to handle, whereas* ***stress testing*** *is about overloading things until they break, applying unrealistic or unlikely load scenarios (loadninja.com)*

In manufacturing: *stress test is a test conducted on some equipment to determine*

- *how much of a load the system can handle*
- *before it breaks or reaches its limit (business dictionary.com)*

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Bank Stress Test

Stress testing definition 2

In financial industry: *Stress testing is a simulation or analysis designed to find out*

how resilient a financial instrument, investment portfolio, financial institution, or whole economy is

at dealing with extreme situations and economic crises.

Stress testing may also refer to tests that measure how well a company or industry might fare/cope when exposed to certain stressors (factors).

Stress testing is a computer simulation *technique used to test the resilience of institutions and investment portfolios against possible future financial situations. (Investopedia.com)*

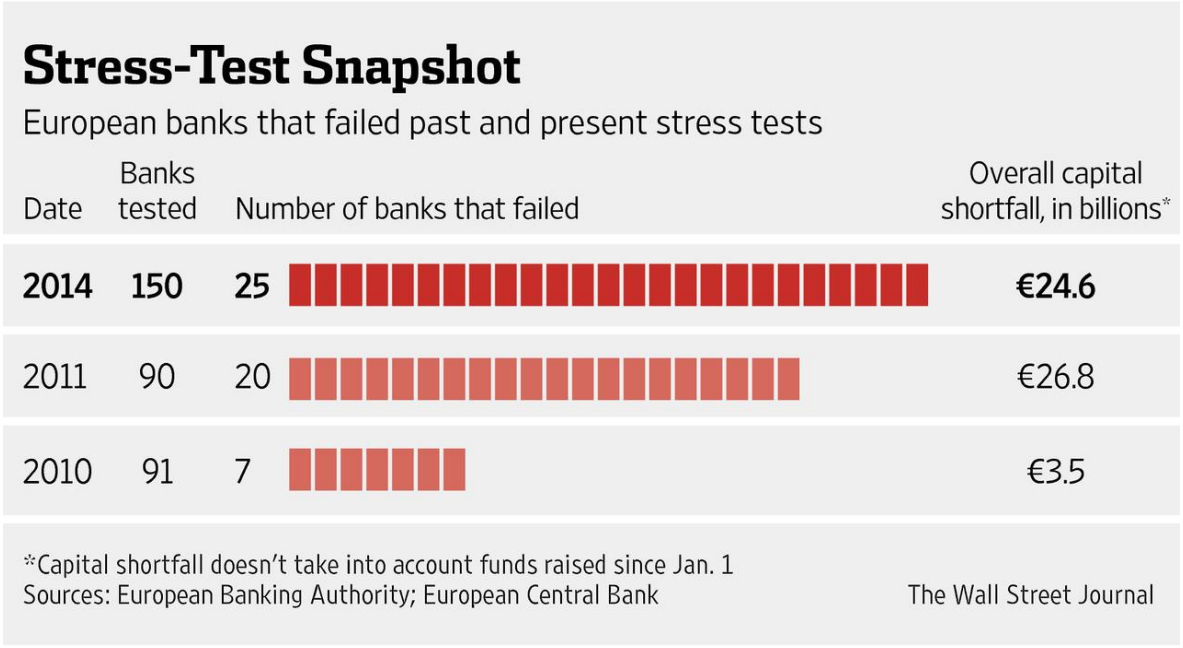
Stress testing definition 3 – Banking

A bank stress test is an analysis conducted under hypothetical unfavorable economic scenarios, such as a deep recession or financial market crisis, designed

- **to determine whether a bank has enough capital**
- **to withstand the impact of adverse economic developments**

Stress testing definition 3 – Banking

From previous crisis



Stress-Test Snapshot

European banks that failed past and present stress tests

Date	Banks tested	Number of banks that failed	Overall capital shortfall, in billions*
2014	**150**	**25**	**€24.6**
2011	90	20	€26.8
2010	91	7	€3.5

*Capital shortfall doesn't take into account funds raised since Jan. 1
Sources: European Banking Authority; European Central Bank

The Wall Street Journal

https://www.zerohedge.com/news/2014-10-26/ecb-announces-stress-test-results-here-are-25-banks-failed

Stress testing definition 4

In banking and non-banking financial industry:

- **How much of "a load" the bank or non bank financial institution can handle before it breaks?**
- **What is a "load" and what is "break"? Is it loan restructuring amount and ratio as a load,**
- **Is "break" default on liabilities? is it loosing the license, is it bellow normative capital, is the case when we loose all retained earnings, we reach zero registered capital (owners equity), or negative owners equity?**
- **How much money can we restructure from the loan portfolio before we break?**

Stress testing definition 4

Stress test is not only about risk and losses but as well about opportunities

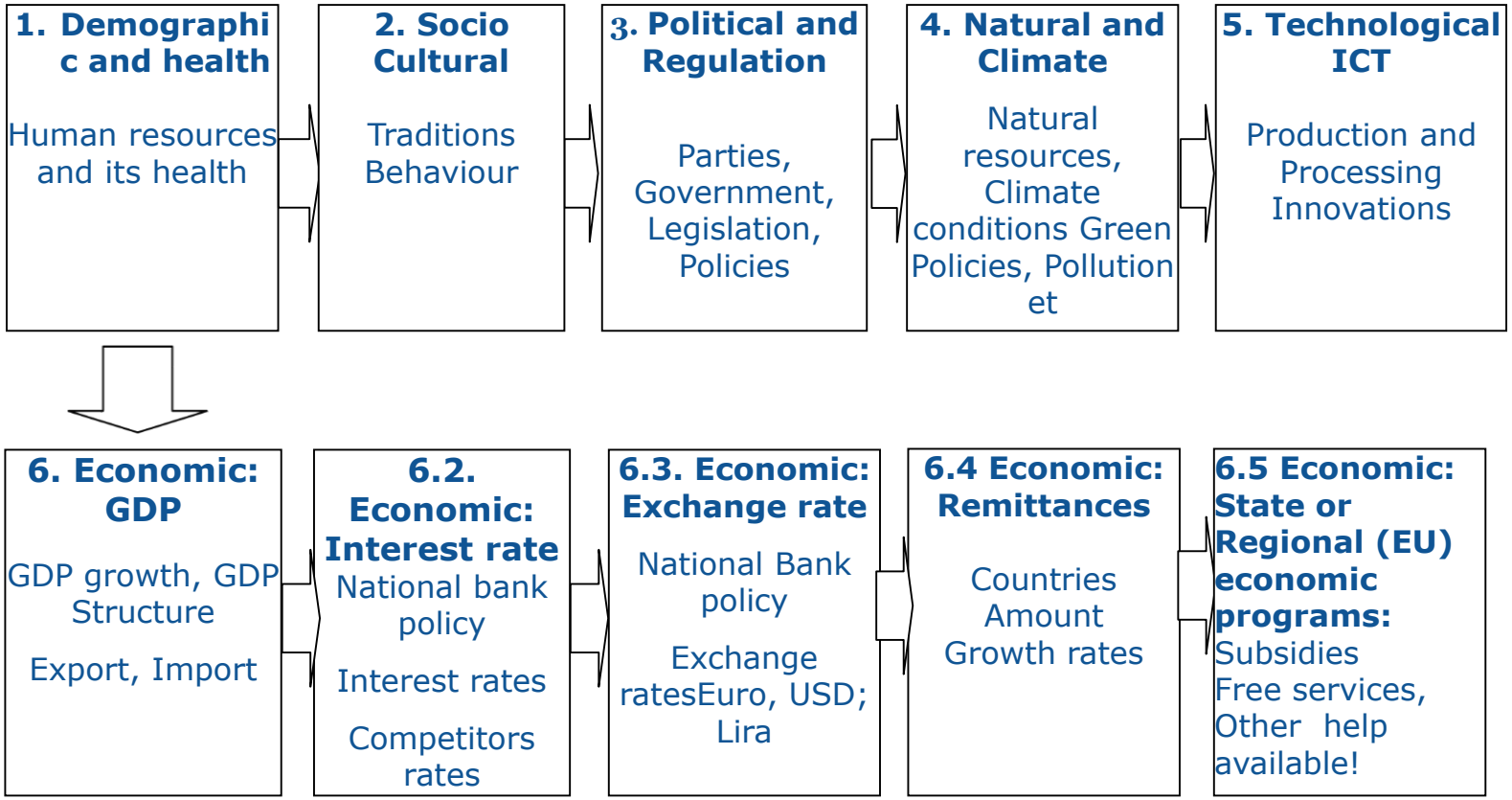
Risks:			Opportunities:		
Budgeted Profit before tax for 2020 (in million X) 11.6 m X	**Profit m X**	**Impact m Currency X**		**Profit, m X**	**Impact Currency, m X**
1. Disbursements drop from 220 million to 127 million	5.5	-6.1	Increase disbursements from 220 to 250	13.4	1.8
Other please list					

Example: CEC Bank Romania is offering refinancing loans for doctors at a lower interest rate in the pandemic crisis

Understanding data from the market (outdoor)

Factors/Drivers Affecting Businesses and Key Actions

External group of factors



External factors and data

Demographics and health data

- **Number of infected people and growth rates**
- **Death ratio**
- **Distance to our business**

(per segment: in the region, in the country, in the company in the portfolio etc)

Economic

- **GDP growth ratios**
- **Number of companies with suspended activity**
- **Unemployment rate**

Banking and finance:

- **Minimum reserve rate**
- **Interbank rates**
- **Exchange rates**

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What is happening on the market?

© Getty Images

- ***What sectors and subsectors and type of businesses will grow?***
- ***What sectors and business stopped completely?***
- ***What sectors will stop and when?***

Growth or survival of our clients individuals and MSMEs

Business in sectors on the basis of the pyramid will continue to exist.

What are they? Food etc For how long?

Will we go back to a life model where we will grow our own food?!

Business on the top will stop for a while or will go bankrupt.

What are these businesses?

HORECA, Clothing and Fashion, etc

Download from Dreamstime.com
ID 12033764

Growth or survival of our clients individuals and MSMEs

List (Segmentation)

- **all sectors and all subsectors**
- **As well as type of business that will survive and grow**

Example:

- **Will agro food survive?**
- **Will food traders offline survive**

Suggestion:

- **Maybe you want to create a online channel with some of your clients or partners for your small food traders**
- **Maybe you sponsor and offer for free or half price**

Variables and their impact

BS	PL	Cash Flow and Maturity
Assets: - shrinking, the same or growing - structure of the assets? Equity: - shrinking, the same or growing - structure of the assets? Liability: - shrinking, the same or growing - structure of the assets?	Sales (Portfolio) - shrinking, the same or growing - Income structure - Interest rate Cost of funding: - up or - down? Operational and Admin Cost	Inflow/ From Clients: -3 month delay -6 month delay, -12 month delay, Inflow from lenders: (any planed drawdown) Inflow from Shareholder Inflow from Government

On human capital: health, moral satisfaction and future

Variables and their impact

Likelihood \ Impact	Negligible	Minor	Moderate	Significant	Severe
Very Likely	Low Med	Medium	Med Hi	High	High
Likely	Low	Low Med	Medium	Med Hi	High
Possible	Low	Low Med	Medium	Med Hi	Med Hi
Unlikely	Low	Low Med	Low Med	Medium	Med Hi
Very Unlikely	Low	Low	Low Med	Medium	Medium

Diagnose your stress test model

Diagnose your model (spreadsheet)

Analyze your financial models if you have a stress test page/module/menu

- **Yes,**
- **No**

If yes, analyze key assumptions (list of variables you assumed and you want to change: PAR, Restructuring Rate, Sales growth, Average loan etc)

- **Withdraw from formulas all data and insert separate in a cell so that you can change it/stress test it. Link all formulas to data cells**
- **If no, build a separate page/module on stress testing**

How close is your approved budget?

How close is your budget approved in December to reality?

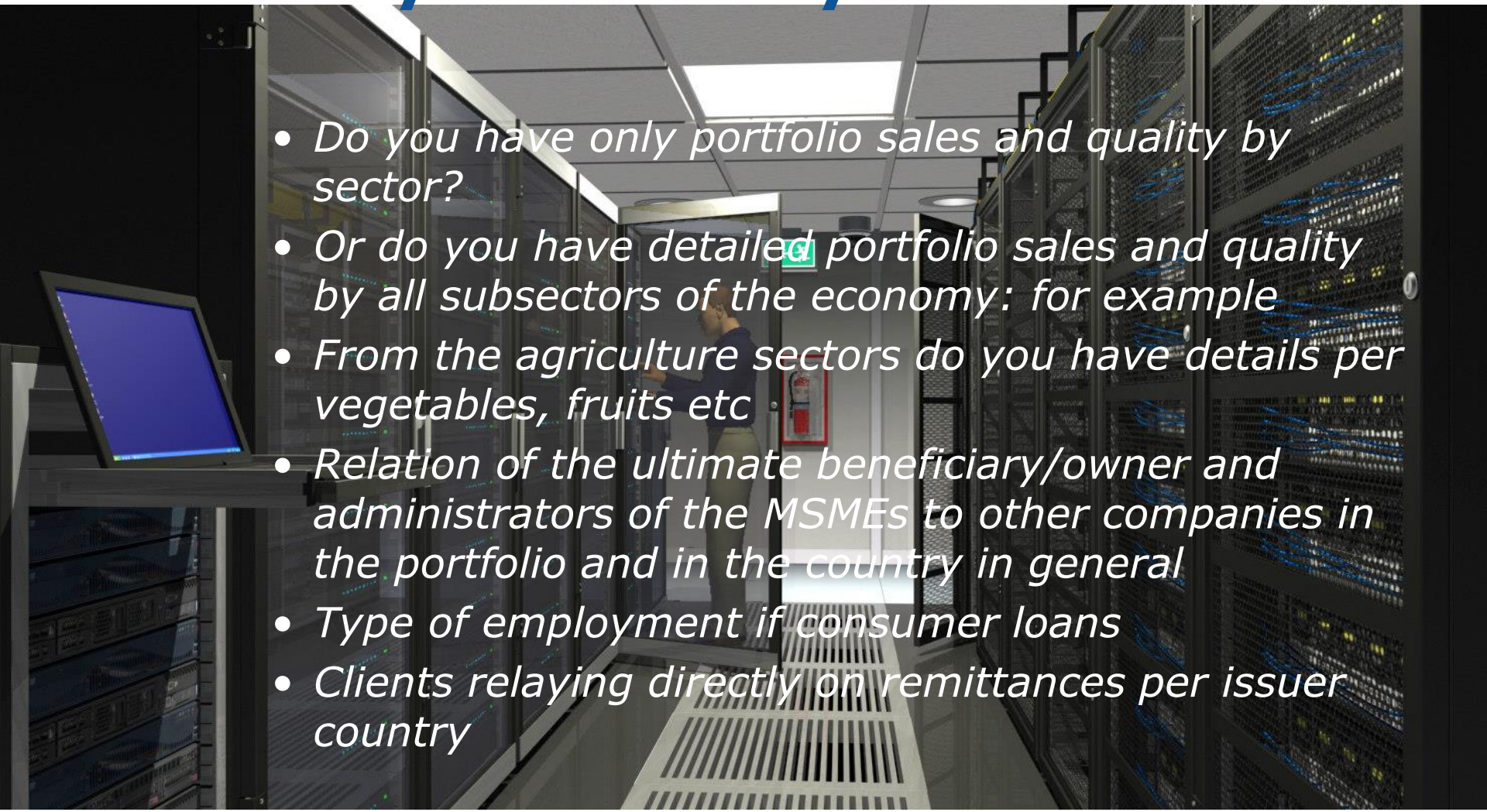
- **100%**
- **50%**
- **10%**

Was your worst case scenario discussed, approved?

- **Yes**
- **No**

Understanding data availability in the company (indoor)

What do you have in your data base?



- *Do you have only portfolio sales and quality by sector?*
- *Or do you have detailed portfolio sales and quality by all subsectors of the economy: for example*
- *From the agriculture sectors do you have details per vegetables, fruits etc*
- *Relation of the ultimate beneficiary/owner and administrators of the MSMEs to other companies in the portfolio and in the country in general*
- *Type of employment if consumer loans*
- *Clients relaying directly on remittances per issuer country*

What do you have in your data base?

Total portfolio outstanding				PAR30			
Sector	№ contracts	amount	%	№ contracts	PAR amount	own, %	% in total
Agriculture	1,182	31,491,153	18.4%	193	7,387,489	23.6%	4.3%
Trade	793	36,789,445	21.5%	140	5,734,280	15.6%	3.4%
Industry	150	13,078,171	7.6%	87	8,907,107	49.5%	5.2%
Services	516	44,421,684	26.0%	32	4,211,776	8.4%	2.5%
SCA	100	19,569,927	11.4%	1	16,965	0.9%	0.0%
Staff	51	6,182,259	3.6%		0	0.0%	0.0%
Consumption	709	18,507,331	10.8%	110	272,106	17.0%	0.2%
Other	28	1,099,114	0.6%	2	152,807	13.9%	0.1%
Total	**3,529**	**171,139,082**	**100%**		**26,682,531**		**15.6%**

What do you have in your data base?

Do you have detailed portfolio statistics on sales and quality by all subsectors of the economy?

By subsectors	31/12/2010		
	PAR 30		
	No	Oustanding	%
PUBLIC FOOD	5	77,157	2.7%
OTHER DOMAINS	2	152,807	13.9%
RETAIL TRADE	127	5,247,884	16.7%
WHOLESALE TRADE	12	459,188	8.8%
CONSUMER LOAN	*Since may 2010 divided into 3 (Auto, Hom*		
LOANS TO EMPLOEE	0	-	0.0%
CROP GROWING	126	5,259,751	27.2%
HOUSEHOLD DURABLES INDUST	3	115,785	11.1%
WOOD INDUSTRY	13	1,456,256	40.3%
BUILDING MATERIALS INDUSTRY	8	4,614,521	84.3%
AGRO PRODUCTION PROCESSING	1	15,370	9.9%
BEVERAGE INDUSTRY			
FOOD PROCESSING INDUSTRY	1	47,814	2.5%
LIGHT INDUSTRY	6	219,373	26.8%
FINANCIAL INTERMEDIARIES	1	16,965	0.1%
SALES INTERMEDIARIES	1	27,209	24.5%
Mortgage	1	272,106	8.8%
FISHING	2	53,007	51.6%
SERVICES			
AGRO SERVICES	16	466,279	20.1%
RENTING SERVICES	3	80,298	1.6%
REPAIR SERVICES	10	240,665	5.2%
BUILDING FINISHING SERVICES	5	415,687	22.1%
TOURISM AND HOTELS	3	70,233	57.3%
IT SERVICES	4	120,959	46.5%
Private services (photo, legal, cosmetics,	23	1,174,606	17.5%
HEALTHCARE SERVICES			
TRANSPORT SERVICES	34	1,565,892	7.0%
ANIMAL PRODUCTION	49	1,641,612	16.9%
AUTO LOANS	12	421,233	28.6%
HOME IMPROVEMENT	96	2,437,988	17.7%
WORK AND TRAVEL	1	11,886	7.3%

What do you have in your data base?

For consumer loans you will need as well to know in what sector the employer is working and how affected is that sector

By subsectors	31/12/2010		
	PAR 30		
	No	Oustanding	%
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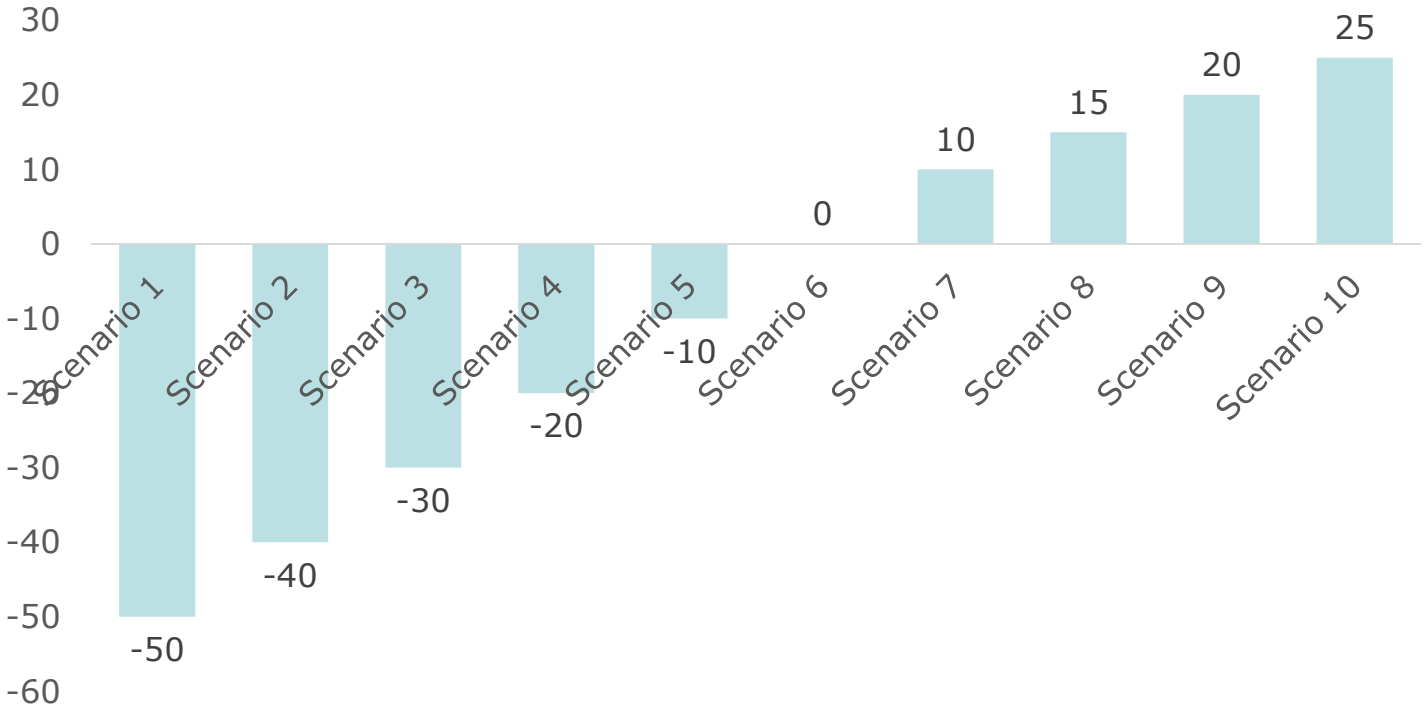
Stress test scenarios

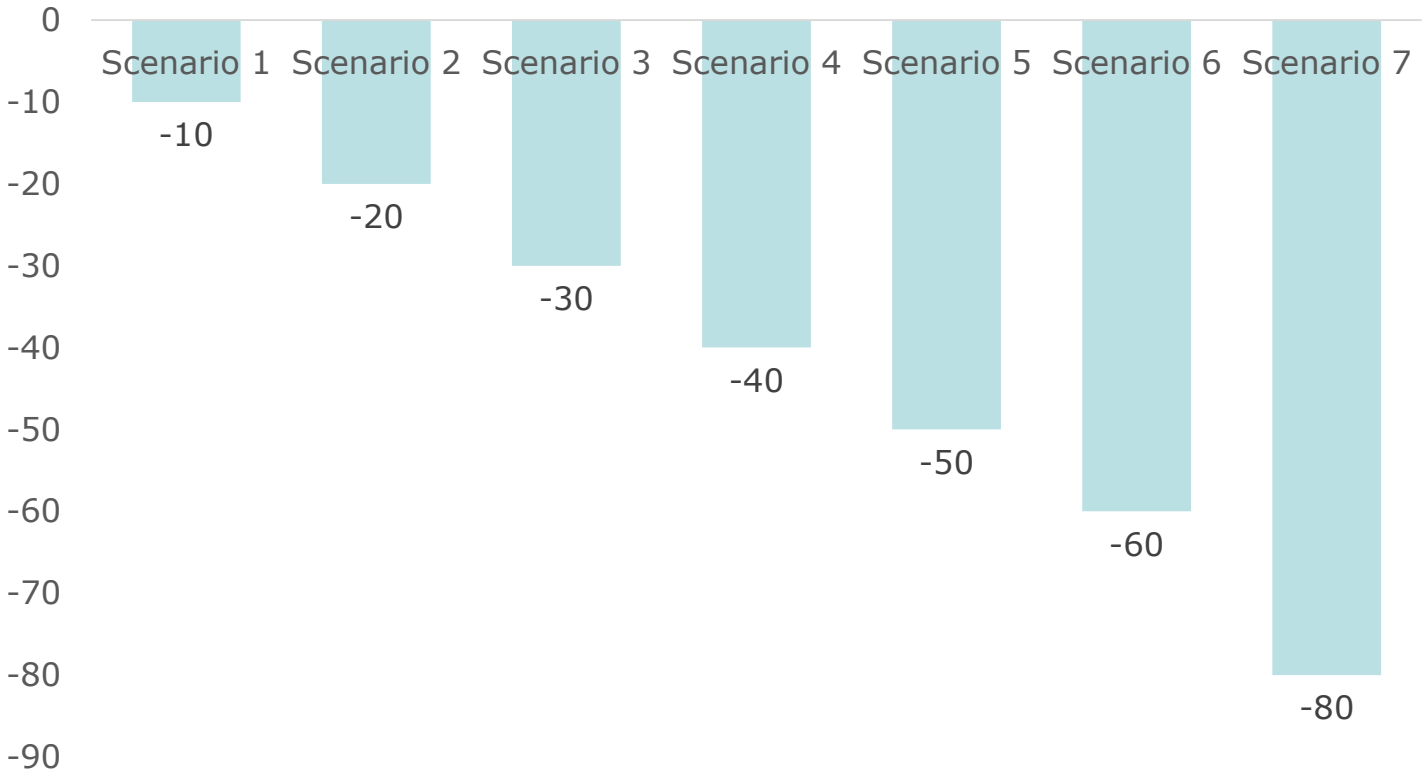
Variables and their impact

Likelihood \ Impact	Negligible	Minor	Moderate	Significant	Severe
Very Likely	Low Med	Medium	Med Hi	High	High
Likely	Low	Low Med	Medium	Med Hi	High
Possible	Low	Low Med	Medium	Med Hi	Med Hi
Unlikely	Low	Low Med	Low Med	Medium	Med Hi
Very Unlikely	Low	Low	Low Med	Medium	Medium

Sales scenarios (growth rate %)



Loan portfolio restructuring rate (%)



Stress test: one variable

	One factor stress test			
	Factor Stressed	**(on/off)**	**Degree Stressed**	
1	PORTFOLIO GROWTH	OFF	20%	reduction in disbursements from 2020 - 2021; 50% reduction in new branches; 40% reduction in new staff hired
2	PORTFOLIO YIELD	OFF	1%	reduction in average weighted interest rate; 0.5% Reduction in Year 2021
3	PORTFOLIO QUALITY	ON	20%	decrease in portfolio quality (PAR30) over base case
4	OVERHEAD EXPENSES	OFF	10%	increase in administration and personnel costs (2020-2021)
5	COST OF FUNDS	OFF	15%	increase in the average cost of debt (2020-2021)
6	REDUCED ACCESS TO DEB	OFF	20%	Liability amount decrease by 20%

Multifactor stress test, key assumptions

	Factor Stressed	(on/off)	Degree Stressed	
1	PORTFOLIO GROWTH	ON	20%	branches; 40% reduction in new staff hired
2	PORTFOLIO YIELD	ON	1%	reduction in average weighted interest rate; 0.5% Reduction in Year 2021
3	PORTFOLIO QUALITY	ON	20%	decrease in portfolio quality (PAR30) over base case
	Restructuring rate			
	Write off ratio			
4	OVERHEAD EXPENSES	ON	10%	increase in administration and personnel costs (2020-2021)
5	COST OF FUNDS	ON	15%	increase in the average cost of debt (2020-2021)
6	REDUCED ACCESS TO DEB	ON	20%	Liability amount decrease by 20%

Simple stress test Case 1

Assumptions:

a portfolio of 171 million at the end of March

- **10% of portfolio outstanding is due every month**
- **at 12% interest annually**

Decision: *We decided to rollover principal for 3 months for all clients*

Impact: *If we make the above decision, 17.1 million will not reach FI accounts next three months, thus 51.3 million.*

Did we make a good decision?

Simple stress test, continuation Case 1

Analysis and discussion: Did we make a good decision?

No

- **Because we automatically increased the maturity risk and liquidity risk by 51.3 million. We mismatched our assets vs. our liabilities because we did nothing on the liability side and outflow side.**
- **We don't need to do it for all clients. Some clients are in operations. Some clients just want to repay all loans and stay calm during pandemic incidents**

Stress test, templates

Stress test: Decision next 3 month principal repayment postponment for 3 month

Cash flow (initial vertion)

	1 month	2 month	3 month	3-6 month	3-9 month	9-12 mont	Total 12m	1-2 years	2-3 years	3-5 years	5-10 years
Inflow from											
Loan principal repaymer	17	17	17	51	51	17	**170**				
Interest											
Penalties											
Outflow											
New loans disbursments											
Loans to lenders											
Admin and Oper Cost											
Dividents											
Net cash flow	17	17	17	51	51	17	170				

Cash flow (3 month rollover)

	1 month	2 month	3 month	3-6 month	6-9 month	9-12 mont	Total 12m	1-2 years	2-3 years	3-5 years	5-10 years
Inflow from											
Loan principal repaymer	17	17	17	0	102	17	**170**	0			
Interest											
Penalties											
Outflow											
New loans disbursment											
Loans to lenders				60							
Admin and Oper Cost											
Dividends											
Net cash flow	17	17	17	- 60	102	17	**170**				

Stress test, templates: 12m Rollover? 24 month Rollover?

Cash flow (12 month rollover)											
	1 month	2 month	3 month	3-6 month	3-9 month	9-12 mont	**Total 12 m**	1-2 years	2-3 years	3-5 years	5-10 years
Initital cash balabce	**0**										
Inflow from	**17**	**17**	**17**	**0**	**51**	**17**	**119**	51			
Loan principal	**17**	**17**	**17**	**0**	**51**	**17**	**119**	**51**			
Interest											
Penalties											
Outflow											
New loans disbursment											
Loans to lenders											
Admin and Oper Cost											
Dividends											
Net cash flow	**17**	**17**	**17**	**0**	**51**	**17**	**119**	**51**			
Cumulative cash flow	**17**	**34**	**51**	**51**	**102**	**119**	**119**	**170**			

Cash flow (24 month rollover)											
	1 month	2 month	3 month	3-6month	3-9 month	9-12 mont	**Total 12 m**	1-2 years	2-3 years	3-5 years	5-10 years
Initial cash balance	0										
Inflow from	17	17	17		51	17	**119**	0	51		
Loan principal	**17**	**17**	**17**	**0**	**51**	**17**	**119**	**0**	51		
Interest											
Penalties											
Outflow											
New loans from lenders											
Dividends											
Admin and Oper Cost											
Dividends											
Net cash flow	**17**	**17**	**17**	**0**	**51**	**17**	**119**	**0**	**51**		
Cumulative cash flow	**17**	**34**	**51**	**51**	**102**	**119**	**119**	**119**	**170**		

Simple stress test, TO DO

Before we do anything on our assets we need to make sure that our liabilities and shareholder equity structure will change or at least shareholders and lenders will approve changes!

- **Map all your liability repayments per lender**
- **Observe were and when you have the biggest payments outflow**
- **Finalize the stress test scenarios and presentation of the scenarios**
- **Propose to negotiate liability rollover**
- **Smooth the payments for as long as possible but avoid crowding cash out in one month or quarter especially in the seasons when you may need it for lending.**

Simple stress test, analyze your liability schedule

			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
				OUTFLOW	*4,408,583*	*5,390,752*	*2,143,931*	*7,694,418*	*38,035,880*	*995,447*	*2,449,582*	*9,052,201*	*44,049,403*	*4,179,862*	*12,778,745*	*7,602,995*	*138,781,800*
Currency	Initial loan	Outstanding amount (local currency)		**borrowings principals' repayments**	**3,856,533**	**4,880,985**	**0**	**6,321,067**	**34,688,401**	**0**	**1,222,545**	**7,838,324**	**42,175,440**	**1,935,339**	**10,455,303**	**6,705,840**	**120,079,778**
EURO	120000	1,935,339		Lender 1		-	-	-	-	-	-	-	-	1,935,339	-	-	1,935,339
EURO	1000000	786,533		Lender 2	786,533	-	-	-	-	-	-	-	-	-	-	-	786,533
EURO	5000000	14,554,820		Lender 3		-	-	-	5,198,150	-	-	-	-	-	9,356,670	-	14,554,820
EURO	400000	6,705,840		Lender 4		-	-	-	-	-	-	-	-	-	-	6,705,840	6,705,840
EURO	700000	2,471,924		Lender 5		-	-	-	1,373,291	-	-	-	-	-	1,098,633	-	2,471,924
USD	3000000	6,321,067		Lender 6		-	-	6,321,067	-	-	-	-	-	-	-	-	6,321,067
EURO	650000	7,838,324		Lender 7		-	-	-	-	-	-	7,838,324	-	-	-	-	7,838,324
USD	5000000	42,175,440		Lender 8		-	-	-	-	-	-	-	42,175,440	-	-	-	42,175,440
USD	1500000	28,116,960		Lender 9		-	-	-	28,116,960	-	-	-	-	-	-	-	28,116,960
local currency	40000000	7,950,985		Lender 10	3,070,000	4,880,985	-	-	-	-	-	-	-	-	-	-	7,950,985
	-	1,222,545		Lender 11		-	-	-	-	-	1,222,545	-	-	-	-	-	1,222,545
	-	-		Lender 12		-	-	-	-	-	-	-	-	-	-	-	0
	-	-		Lender ..XX	-	-	-	-	-	-	-	-	-	-	-	-	0

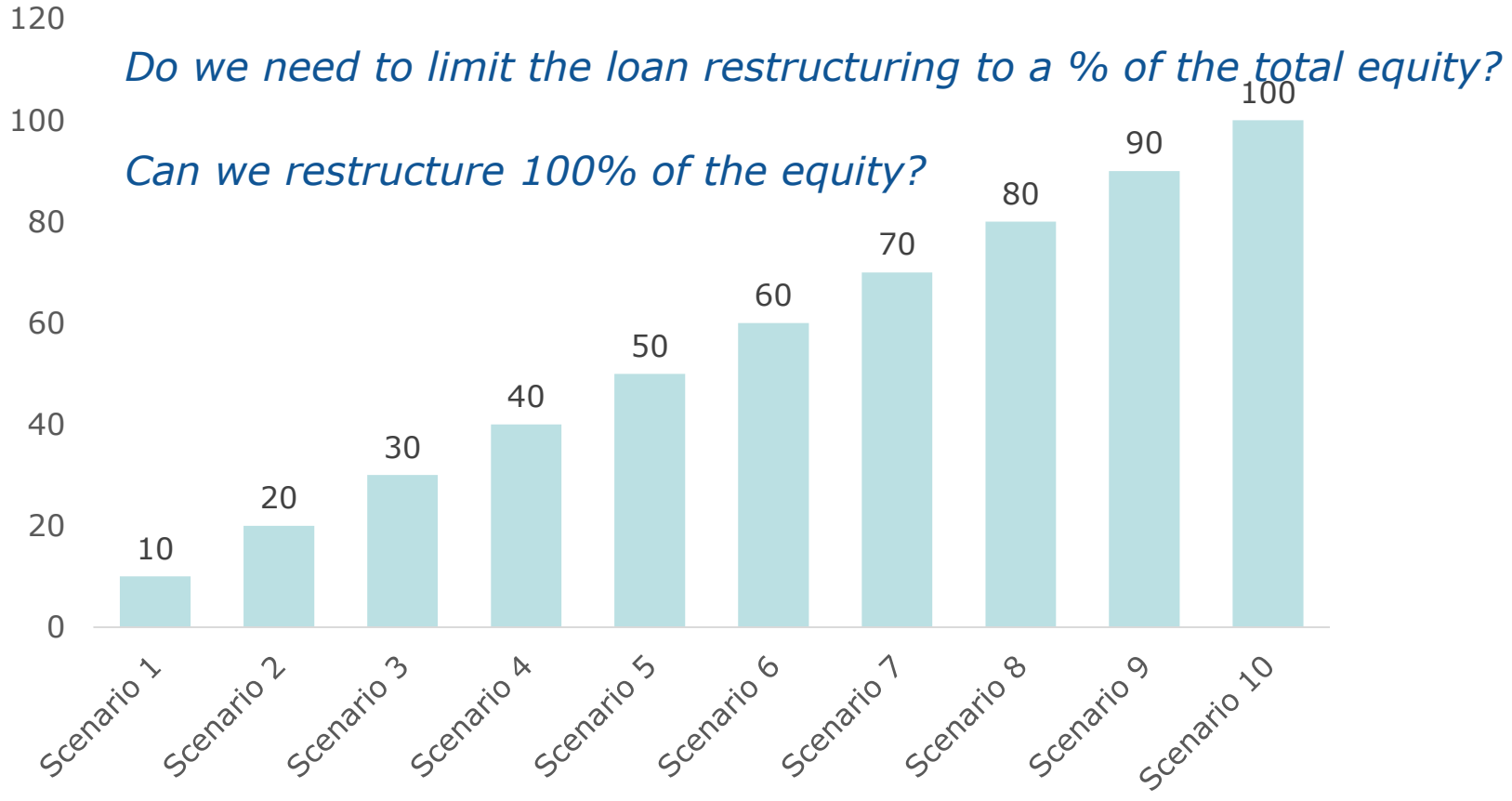
				OUTFLOW													
Currency	Initial loan	Outstanding amount (local currency)		**borrowings principals' repayments**	**3,856,533**	**4,880,985**	**0**	**0**	**1,373,291**	**0**	**7,543,612**	**42,526,725**	**42,175,440**	**1,935,339**	**10,455,303**	**6,705,840**	**120,079,778**
EURO	120000	1,935,339		Lender 1		-	-	-	-	-	-	-	-	1,935,339	-	-	1,935,339
EURO	1000000	786,533		Lender 2	786,533	-	-	-	-	-	-	-	-	-	-	-	786,533
EURO	5000000	14,554,820		Lender 3		-	-	-	-	-	-	5,198,150	-	-	9,356,670	-	14,554,820
EURO	400000	6,705,840		Lender 4		-	-	-	-	-	-	-	-	-	-	6,705,840	6,705,840
EURO	700000	2,471,924		Lender 5		-	-	-	1,373,291	-	-	1,373,291	-	-	1,098,633	-	2,471,924
USD	3000000	6,321,067		Lender 6		-	-	-	-	-	6,321,067	-	-	-	-	-	6,321,067
EURO	650000	7,838,324		Lender 7		-	-	-	-	-	-	7,838,324	-	-	-	-	7,838,324
USD	5000000	42,175,440		Lender 8		-	-	-	-	-	-	-	42,175,440	-	-	-	42,175,440
USD	1500000	28,116,960		Lender 9		-	-	-	-	-	-	28,116,960	-	-	-	-	28,116,960
local currency	40000000	7,950,985		Lender 10	3,070,000	4,880,985	-	-	-	-	-	-	-	-	-	-	7,950,985
	-	1,222,545		Lender 11		-	-	-	-	-	1,222,545	-	-	-	-	-	1,222,545
	-	-		Lender 12		-	-	-	-	-	-	-	-	-	-	-	0
	-	-		Lender ..XX	-	-	-	-	-	-	-	-	-	-	-	-	0

Loan restructuring amount in total equity (rate %)

If our liability structure and maturity will not change

Do we need to limit the loan restructuring to a % of the total equity?

Can we restructure 100% of the equity?



Stress test Output

Stress test output: Cash flow scenarios template

Scenario nr.	1	2	3	4	5	6
Key assumptions	basic	All lenders rollover except for lender 1, New loan to be issued from Shareholder MDL40m	All lenders rollover with out Lender5, without New lender 1 first tranche (MDL 11m) and new lender 1 second tranche postponed (20m), with MDL18m new loan from New lender 2	The same as in 3rd scenario and without New lender 2	With New Lender 2 MDL12m, without Lender 4 new loan, and cut in disbursements by MDL 27m	The same as 5 but not growth at all
GLP	251.00	251.00	251.00	251.00	227.78	205.00
% growth of GLP	21.07%	21.07%	21.07%	21,07%	10.00%	-
Cash flow						
Inflow (repayments of Principal)	155.17	155.17	151.61	151.61	147.85	147.85
Inflow (new debt)	157.37	130.84	129.22	111.17	102.10	102.10
Outflow (Disbursments)	205.85	205.85	205.15	205.15	178.15	155.45
Outflow (debt principal)	140.05	115.12	120.08	120.08	120.08	120.08
Outflow (debt interest)	16.04	17.79	16.55	15.95	15.85	15.85
Net Cumulative Cash	3.73	10.39	(3.78)	(21.00)	1.50	24.20

Simple stress test, TO DO

How about other type of liabilities:

Deposit accounts? What shall we stress test?

Will you stop interest rate? Will you rollover/renew accounts?

What if they come to withdraw on earlier term that cash for food if clients salaries are not paid.

Stress test multiple variables (composite)

Until now we did only stress test on restructuring assuming sales are the same.

Additional factors are:

- **Sales reduction**
- **Cost reduction, cost the same but structure changed or cost up!**

TO DO: Multivariable case stress test and output with all financial data and indicators including covenants

Multifactor stress test, key assumptions

	Factor Stressed	(on/off)	Degree Stressed	
1	PORTFOLIO GROWTH	ON	20%	branches; 40% reduction in new staff hired
2	PORTFOLIO YIELD	ON	1%	reduction in average weighted interest rate; 0.5% Reduction in Year 2021
3	PORTFOLIO QUALITY	ON	20%	decrease in portfolio quality (PAR30) over base case
	Restructuring rate			
	Write off ratio			
4	OVERHEAD EXPENSES	ON	10%	increase in administration and personnel costs (2020-2021)
5	COST OF FUNDS	ON	15%	increase in the average cost of debt (2020-2021)
6	REDUCED ACCESS TO DEB'	ON	20%	Liability amount decrease by 20%

Stress test multiple variables (composite output)

Output		PROJECTION v2019 2020	2021	MULTIFCATOR LOW impact 2021	2022
Outreach					
	# of Branches	23	25	20	21
	% clients reached and served online			10%	20%
	Value of Loans Disbursed (millions)	466.5	586.5	373.2	469.2
Balance Sheet					
	Gross Loan Portfolio (millions)	506.2	643.6	405.4	515.3
	Loan Loss Reserve	(9.1)	(11.5)	(7.2)	(9.2)
	Total Assets	759.5	897.1	621.2	730.0
	Total L Borrowings	627.5	733.3	513.4	596.8
	Total L Savings and Current Acc				
	Total Equity	114.4	142.8	93.5	116.1
Income Statement					
	Revenue on Portfolio	96.0	124.3	73.5	95.0
	Financial Cost	43.8	50.4	40.1	46.7
	Total Provision Expense	14.4	15.5	11.5	12.4
	Other Financial Income	24.1	22.4	21.7	19.6
	Net Margin	61.9	80.8	43.6	55.7
	Total Operational Costs	42.3	46.6	41.3	45.2
	Net Income from Operations	19.6	34.2	2.3	10.4
	Net Income	15.4	27.1	1.6	8.1

Stress test multiple variables (composite output)

Output	PROJECTION v2019 2020	PROJECTION v2019 2021	MULTIFCATOR LOW impact 2021	MULTIFCATOR LOW impact 2022
Key Ratios				
% Growth in GLP	*37%*	*27%*	*37%*	*27%*
PAR > 30 (%)	*2.8%*	*2.8%*	*2.8%*	*2.8%*
Write-off Ratio	*1.5%*	*1.0%*	*1.5%*	*1.0%*
Loan Loss Reserves / PAR>30	*63%*	*63%*	*63%*	*63%*
Recovery Rate	*68%*	*75%*	*68%*	*76%*
Total Equity/(Assets - 80% of Cash - 100% of FX Deposits)	*20%*	*20%*	*20%*	*20%*
(Total Debt - 100% of FX Deposits) / Total Equity	*4.1x*	*4.1x*	*4.1x*	*4.1x*
ROE	*14.6%*	*21.1%*	*1.8%*	*7.7%*
ROA	*2.3%*	*3.3%*	*0.3%*	*1.2%*
Cost to Income Ratio	*84%*	*77%*	*98%*	*91%*
Operational Self-Sufficiency	*120%*	*130%*	*102%*	*110%*
Yield on Portfolio (% of Avg. GLP)	*20.2%*	*20.1%*	*19.2%*	*19.2%*
Funding Ratio (net of interest on deposits) (	*8.2%*	*7.3%*	*9.6%*	*8.6%*
Provisioning Ratio (% of Avg GLP)	*2.4%*	*1.9%*	*2.3%*	*1.8%*
Portfolio financial margin	*9.6%*	*11.0%*	*7.2%*	*8.7%*
Funding Requirements				
New Equity Required	2.5	1.3	6.3	14.6
New Debt Financing Required	146.7	105.7	132.5	83.4
New Debt Financing (excluding back-	155.1	116.0	135.4	92.4

Stress test multiple variables (composite output)

Output	PROJECTION v2019		MULTIFCATOR LOW impact		MULTIFCATOR MEDIUM impact		MULTIFCATOR HIGH Impact	
	2020	2021	2021	2022	2021	2022	2021	2022
Outreach								
# of Branches	23	25	20	21	15	18	10	10
% clients reached and served online			10%	20%	10%	20%	0%	0%
Value of Loans Disbursed (millions)	466.5	586.5	373.2	469.2	373.2	469.2	373.2	469.2
Balance Sheet								
Gross Loan Portfolio (millions)	506.2	643.6	405.4	515.3	380.0	400.0	350.0	300.0
Loan Loss Reserve	(9.1)	(11.5)	(7.2)	(9.2)				
Total Assets	759.5	897.1	621.2	730.0				
Total L Borrowings	627.5	733.3	513.4	596.8				
Total L Savings and Current Acc								
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Stress test Team

Stress test team

Work in team, work in parallel to save time

- **Stress test architect (CFO, Vice CFO, Chief analysts)**
- **Stress test assumptions approval (Crisis Task Force, Crisis Committee, Risk Committee)**
- **Assumption per departments (Department managers)**
- **Formulas design: analysis**
- **Testing: different analyst may be as well IT tester.**
- **Testing output CEO, CFO, Vice CEO, Vice CFO**

In conclusion

In conclusion key actions

Analyze your asset structure, liability and owners equity

For smaller MFIs

If you are financed with equity only:

You are better positions than others

Understand your portfolio structure by as mush as possible details prepare stress test

Discuss with shareholders the restructuring limits

Discuss with shareholders possibility to grow in crisis

Segment clients you want to support.

In conclusion key actions

Analyze external data

Analyze MFI asset structure, liability and owners equity

For smaller MFIs

If your MFI have high leverage:

- **Understand your portfolio structure by as mush as possible details prepare stress test**
- **Stress test**
- **Discuss with lenders the restructuring limits**
- **Discuss with shareholders and lenders possibility to grow in crisis**
- **Segment clients you want to support.**

In conclusion key actions

Diagnose where you are?

Diagnose what tools you have? Excel, model etc.

Diagnose abilities and human capital for stress test?

Apply multivariable stress test and present a simple table output

Work in parallel with different teams to speed up

Communicate results internally, approve scenarios with shareholders

Test some scenarios with key lenders

In conclusion

Recruit online volunteers if you need help (usually students in last two years) for:

- **For analyzing your data base**
- **For forecasting and stress testing in paralel to speed the processes**
- **For testing new products**
- **For testing your IT security**

Cooperate with start up communities from different incubators, acclerators etc

- **Writing testing new processes**
- **Financial models and stress tests**

In conclusion

If you will apply above mentioned:

- **I am sure you will be more prepared for next crisis you will have a stress test module and a scenario close to the reality**
- **I am sure you will be more prepared, your immunity will strong to face new crisis**

Terminology

Terminology

Stress testing:

In financial industry: Stress testing is a simulation or analysis designed to find out how resilient a financial instrument, investment portfolio, financial institution, or whole economy is at dealing with extreme situations and economic crises.

Stress testing may also refer to tests that measure how well a company or industry might fare/cope when exposed to certain stressors (factors).

Stress testing is a computer simulation technique used to test the resilience of institutions and investment portfolios against possible future financial situations. (Investopedia.com)

Terminology

Sensitivity analysis *- for this presentation the same as stress test,*
What if analysis *- for this presentation the same as tress test,*

In the banking and lending world, a ***standstill*** *agreement between a lender and borrower halts the contractual repayment schedule for a distressed borrower and forces certain actions that the borrower must undertake. A new deal is negotiated during the standstill period that usually alters the loan's original repayment schedule.*

A ***moratorium*** *allows you to delay the payment of a debt for a finite period of time. In the loan context, this is also known as a deferment or forbearance. If you are facing a temporary hardship, you can request a moratorium and briefly postpone your loan payments.*

Moratorium is a sort of granting of a 'holiday'- it is a repayment holiday where the borrower is granted an option to not pay during the moratorium period. It is a restructuring of the terms of the loan with the mutual consent of the lender and the borrower.

Rollover *– for this presentation the same as moratorium*

Terminology

Stress test *- please see definitions at the beginning of the presentation,*
Sensitivity *- for this presentation the same as stress test,*
What if analysis *- for this presentation the same as tress test,*

*In the banking and lending world, a **standstill** agreement between a lender and borrower halts the contractual repayment schedule for a distressed borrower and forces certain actions that the borrower must undertake. A new deal is negotiated during the standstill period that usually alters the loan's original repayment schedule.*

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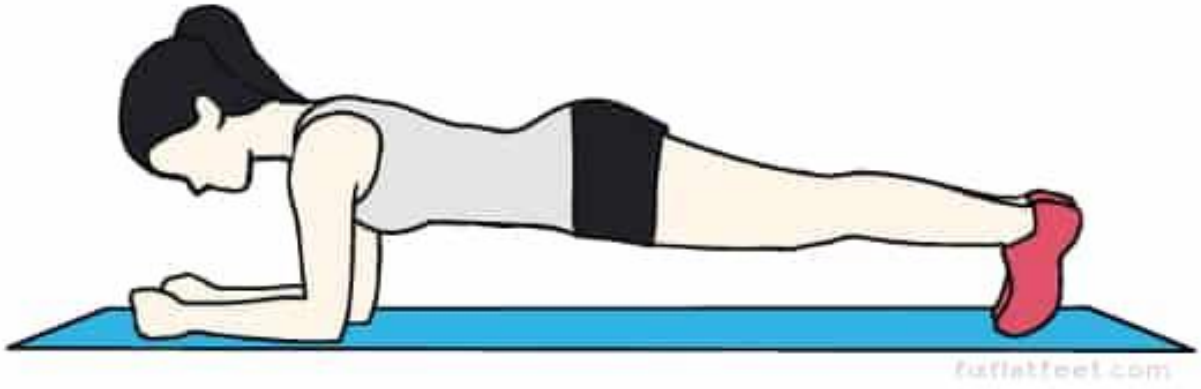
Rollover *– for this presentation the same as moratorium*

European Commission

HEALTH

Plank for 2 minutes everyday



MICROFINANCE CENTRE

European Commission

Thank you!

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