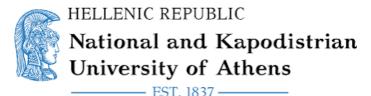
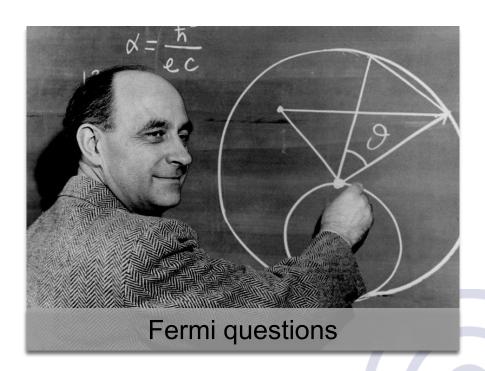
Ass. Prof. Antonis Livieratos
Department of Business Administration, NKUA



# Fermi questions





Enrico Fermi, was famous for being able to make quick estimates with little or no data that at first seemed impossible to answer.

## Case study: Goody's

#### Fermi questions in business

#### **Exercise**



Goody's (Greek fastfood chain) aim to insource its meat production for burgers. What is the capacity that the factory should have on an annual basis?(how many tons of meat should the factory produce annually?)

Develop assumptions using 1 as a reference value e.g. 1, 10, 100, 1,000, and 0.1, 0.01).

#### **Answer**

Number of Goody's restaurants in Greece? **100** 

Clients per Goody's restaurant per day: **1.000** 

Burgers per clients per day: 1

How much does each burger weight: 0,1 kilo (100 grams)

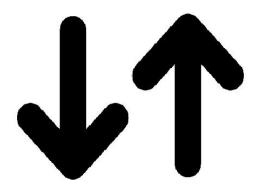
Per day we need 10.000 kilos (10 tons)

10 tons X 365 days = **3.650** tons per **year** 

The calculation of the TAM is the expression in Euros per year of how much you will earn by solving the "problem" you have defined. In order to define the TAM, you have to calculate the (theoretical) total turnover of your business in case all customers buy only from you as if there are no competitors (Market share 100%).

The identification of TAM serves as a quick metric for the underlining potential of a given opportunity—and is a key figure that is important for investors to understand the prospective value of your company.

even multi-billion dollar corporations do not sell to 'everyone'.



- **Top down approach (market/industry reports)** If you intend to sell to a mature and well-defined market (*e.g. toothpaste market*) you may find this number in an industry report referred to as the 'size of the market'.
- **Bottom up (calculation).** Count the number of potential customers you have (e.g. No of oncologists, No of girls going to high school, No of orange juice producers) and, in turn, the annual revenue per customer per year. If you multiply the two numbers, you will get your TAM.



Poor economic growth in various regions, continued effects of widespread disruption caused by restrictions imposed to contain the spread of COVID-19, and additional challenges specific to the global construction industry, notably high construction material costs and labor shortages, have resulted in a cut for forecast growth in global construction output. The downward revision is most evident in Europe and in the US, where the construction industry has deteriorated sharply in recent months, with investor confidence being hit hard by the looming economic recession and the surge in inflation.

Tables

Global Water Heater Market Outlook

4.0% during the period 2023-2028.

**Report Overview** 

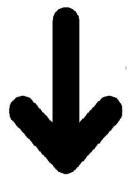
Countries, 2022-2026

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With the conflict in Ukraine set to persist in the coming quarters, the global economy will face severe headwinds amid high energy and commodity prices, supply chain bottlenecks, and worsening investor confidence.

Investment in the infra dutilities sectors remains a major driver of overall construction output growth.





#### **Bottom-up TAM calculation:**

- 1. Identify the target market
- 2. For each target market identify 'typical customers'
- e.g. a target market may have more than one typical customers such as a) large, b) small and c) medium
- 3. Determine the quantity that each typical customer would need and the price at which they would be willing to buy
- 4. Find total value per typical customer
- 5. Multiply the value of a typical customer by the number of customers

If we take over all the canteens in the stadiums of the Czech Republic's First Football League, how much revenue will we have?

Assumtions: The canteens will only offer beers and sausages (one type of each). The Czech league does not have play-offs.











#	Stadium	Capacity	<u>Average</u>	Capacity
1	Fortuna Arena	19.370	17.594	90.8 %
2	epet Arena	18.349	16.953	92.4 %
3	AGC Aréna Na Stínadlech	17.078	5.917	34.7 %
4	Městský stadion - Vitkovice Aréna	15.123	9.055	59.9 %
5	Andrův stadion	12.464	4.188	33.6 %
6	Doosan Aréna	11.700	8.802	<b>75.2</b> %
7	Stadion U Nisy	9.900	3.088	31.2 %
8	Malšovická aréna	9.300	7.467	80.3 %
9	Městský fotbalový stadion Miroslava Valenty	8.000	4.916	61.5 %
10	Fotbalový stadion Střelecký ostrov	6.746	2.922	43.3 %
11	Stadion Letná	6.375	3.580	56.2 %
12	<u>Ďolíček</u>	6.300	5.125	81.4 %
13	<u>Střelnice</u>	6.108	2.586	42.3 %
14	Lokotrans Arena	5.000	2.815	56.3 %
15	<u>Městský stadion</u>	4.833	2.716	56.2 %
16	CFIG Arena	4.620	3.510	76.0 %
	ΜΕΣΟΣ ΟΡΟΣ	10.079	6.327	

30 matchdays

8 games per matchday

TOTAL: 240 games

Average attendance: 6,300 spectators

**Total spectators: 1.5 million spectators** 

Assumptions:

0.5 sausages per spectator

1 beer per spectator

Prices:

Sausage:€4 Beer:€3

Revenue from sausages: €3

million

Revenue from beers: €4.5 million

**TOTAL: €7.5 million** 

If a product has a usage period exceeding one year, then we need to 'translate' the revenue on an annual basis.



World need for cranes is 50.000 vehicles.
The price of each vehicle is 60.000 Euros.

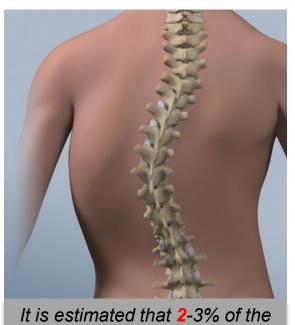
Market size: 50.000 Vehicles X 60.000 Euros

= 3 billion Euros

**HOWEVER**, on average the lifespan of such a vehicle is 10 years.

As a result, the TAM on an annual basis is 3 bill. Euros/10 years= 300 million Euros.

Our products is addressing people suffering from scoliosis at the age 5 to 15. Estimated price 150 Euros



It is estimated that 2-3% of the
population is suffering from
scoliosis

	% of population at the age 5-15	Total population	Population age 5-15
Europe 27	4,8%	447 mil.	21,34 mil.
USA	4,6%	328 mil.	16,10 mil.
Japan	6,6%	126 mil.	8,35 mil.
TOTAL	45,79 mil.		

TAM in number of users: 45,79 mil. X 2% = 910.000

TAM in turnover: 910.000 χιλ. X 150 Euros = 136 mil. Euros TAM on an annual basis is:
136 mil. Euros/ 10
years
=13,6 mil. Euros

## **Case study: Wine analysis equipment**

Estimated (future) price: 20,000 Euros

Target markets: Wineries and wine

laboratories

Expected lifetime: 10 years





"Master of Wine" with extensive knowledge of the Greek and international markets

"...only wineries with a turnover exceeding 500 thousand would have an in-house oenological laboratory and would be interested..."

"...approximately one in four oenological laboratories would be interested..."

"...the (mature) wine markets have a similar structure to the Greek market..."

#### **Case study: Wine analysis equipment**

#### **Greek Market**

- Wine production: 3.1 million hectoliters
- 680 wineries, out of which 60 have a turnover exceeding 500 thousand Euros.
- 80 oenological laboratories

	Wine production in mil. hl
Greece	3,1
France	45,29
Italy	48,58
Spain	36,09
USA	19,62
Argentina	16,25
Australia	11,24
S. Africa	9,22
Chile	8,84
Russia	8,24
Germany	7,19
Portugal	6,76
TOTAL 12	220,42

#### Size of the Greek market

60 wineries

20 wine laboratories

**TOTAL 80 potential clients** 

80 clients X 20.000 Euro = 1,6mil. Euro

Total Addressable Market (TAM) for the 12 biggest winemaking countries.

Assumption: The global market resembles the structure of the Greek market.

Greek market: 3.1 million hectoliters (hl) wine production

=> TAM: 1.6 million Euros

12 countries: 220.42 million hectoliters (hl) wine

production => TAM: 113 million Euros/10 years=11,3

million Euros