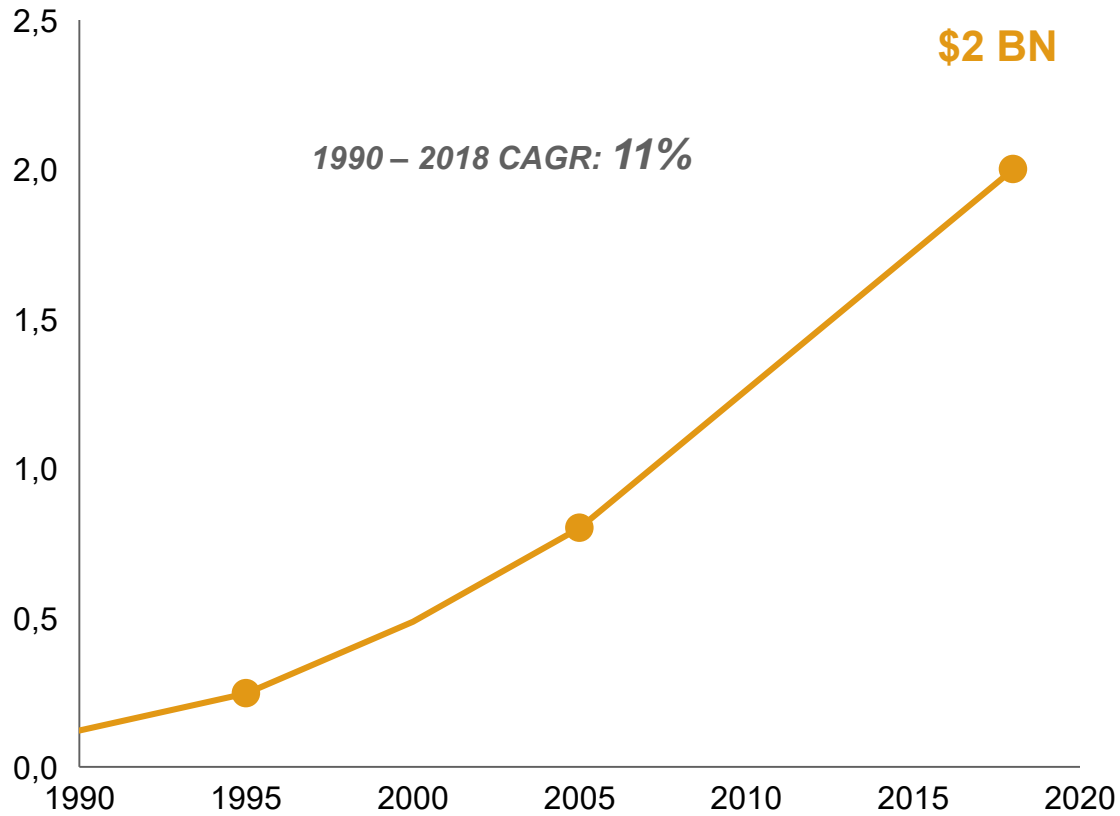




# Oliver Wyman

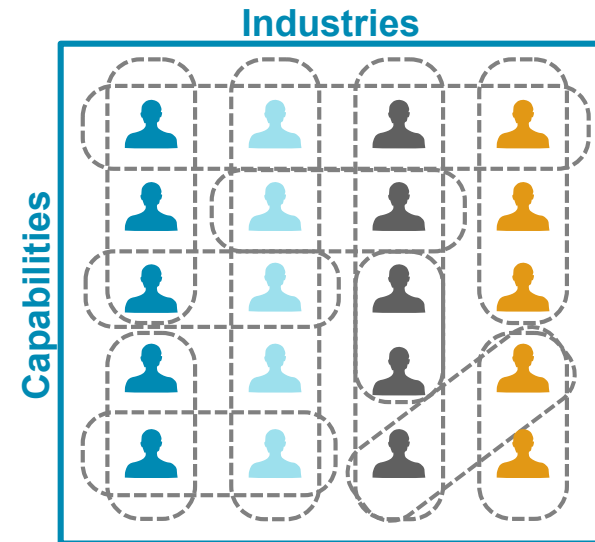
# Oliver Wyman is striving to build a unique and winning model

## OW revenue evolution In \$BN



Source: mmc.com, Marsh & McLennan Companies Annual reports

## Multi-team agile approach



- Dedicated partners AND consulting staff, resulting in specialized knowledge
- “Best Foot Forward” processes to ensure best possible team for each client project
- Flat structure, true meritocracy, and one partnership compact driving a collaborative working style
- Right leverage, more engagement

Clients include **half** of the top **500** global companies

**60+**

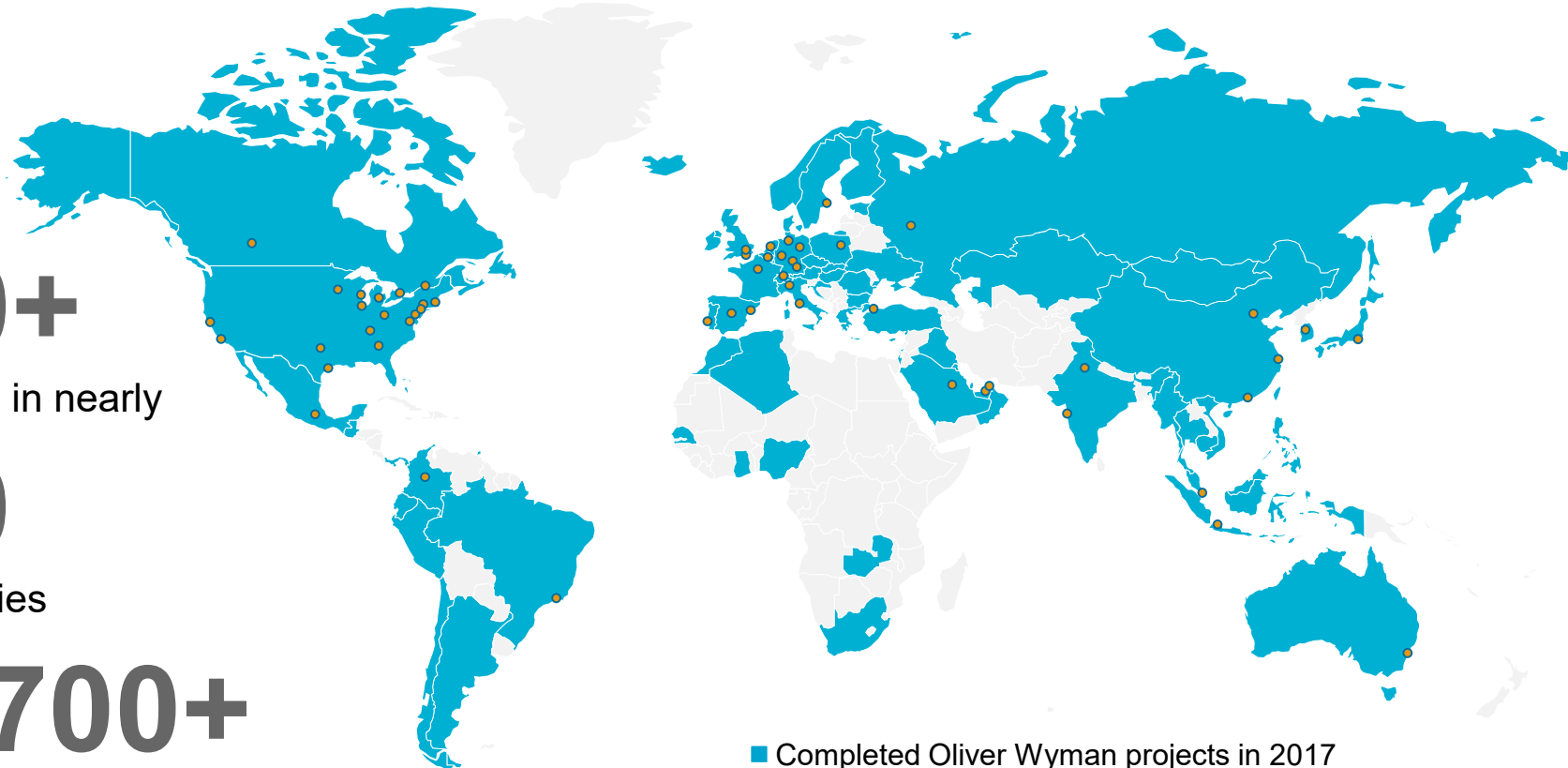
Offices in nearly

**30**

Countries

**4,700+**

Professionals worldwide



- Completed Oliver Wyman projects in 2017
- Oliver Wyman offices



Advising leading companies across many different sectors and geographies

# Oliver Wyman in Italy







- Italy oversees Southern Eastern Europe region, we operate in Italy **since 1995**
- Milan office has been opened in 2003; Rome location in 2007
- **Our revenues** and **consultants** grew by **double digit** in 2010-18, currently ~70 consultants and quantitative analysts dedicated to **project execution**
- **15 Partners** who cover most of the Financial Services and Consumer, Industrials and Services Practices



# We work with all main Italian financial institutions and we deliver projects with high impact

## Selection of relevant engagements in Italy

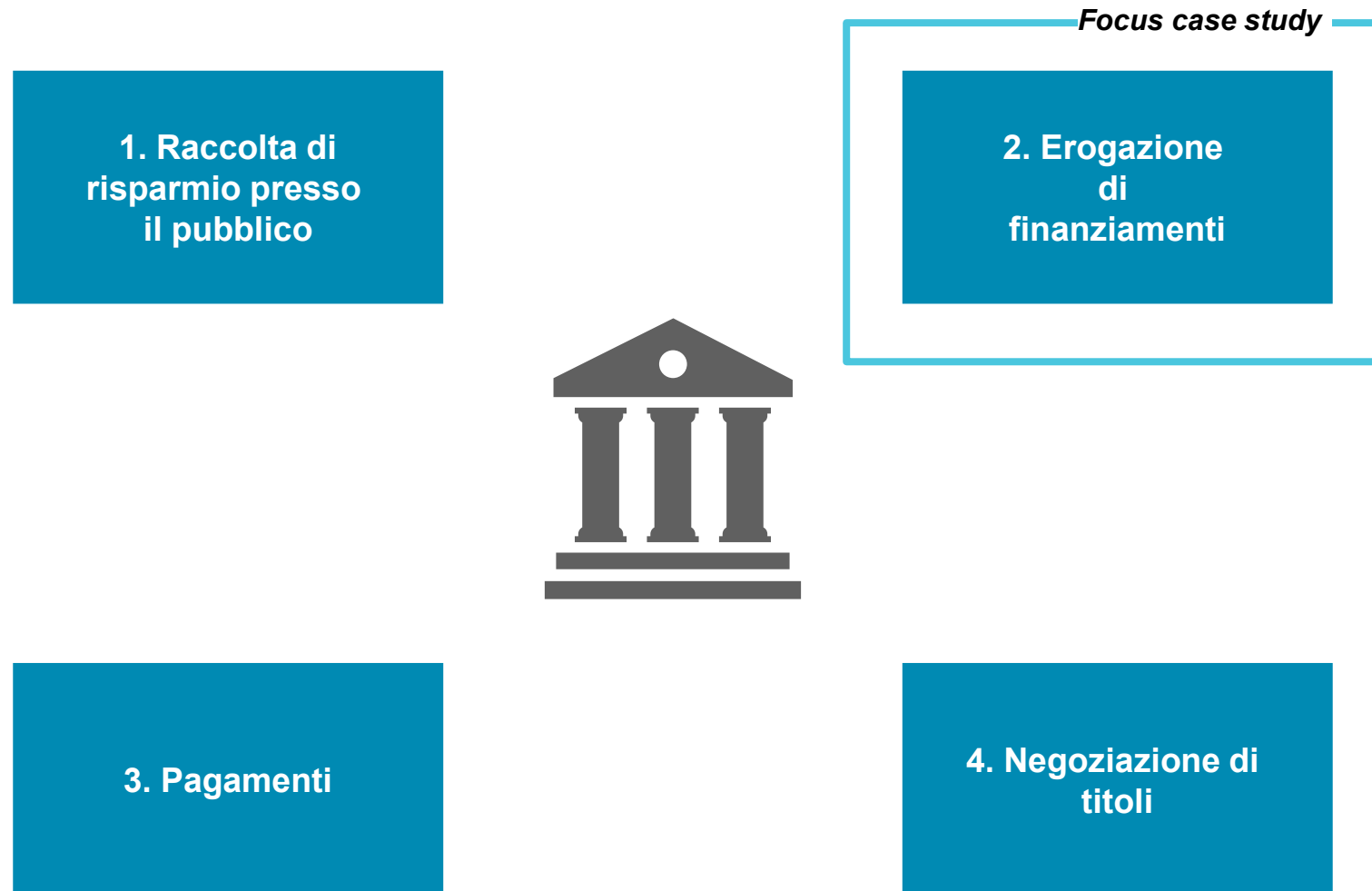
Client	Project	Short description	Impact
 <b>European Central Bank</b>	<b>Comprehensive assessment</b>	<ul style="list-style-type: none"> <li>Advised the ECB and a number of national CBs on the asset quality review and stress test of 130 euro-area banks</li> <li>Developed the methodology for the assessment, coordinate c. 5000 auditors, and provided quality assurance on the results</li> </ul>	<ul style="list-style-type: none"> <li>€26 TN assets assessed; €135.9 BN of new Non Performing Loans and €25 BN of capital needs identified</li> <li>Transparency enabled ahead of the launch of the new ECB-led euro-level Single Supervision</li> </ul>
 <b>Greek systemic banks</b>	<b>Restructuring of Non Performing Exposure</b>	<ul style="list-style-type: none"> <li>Supported the banks in the design of a common platform in the SME segment</li> <li>Managed the servicer selection and negotiations among the four banks</li> </ul>	<ul style="list-style-type: none"> <li>Created the first common NPE servicing platform in SEE</li> </ul>
 <b>Banco BPM</b>	<b>Merger Plan</b>	<ul style="list-style-type: none"> <li>Developed an integrated strategic plan in 8 weeks to be communicated to ECB and to the market to support the capital increase process</li> </ul>	<ul style="list-style-type: none"> <li>Successfully communication with the Supervisor and investors</li> <li>Allowed the creation of the third Italian banking group</li> <li>Successful capital increase for €1,0Bn</li> </ul>
 <b>National Resolution Authority</b>	<b>Strategic advisory for the sale of the four banks resolved in 2015</b> (Banca Marche, Banca Etruria, Banca Marche e Carichieti)	<ul style="list-style-type: none"> <li>Supported the sale process, developing four credible and sound business plans</li> <li>Negotiated with investors the sale of the Good Bank and NPE sale to Atlante</li> </ul>	<ul style="list-style-type: none"> <li>Received compliant binding offers</li> <li>Banks sold to investors</li> <li>First investment of Atlante ("<i>Italian Recovery Fund</i>")</li> </ul>

A young man with short brown hair and black-rimmed glasses is smiling broadly. He is wearing a blue t-shirt with a pocket on the left chest. He stands in a street with brick buildings in the background. A large blue arrow graphic points from the left towards the text.

2. SOME EXAMPLES OF WHAT WE DO

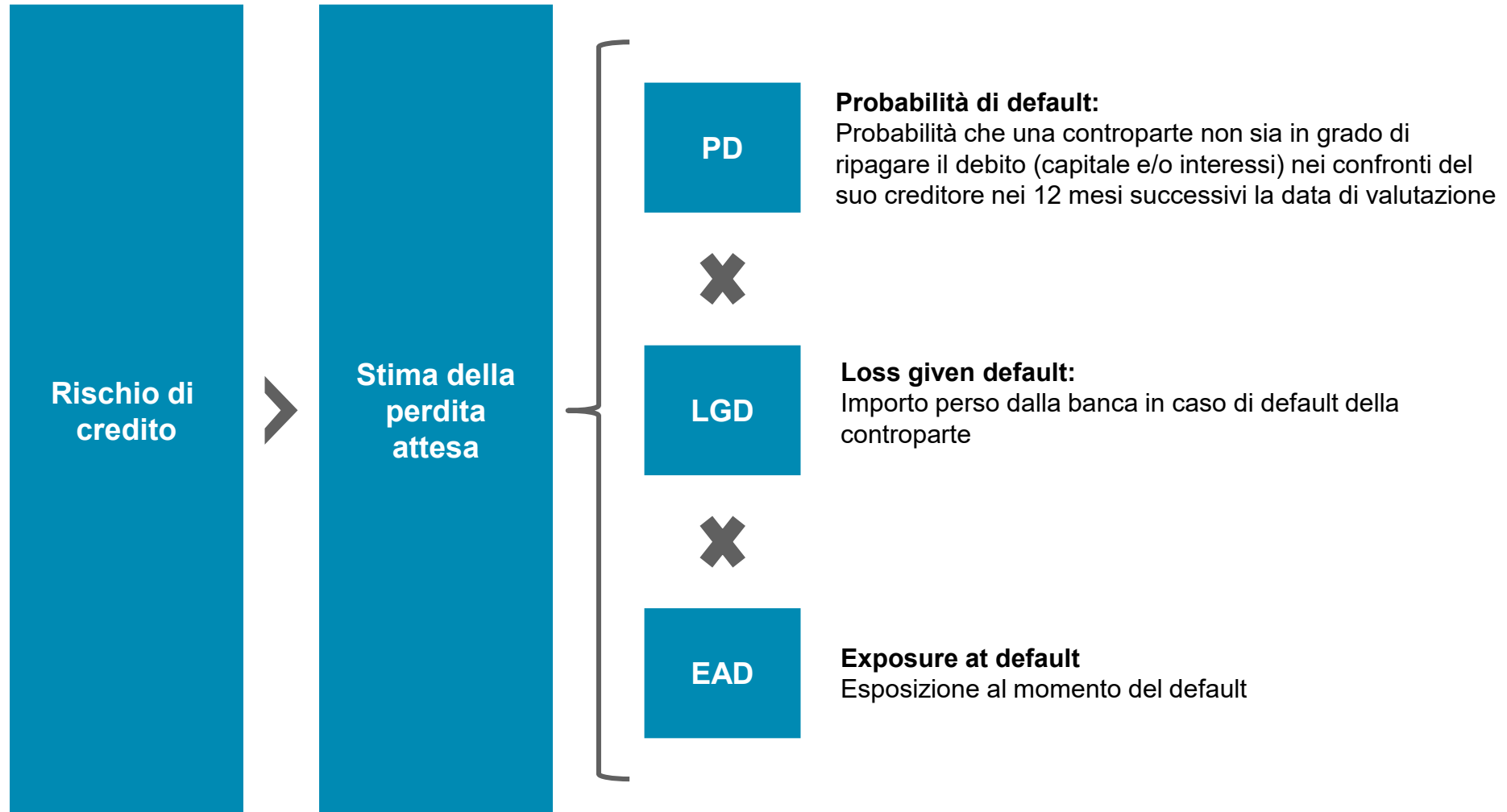
... And why we love physicists

# Quali sono le principali attività di una banca?



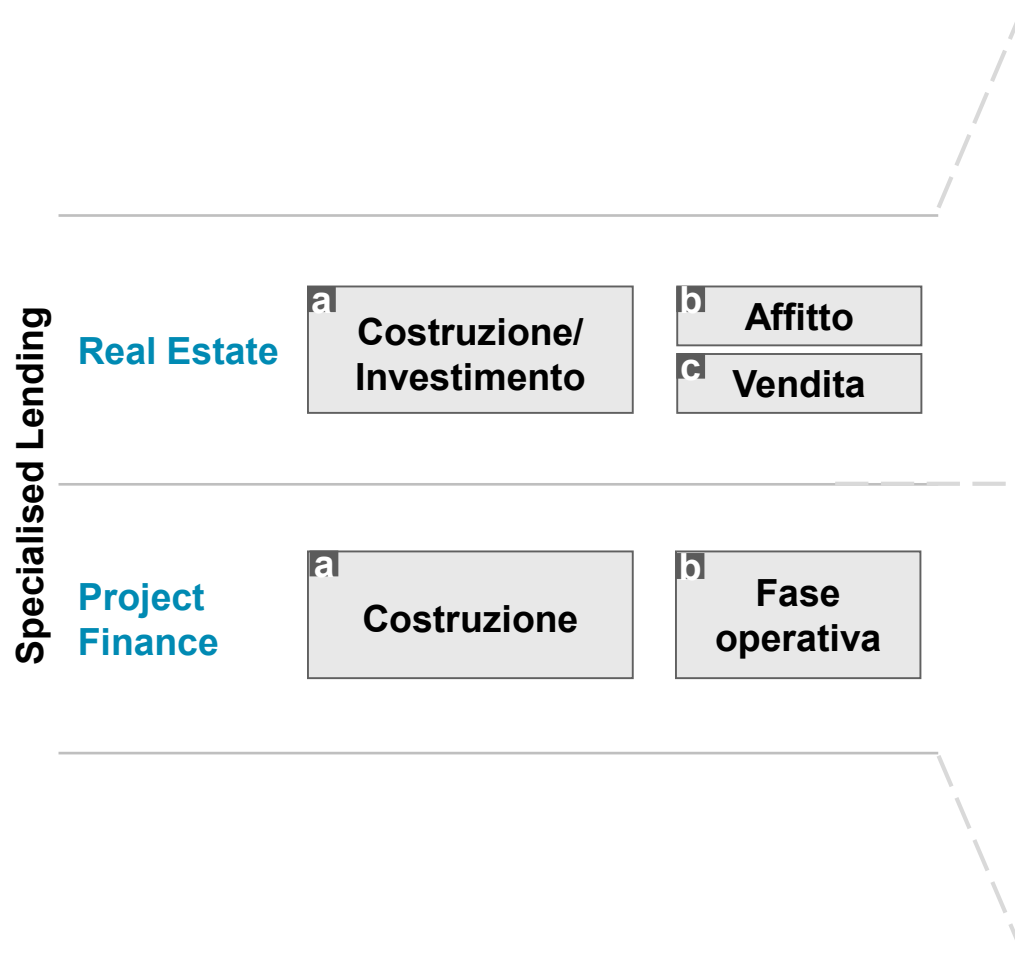


# L'erogazione di finanziamenti genera rischio di credito per la banca



# Finanza strutturata: Real Estate e Project Finance

Obiettivo del progetto: sviluppo modelli per la misurazione del rischio di credito del portafoglio Specialised Lending (Real Estate e Project Finance)



## RED (Real Estate Development):

Finanziamenti destinati ad attività che spaziano dalla **ristrutturazione di edifici esistenti all'acquisto di terreni per lo sviluppo di iniziative immobiliari** e che hanno come **finalità principale la vendita con scopo di lucro**

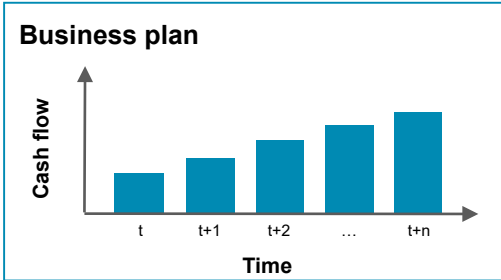
## IPRE (Income Producing Real Estate):

Operazioni di **sviluppo o acquisizione di beni immobili** inclusi, in particolare, palazzi per uffici, negozi, edifici residenziali, magazzini o depositi, alberghi e terreni con **principale finalità di locazione o affitto**

## PROJECT FINANCE:

Finanziamenti di operazioni di **costruzione di nuovi o acquisto di impianti** esistenti grandi, complessi e costosi (con o senza migliorie), quali ad esempio centrali elettriche, impianti per le lavorazioni chimiche, miniere, infrastrutture di trasporto, installazioni per l'ambiente, media e telecomunicazioni

# Modelli AIRB per portafogli *specialised lending*: Esempio di approccio simulativo Montecarlo

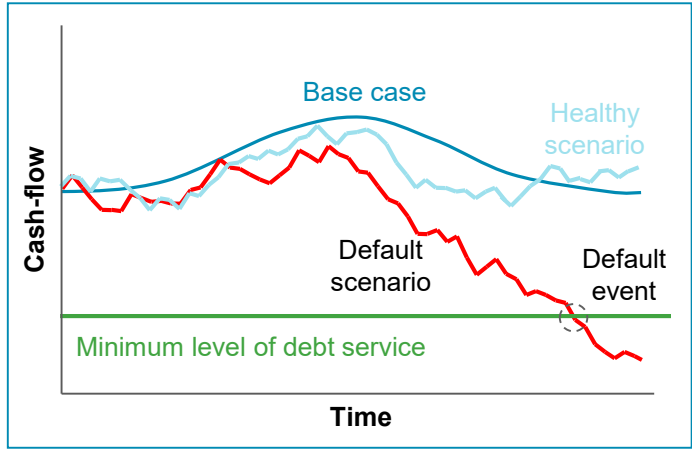


**Condizioni e caratteristiche prestito**

	TRN 1	TRN 2	...	TRN N
Amount	120 MM	230 MM	...	80 MM
Rate	Euribor	Euribor	...	Euribor
Spread	120 bps	160 bps	...	340 bps
Seniority	Senior	Subord	...	HY
Maturity	6 years	4 years	...	2 years
Covenants				

**Scenari di Cash-flow**

- Simulazioni Montecarlo generano un ampio numero di scenari, basati su
  - Generatore di numeri casuali
  - Parametrizzazione stocastica dei cashflow:  $\mu, \sigma$



Scenario	Default?	Anno	Perdita
1	No	-	0.0
2	Yes	4	17.5
3	Yes	10	5.0
		...	
10,000	Yes	2	20.5

PD-Rating

Perdita Attesa

PD    LGD    EAD

▼

Capitale Regolamentare

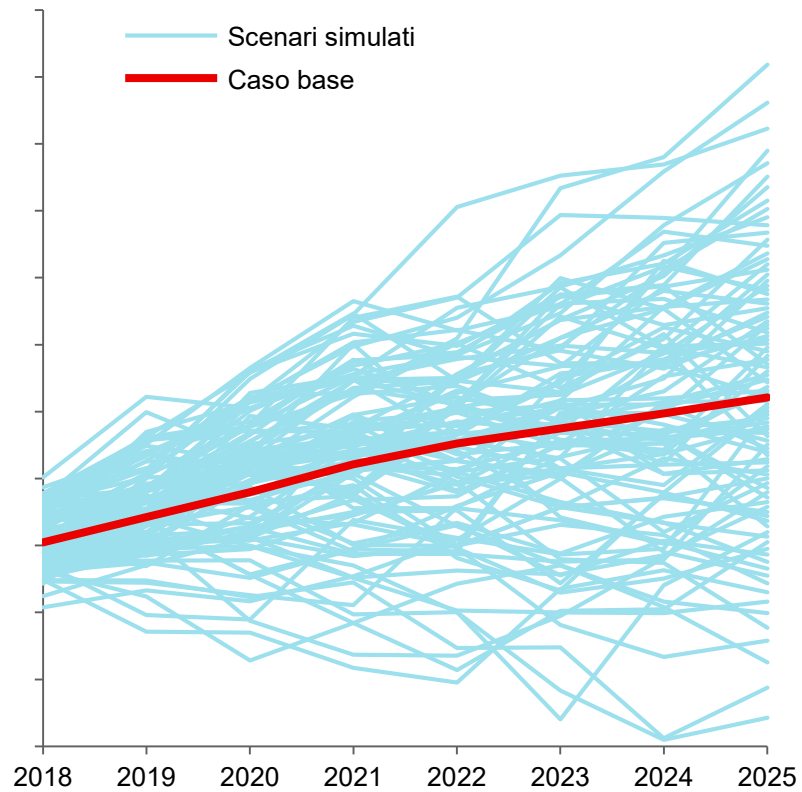
**Modulo qualitativo**



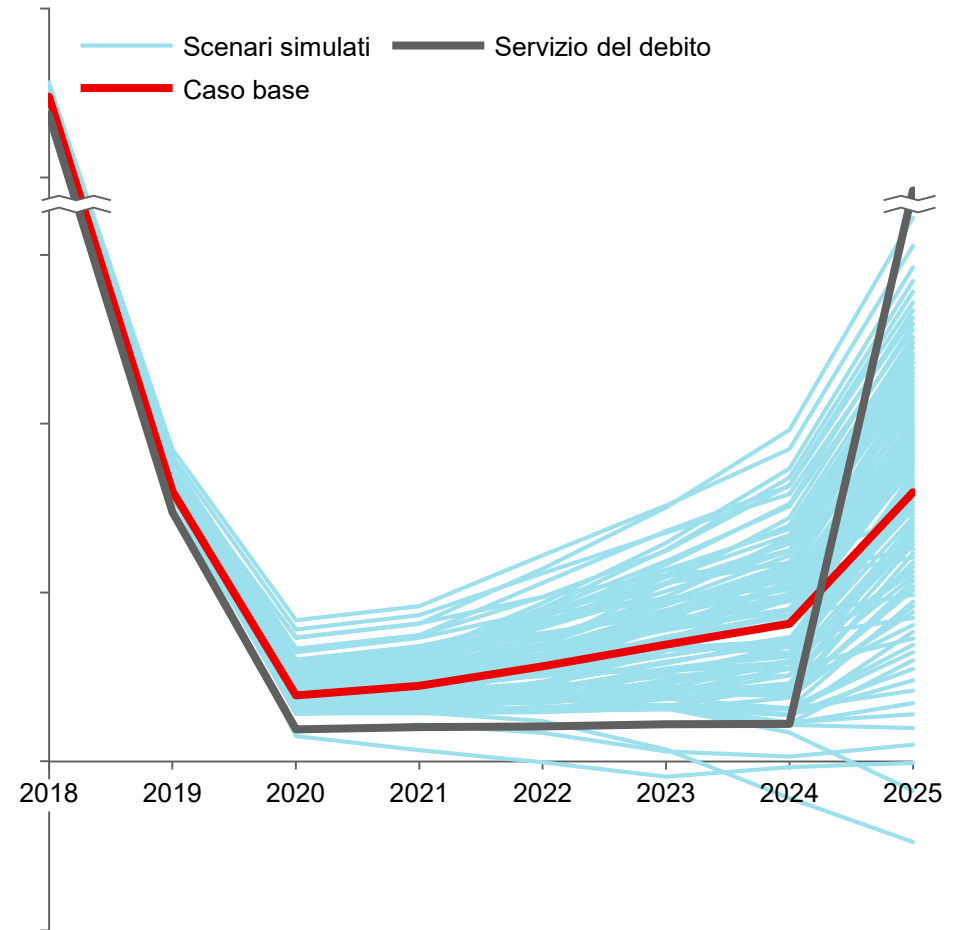
# Scenari generati dal modello

## Evoluzione ricavi e flussi di cassa vs servizio del debito

**Evoluzione Ricavi simulati vs. caso base**  
100,000 simulazioni



**Evoluzione Cashflow pre-servizio del debito simulati vs. caso base e Servizio del debito**  
100,000 simulazioni



# La prossima generazione di Analytics sarà largamente influenzata da tre macro-trend

## BIG DATA

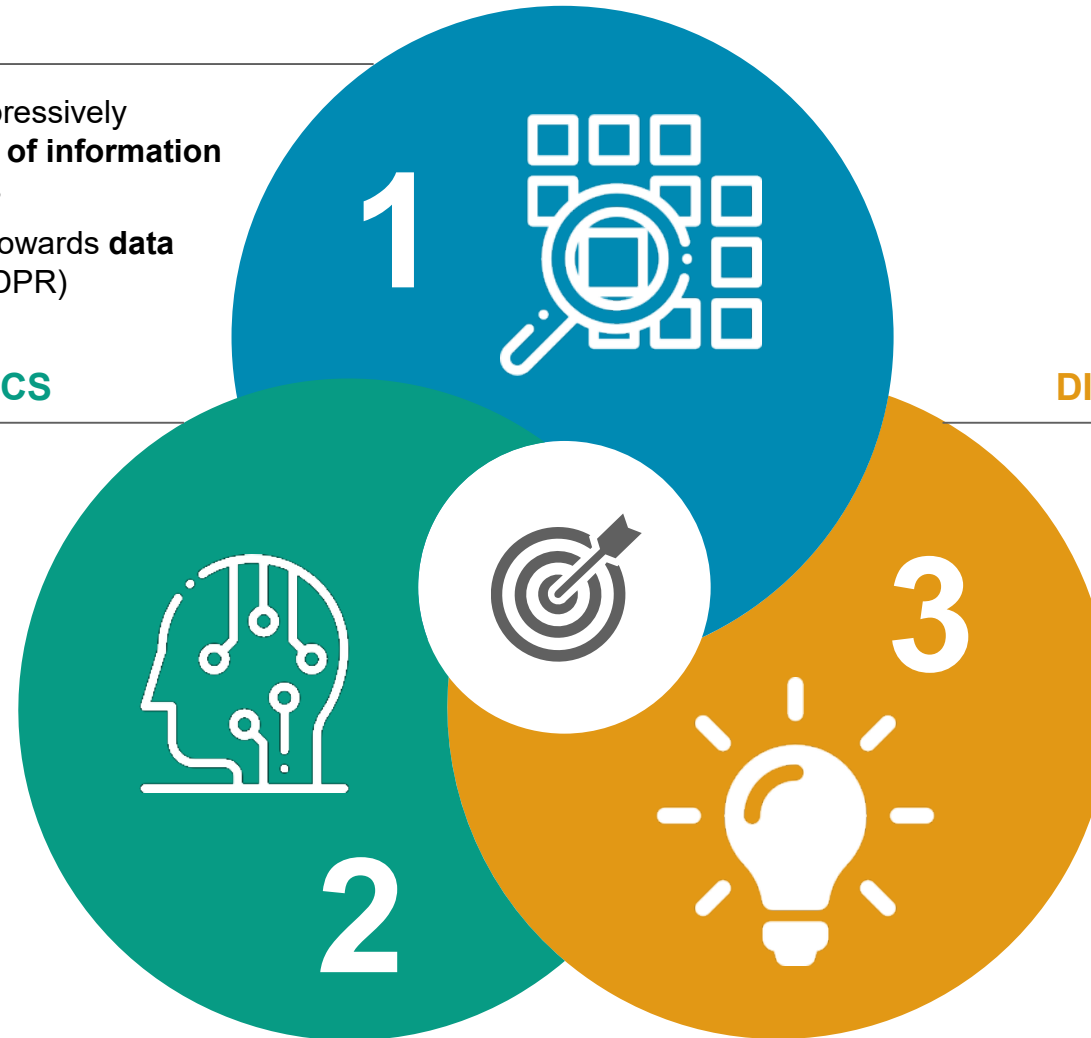
- Digital revolution is impressively increasing the **amount of information** available on customers
- Regulation is pushing towards **data sharing** (PSD2 and GDPR)

## ADVANCE ANALYTICS

- Machine learning/ artificial intelligence techniques are now **commonly available** as more fitting to use large amount and fresh data




## DIGITAL EVERYWHERE

- Increasing expectation in terms of **mobility** and **rapid access** within an omnichannel service model
- Impressive growth in number and quality of **customers touchpoints**



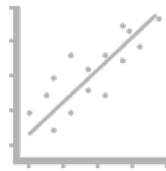


# Utilizziamo algoritmi di machine learning principalmente su per problem di classificazione (es. Probabilità di default) e clustering

#	Types of tasks	Description	Main problems covered (simplified)
1	<b>Supervised learning</b> 	<ul style="list-style-type: none"><li>• Dataset composed of both <b>features</b> and <b>labels</b>, i.e. there is a dependent variable (the desired output)</li><li>• The goal is to <b>construct an estimator</b> which is able to <b>predict the label</b> (i.e. dependent variable) of an object given the set of features</li><li>• The estimator simply maps inputs to outputs</li></ul>	<ul style="list-style-type: none"><li>• <b>Classification</b> problems (e.g. propensity models, churn prediction models, PD models, fraud detection models, ...)</li></ul> <p style="text-align: right; color: red;">Focus next page</p>
2	<b>Unsupervised learning</b> 	<ul style="list-style-type: none"><li>• <b>Data has no labels</b>, i.e. no dependent variable to predict</li><li>• We can think of unsupervised learning as a <b>means of discovering labels from the data itself</b></li><li>• With the learning algorithm we are interested in finding similarities between the objects in question, we leave it on its own to find structure in its input</li><li>• Unsupervised learning can be a goal in itself, e.g. discovering hidden patterns in data</li></ul>	<ul style="list-style-type: none"><li>• <b>Clustering</b> problems (e.g. customer segmentation, branch clustering, ...)</li></ul>
3	<b>Reinforcement learning</b> 	<ul style="list-style-type: none"><li>• A computer program interacts with a dynamic environment in which it must perform a certain goal (finding a balance between exploration (of uncharted territory) and exploitation (of current knowledge))</li><li>• The program is provided feedback in terms of rewards and punishments as it navigates its problem space</li></ul>	<ul style="list-style-type: none"><li>• <b>Artificial Intelligence</b> (e.g. customer interaction bots)</li></ul>

# Supervised learning: esempi di algoritmi di Machine Learning testati per predire la probabilità di default

## Examples of advanced analytics algorithms: classification problems (not exhaustive)



### Generalized linear models

Minimize a loss function that penalizes both classification error and model complexity



### Random Forests

Train an ensemble of large decision trees on random samples of the data and variables, and combine the results



### Gradient Boosted Trees

Train an ensemble of shallow decision trees, overweighting misclassified points as training progresses



### Support Vector Machines

Find a hyperplane that maximizes the margins between positive and negative classes in high dimensions



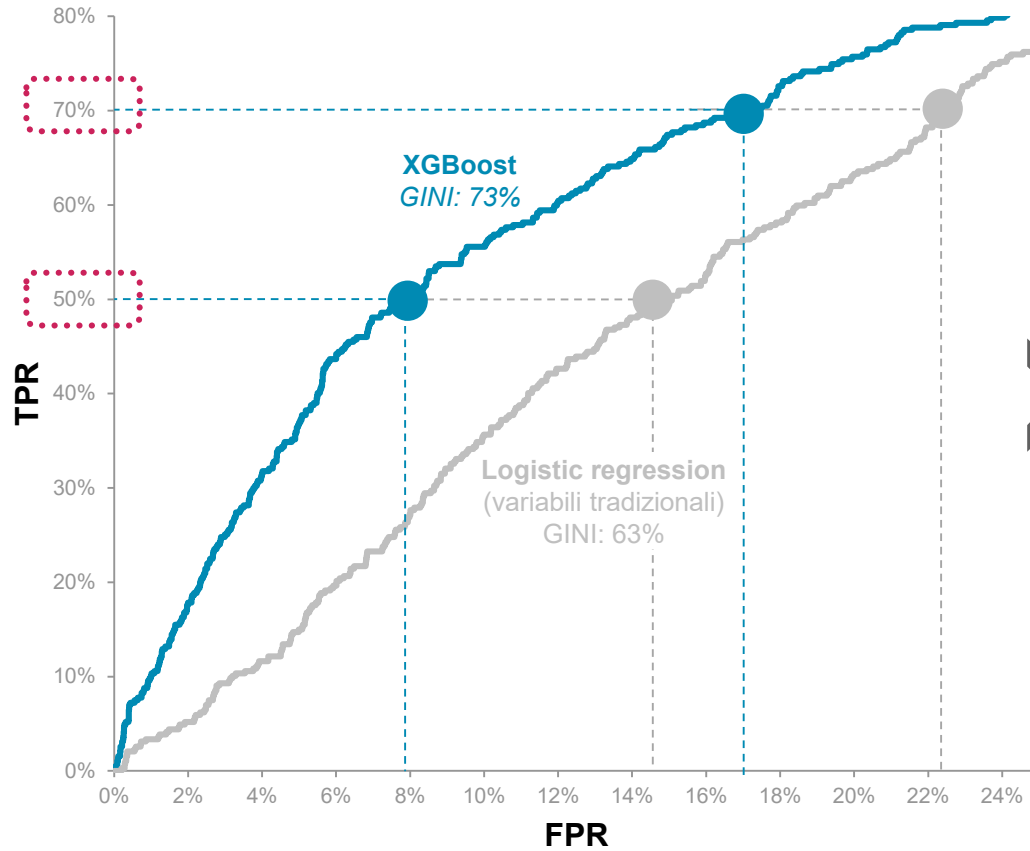
### Deep Learning Networks

Build neural networks with several hidden layers to model non-linear response manifolds

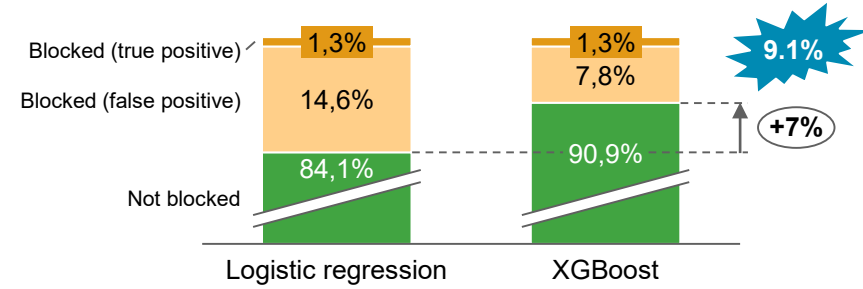
1. Predictive power strongly depends on data (type and amount) leveraged by the model: limited datasets don't allow to fully exploit most sophisticated predictive models

# Esempio in modello anti-frode: gli algoritmi di Machine Learning identificano in modo più accurate le frodi, minimizzando i falsi positivi a parità di pratiche processate

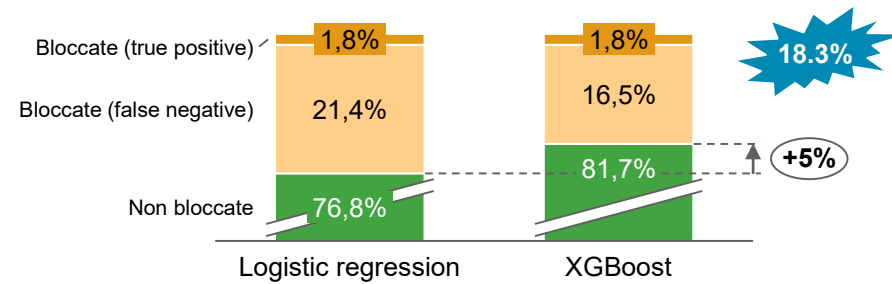
## Performance curves by algorithm Receiving Operators Curve



**TPR: 50%**  
% frauds: 2,6% - frauds not blocked: 1,3%



**TPR: 70%**  
% frauds<sup>1</sup>: 2,6% - frauds not blocked: 0,8%



% blocked applications

Source: Oliver Wyman analysis





### 3. JOIN US

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How do I join?



# We are hiring

## Core Consultant Group (CCG)

### Entry-level consultant

Full-time position, permanent contract

Hiring period: all year round

Who can apply?: We are looking for talented graduates or students at their final year of **Master of Science** with an outstanding academic track record, personal drive, creativity, and strong problem-solving and analytical skills

### Internship

Internship duration: 3 months

Hiring period: all year round

Who can apply? Students in their first year of **Master of Science**

### Recruiting process:

two rounds of Case Study and CV based interviews



Submit your application at:  
[www.oliverwyman.com/careers](http://www.oliverwyman.com/careers)

Include following documents in English:  
CV (with GPA), cover letter, and transcript

Required fluency: Italian and English

Questions? [Recruiting.Italy@oliverwyman.com](mailto:Recruiting.Italy@oliverwyman.com)

# We are hiring

## Financial Services Quantitative Analytics (FSQA)

### Analyst Graduate

Full-time position, permanent contract

Hiring period: all year round

Who can apply?: We are looking for talented, entrepreneurial and ambitious graduates with backgrounds in quantitative disciplines (**Maths, Physics, Computer Science, Engineering, Economics**) with experience using advanced analytics/data manipulation software (**Matlab, Python, R, SAS**).

### Recruiting process:

- Screen interview
- Quantitative test
- Case study interview
- Fit interview



Submit your application at:  
[fsqarecruiting.Italy@oliverwyman.com](mailto:fsqarecruiting.Italy@oliverwyman.com)

Include following documents in English:  
CV (with current GPA and BSc grade), cover letter

Required fluency: Italian and English

Questions? [fsqarecruiting.Italy@oliverwyman.com](mailto:fsqarecruiting.Italy@oliverwyman.com)