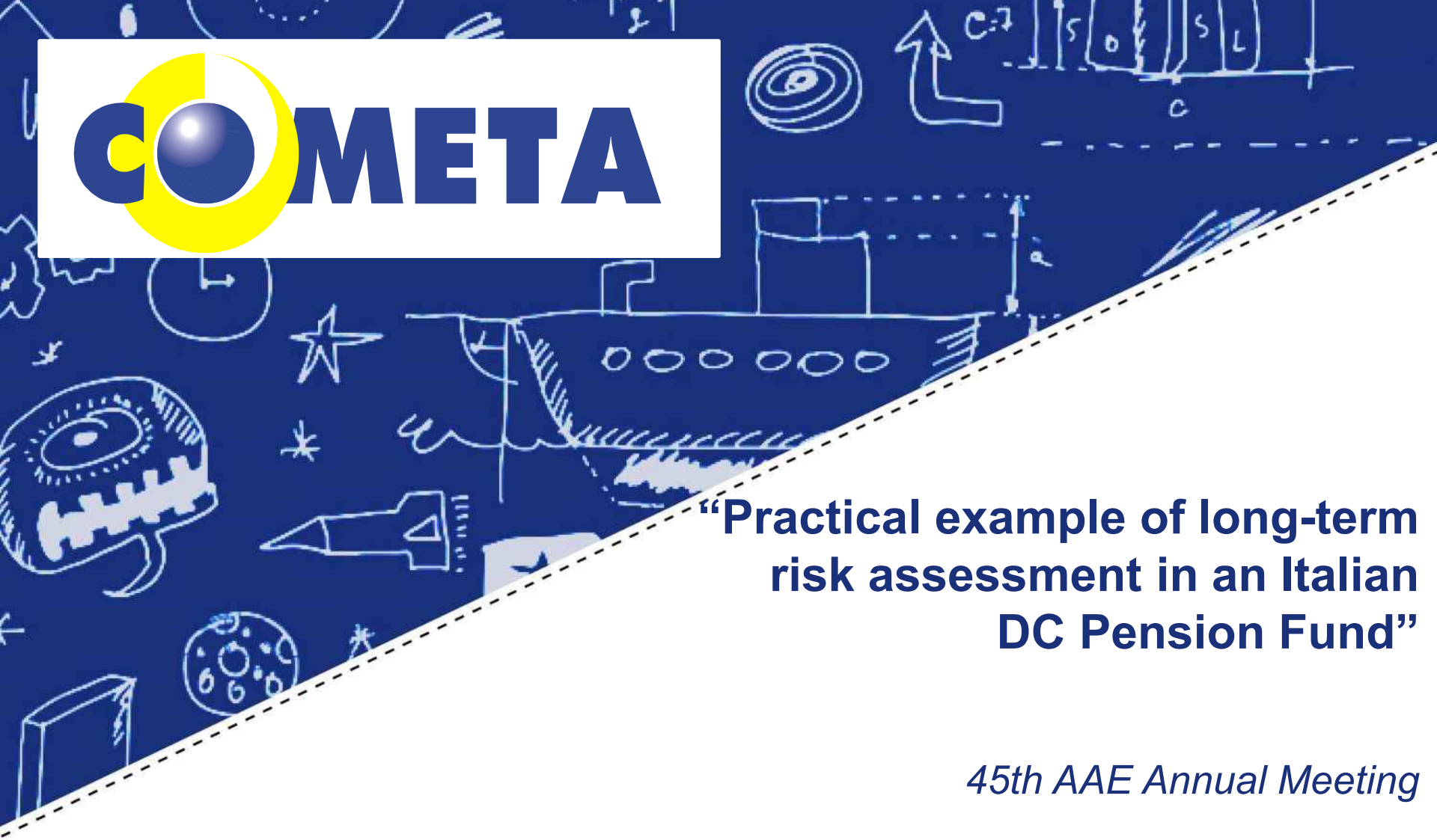


"Practical example of long-term risk assessment in an Italian DC Pension Fund"

45th AAE Annual Meeting

06 October 2022

Luigi Antonelli
Chief Risk Officer, Cometa Pension Fund

ITALIAN PENSION SYSTEM

The Italian pension System consists of:

a) A compulsory first pillar: it' s a public and unfunded PAYG scheme

b) Second and third pillars are voluntary, funded and private. They include:

- *Contractual/closed funds (second pillar). Only a specific group of workers can join them and they are set up by employer associations and trade unions.*
- *Open funds are third pillar and are offered by insurance companies or investment management companies*

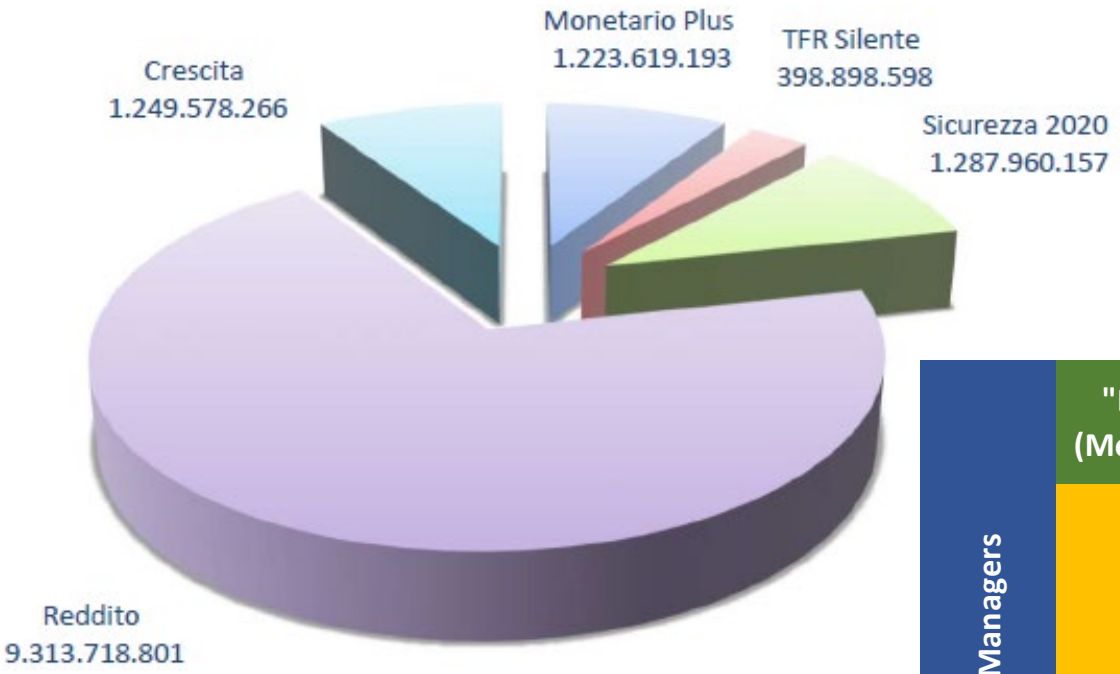
COMETA PENSION FUND

- *Cometa:*
  - *is a second pillar-contractual Fund: membership is reserved to workers and regulated by the collective agreement of metalworking industry and related sectors.*
  - *is a defined contribution Fund and the contributions consist of a severance package (TFR) the metalworkers can transfer quarterly accrual part to Cometa or else leave it in their company. In the latter case the annual revaluation during the period of accrual is 75% of inflation plus a fixed rate of 1.5%.*

- *Contributions flow into a member's personal account and are invested by external investment managers that can only be an insurance company, a bank or a registered asset management company (SGR).*
- *On the basis of pension needs Cometa defines the investment policies and selects the fund managers.*
- *This kind of model has led to a lack of expertise in trading but a good expertise in defining SAA, selecting Fund Managers as well as assessing and monitoring risks in short and long term.*

AuM and Fund Managers

Cometa has set 5 different investment lines/options that members can choose



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Fund Managers	
"Monetario" (Money Market)	Allianz Global Investors GmbH Eurizon Capital SGR S.p.A Groupama Asset Management
"Reddito" (Income)	Allianz Global Investors GmbH BlackRock Investment Management Candriam Investors Group, Credit Suisse S.p.a. State Street Global Advisors
"Crescita" (Growth)	Allianz Global Investors GmbH BlackRock Investment Management
"Tfr Silente" (Safe)	Generali Italia SPA
"Sicurezza 2020" (Safe)	Generali Italia SPA

FUNDS' STRATEGIC ASSET ALLOCATION

		Strategical Asset Allocation				
		Monetario	Reddito	Crescita	Tfr Silente	Sicurezza 2020
Money market	**Total Money Market**	**30,0%**	**7,2%**			
	Emu Govies 0-1Y	30,0%	7,2%			
Govies	**Total Govies**	**47%**	**44%**	**33%**	**70%**	**55%**
	Emu all mats		20,1%	7,7%	70,0%	55,0%
	Europe 1-3Y	35,0%				
	US 1-3Y € hdg	12,0%				
	Global ex Emu all mats € hdg		16,1%	22,5%		
	Emerging HC all mats € hdg		3,4%	3,0%		
	Emu inflation linked all mats		4,0%			
Corporate	**Total Corporate**	**23%**	**28%**	**31%**	**25%**	**30%**
	Euro IG 1-3Y	23,0%			25,0%	15,0%
	Europe IG all mats € hdg		10,1%	8,0%		
	US IG all mats € hdg		15,5%	20,2%		10,0%
	Global HY BB-B all mats € hdg		2,7%	2,6%		5,0%
Equity	**Total Equity**		**20,9%**	**36,0%**	**5,0%**	**15,0%**
	Emu		6,8%	9,0%		
	Global ex Emu € hdg		1,3%	2,4%		
	Emerging in €		12,8%	24,6%	5,0%	15,0%

INDEXES

		Strategical Asset Allocation					
		Monetario	Reddito	Crescita	Tfr Silente	Sicurezza 2020	Index
Money market	Total Money Market	30,0%	7,2%				
	Emu Govies 0-1Y	30,0%	7,2%				Barclay's Euro Treasury 0-12
Govies	Total Govies	47%	44%	33%	70%	55%	
	Emu all mats		20,1%	7,7%	70,0%	55,0%	BofA Merrill Lynch Euro Government Index
	Europe 1-3Y	35,0%					Bofa 1-3 europe gov eur hedged
	US 1-3Y € hdg	12,0%					Bofa1-3 Us Treasury
	Global ex Emu all mats € hdg		16,1%	22,5%			BofA Merrill Lynch Global Gov. Ex. Euro Gov.
	Emerging HC all mats € hdg		3,4%	3,0%			JPM Emerging market bond
	Emu inflation linked all mats		4,0%				BofA Infl linked Gov.
Corporate	Total Corporate	23%	28%	31%	25%	30%	
	Euro IG 1-3Y	23,0%			25,0%	15,0%	BofA 1-3 corp euro
	Europe IG all mats € hdg		10,1%	8,0%			BofA large cap corporate europe
	US IG all mats € hdg		15,5%	20,2%		10,0%	BofA us corporate
	Global HY BB-B all mats € hdg		2,7%	2,6%		5,0%	BofA global High Yield
Equity	Total Equity		20,9%	36,0%	5,0%	15,0%	
	Emu		6,8%	9,0%			MSCI Emu
	Global ex Emu € hdg		1,3%	2,4%			MSCI Emerging market
	Emerging in €		12,8%	24,6%	5,0%	15,0%	Global equity ex eur

INDEX RISK-RETURN PROJECTIONS

In order to project risk and returns, Cometa uses an Economic Scenario Generator (ESG): a stochastic economic model that is used to produce simulations of financial market values and economic variables (bond prices, stock prices, inflation, GDP etc.)

An ESG model generates plausible forward looking scenarios for the joint behaviour of the previously mentioned economic risk factors

The output from the ESG will be a large number of possible scenarios for each of these risk factors, typically looking out up to 50 years into the future.

An Esg model is tricky to build not just because the mathematical equations but also because it's based on a combination of different data sources: market prices, historical experience, economic judgment.

ESG AND RISK ASSESSMENT

The output of ESG model is a three dimensional cube matrix containing the returns for 14 indexes for 10.000 scenarios for 40 years.

The scenarios are released quarterly

The Risk manager uses the projected returns in order to:

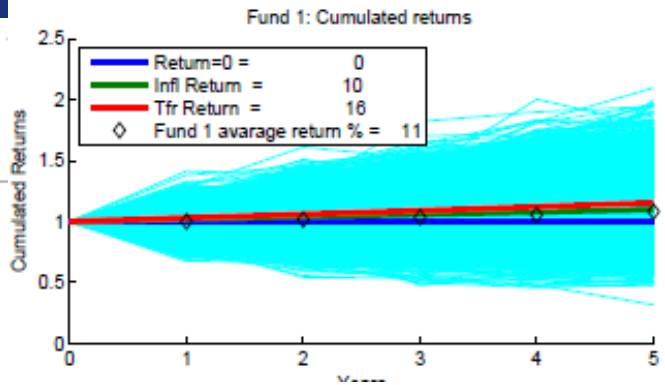
- *Assess and monitor the risk based on the probability to meet the target return of each fund and each portfolio manager who manages a share of that portfolio (short-medium term)*
- *Assess the risk in the long term monitoring the probability to meet a defined level of return and second pillar replacement rates*

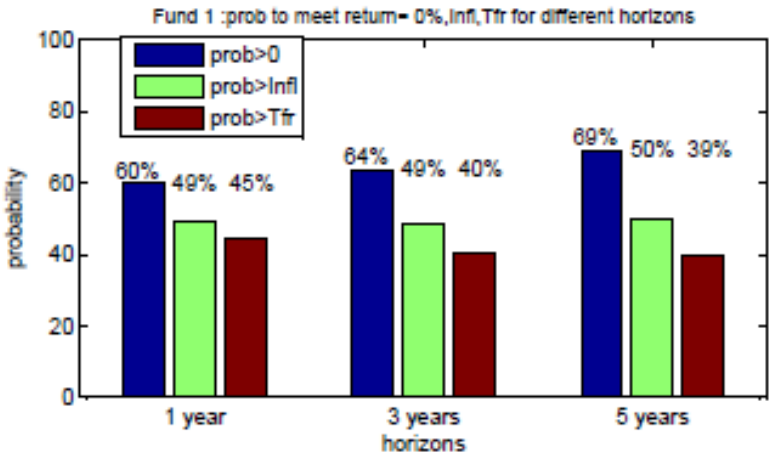
SHORT-MEDIUM TERM RISK ASSESSMENT

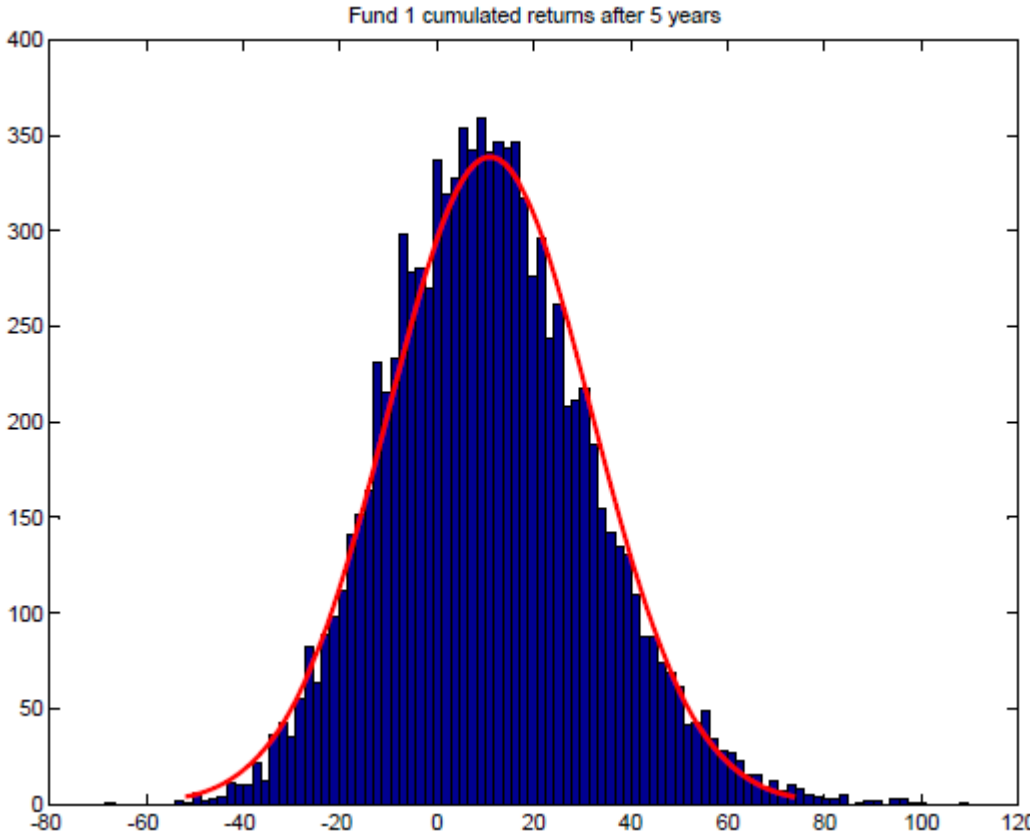
Fund 1: Ex ante risk return

Ex Ante Return (annualized mean)

	FUND 1	FUND SAA	Infl	TFR
1 anno	1.6	1.2	2.1	3.1
3 anni	1.8	1.5	1.9	2.9
5 anni	2.1	1.8	1.9	2.9







Expected Shortfall 5%

	Fund 1	Fund 1 SAA
1 year	-17.7	-16.3
3 years	-26.2	-24.3
5 years	-29.3	-27.2

5-th percentile

	Fund 1	Fund 1 SAA
1 year	-13.1	-12.1
3 years	-19.9	-18.4
5 years	-21.8	-20.3

LONG TERM ASSESSMENT

The projections of future retirement income of members is based on stochastic scenarios of asset returns described previously.

The results are useful to assess the investment policy ability to meet the long run goals in terms of second pillar replacement rate and the Cometa mission to partially close the gap between the working and pension income

The results are compared with the established risk tolerance of the members estimated considering both capacity to bear risk (age, wages, education level, professional category) and preferences on taking risks estimated by specific surveys

Replacement Rates Projections Fund: «Reddito»

	Members Age			
	30 years old	40 years old	50 years old	60 years old
Salary growth	infl. + 1%	infl. + 1%	infl. + 1%	infl. + 1%
Retirement Age	67 years	67 years	67 years	67 years
Avarage yearly salary	22.421 €	28.066 €	31.046 €	35.234 €
Members current accumulated capital	9.489 €	25.605 €	32.880 €	42.084 €
Total yearly contribution	2.490 €	3.152 €	2.997 €	3.073 €
Avarage yearly salary at age of retirement	35.279 €	39.195 €	38.482 €	38.762 €
Accumulated capital at age of retirement	169.286 €	149.828 €	94.591 €	65.207 €
Second Pillar Annuity	6.714 €	5.943 €	3.752 €	2.586 €
Second Pillar Replacement rate	**19,0%**	**15,2%**	**9,7%**	**6,7%**

Replacement Rates Projections Fund: «Reddito»

➢ *First Pillar replacement Rates*

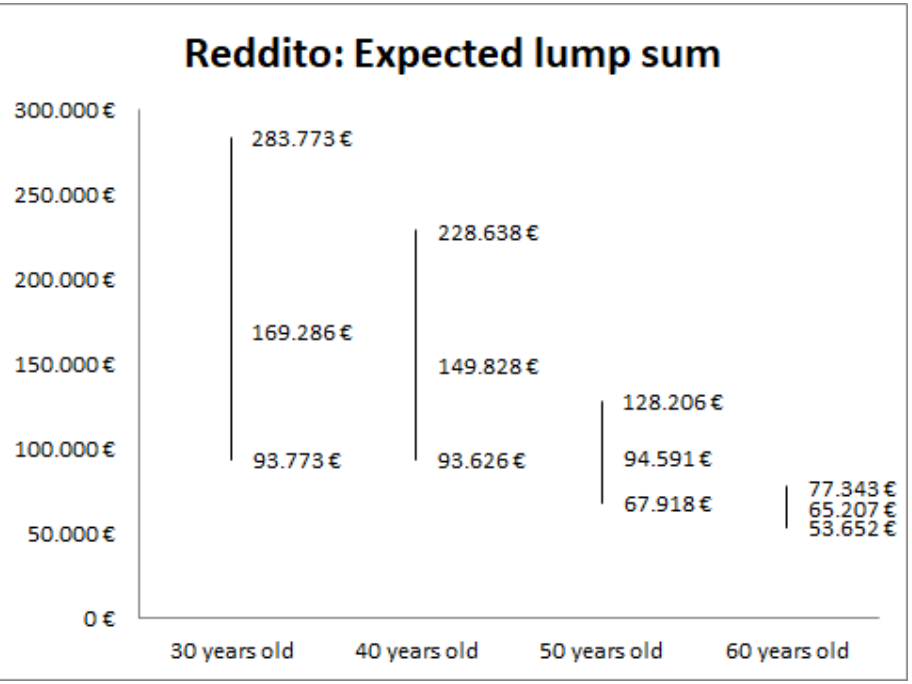
	Members Age			
	30 years old	40 years old	50 years old	60 years old
Salary growth	infl. + 1%	infl. + 1%	infl. + 1%	infl. + 1%
Retirement Age	67 years	67 years	67 years	67 years
Avarage yearly salary	22.421 €	28.066 €	31.046 €	35.234 €
Avarage yearly salary at age of retirement	35.279 €	39.195 €	38.482 €	38.762 €
First Pillar Pension	22.931 €	27.437 €	28.092 €	28.296 €
First Pillar Replacement Rate	**65,0%**	**70,0%**	**73,0%**	**73,0%**

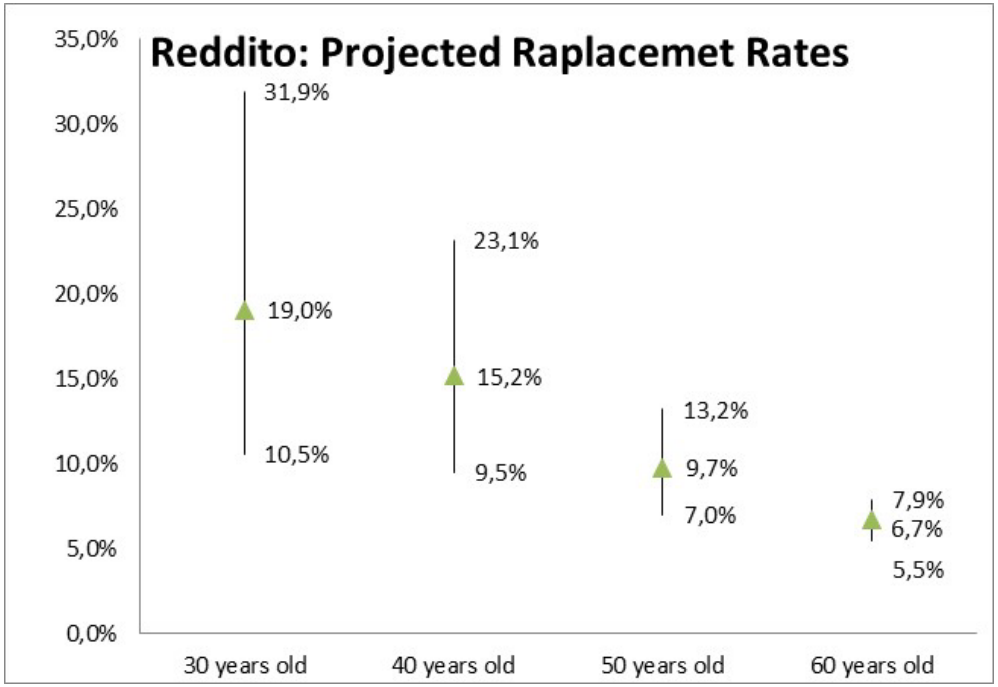
➢ *Total replacement Rates*

	Members Age			
	30 years	40 years	50 years	60 years
First pillar Replacement Rate	65%	70%	73%	73%
Second Pillar Replacement Rate	19%	15%	10%	7%
Total Replacement Rate	**84%**	**85%**	**83%**	**80%**

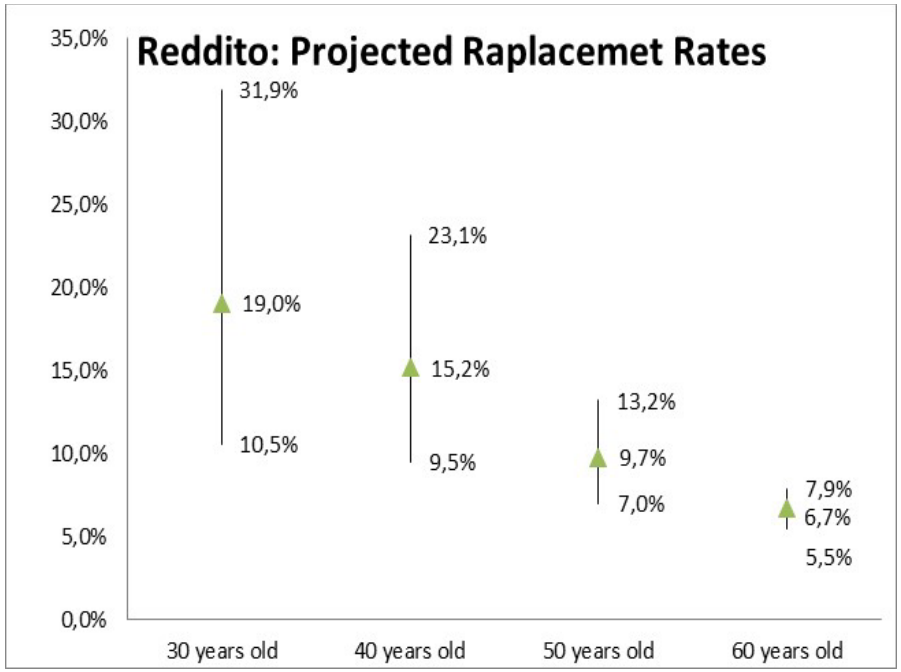
Replacement Rates Projections
Fund: «Reddito»

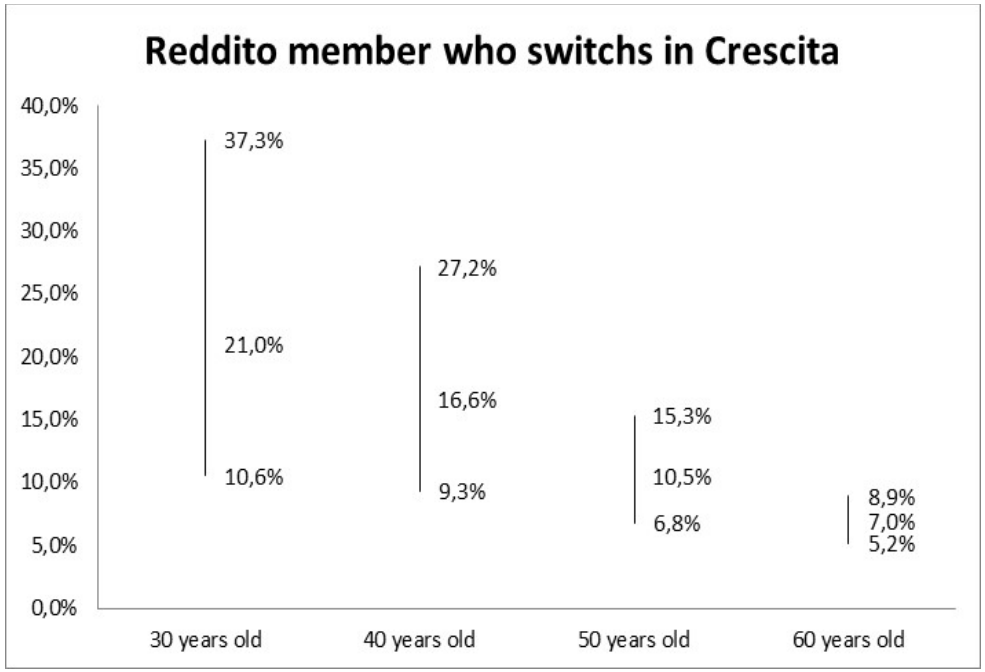
On average the accumulated capital at the age of retirement for the forty years old member of Reddito fund will be 149.828 euros. This value is in the range 228.638-93.626 euros with a probability of 90%.





Replacement Rates Projections
Fund: «Reddito» in «Crescita»





Replacement Rates Estimations
Fund: Reddito

	Reddito Fund	
	Risk Appetite	Risk Tolerance
Reddito Fund probability to meet the target return (1.5%+75%*inflation) at the Fund Manager horizon (5 years)	58%	49%
Reddito Fund probability to meet the target return (1.5%+75%*inflation) on the Fund horizon (10 years)	49%	44%
Second Pillar replacement Rate at Reddito Fund horizon (10 years)	10%	8,95%
Fund/Fund manager Standard deviation	4,6%	5%

RISK TOLERANCE ESTIMATIONS

Eiopa's opinions states also to establish the risk tolerance of Pension Fund members by using appropriate methodologies consisting of at least:

i. The extent to which members are able to bear risk

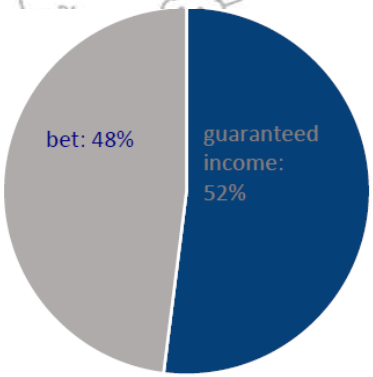
ii. The extent to which members want to take risk

For the first topic we constantly monitor our members' characteristics

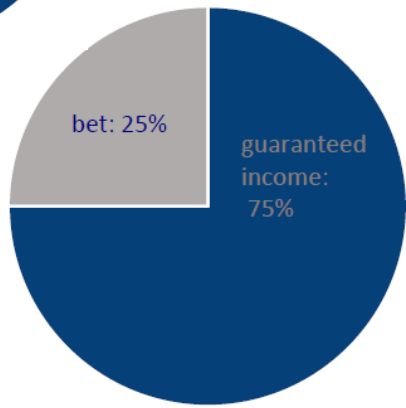
For the first and the latter, Cometa approaches its members directly with self-assessment questionnaire

Different risk return profile Funds

1. *Suppose you have to choose between two new jobs. The first job guarantees your current income, the second pays with a 50% probability a 30% higher income and with a 50% probability an income of 15% below your current income. What job would you choose?*



2. *And if the second job pays with a 50% probability a 20% higher income and with a 50% probability an income of 20% below your current income. What job would you choose?*



3. *And if the second job pays with a 50% probability a 15% higher income and with a 50% probability an income of 30% below your current income. What job would you choose?*

THANK YOU FOR YOUR ATTENTION