The Tax Burden
of the Hotel Sector

Introduction

The purpose of this study is to assess the tax burden of the hotel sector.

To achieve this, we break down the production cost of the final product in the hotel sector into the various cost categories required directly and indirectly for the production of hotel services.

The estimates were made using Input-Output Analysis methods and data from the Supply and Use Tables of the Greek economy.

The analysis is conducted using **data from the last pre-COVID-19 available year (2019)**, as well as from 2010, to explore the temporal evolution of the structure of hotel costs.

Finally, we compare our findings for the hotel industry with the corresponding average figures of other sectors of the Greek economy.

Methodology Summary

We begin with the national accounting identity that describes the monetary side of the Supply and Use Tables:

$$\mathbf{e}^{\mathrm{T}}\mathbf{M} = \mathbf{e}^{\mathrm{T}}\mathbf{U} + \mathbf{v}^{\mathrm{T}} \qquad\qquad (1)$$

where $\mathbf{M}$ is the economy's production matrix, $\mathbf{U}$ is the economy's use matrix and $\mathbf{v}^{\mathrm{T}}$ is the value-added vector by sector.

From equation (1) we derive:

$$\mathbf{e}^{\mathrm{T}} = \mathbf{v}^{\mathrm{T}}[\mathbf{M} - \mathbf{U}]^{-1} \qquad\qquad (2)$$

where $[\mathbf{M} - \mathbf{U}]^{-1}$ represents the "generalized Leontief inverse matrix". The right side of equation (2) provides the direct and indirect requirements for value added necessary to produce one unit of the final product for each sector. Therefore, equation (2) decomposes the production cost of the final product in each sector into the costs of the production factors used for its production.

Methodology Summary

Next, let $\mathbf{C}$ be a matrix, with dimensions $k \times n$, where k is the number of cost categories that make up the total cost of each product (e.g., wages, taxes, depreciation, etc.), and n is the number of the economy sectors. Each element of matrix $\mathbf{C}$ represents the direct requirements of the various cost categories for the production of one unit of each product. Therefore, the following holds:

$$\mathbf{e}^{\mathrm{T}}\mathbf{C} = \mathbf{v}^{\mathrm{T}} \tag{3}$$

Taking into account equation (3), equation (2) becomes:

$$\mathbf{e}^{\mathrm{T}} = \mathbf{e}^{\mathrm{T}}\mathbf{C}[\mathbf{M} - \mathbf{U}]^{-1} \tag{4}$$

or

$$\mathbf{e}^{\mathrm{T}} = \mathbf{e}^{\mathrm{T}}\mathbf{D} \tag{5}$$

where $\mathbf{D} \equiv \mathbf{C}[\mathbf{M} - \mathbf{U}]^{-1}$.

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Methodology Summary

$$\mathbf{D} \equiv \mathbf{C}[\mathbf{M} - \mathbf{U}]^{-1}$$

$\mathbf{D}$ is a $k \times n$ matrix where each element represents the direct and indirect contribution of the various cost categories to the Structure of **production costs for the final products produced** in the economy.

From the Supply and Use Tables of the Greek economy, we can distinguish six cost categories that are involved in the **production process**.

COST CATEGORIES
Net taxes
Employer's Social Contributions
Wages
Depreciation
Imports
Operating surplus

Hotel Product Cost by Cost Category

Table 1. Hotel Product Cost Decomposition by Cost Category

COST CATEGORIES	2010		2019	
	Hotel Sector	Total Economy	Hotel Sector	Total Economy
Net taxes	15,6%	9,0%	19,1%	10,2%
Employer's Contributions	4,3%	5,6%	4,4%	5,4%
Wages	20,4%	21,8%	19,6%	21,1%
Depreciation	8,1%	12,0%	5,7%	9,0%
Imports	13,7%	28,8%	17,2%	32,7%
Operating surplus	37,9%	22,9%	33,9%	21,6%

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Key Findings on the Tax Burden of the Hotel Product

Focusing on the tax burden of the hotel sector, the above table shows the following:

- Net taxes account for 19.1% of the production cost of the final hotel product, having increased significantly compared to the year 2010, when they constituted 15.6% of the production cost of the hotel product.

- Although the share of taxes in the production cost of final products has increased across the entire Greek economy, the increase in the share of taxes in the production cost of the hotel sector's product between 2010 and 2019 is significantly higher (+22.4%) compared to the average increase in other sectors of the economy (+13.3%).

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Key Findings on the Tax Burden of the Hotel Product

- Overall, the share of net taxes in the production cost of the hotel product is 87.3% higher compared to the share of taxes in the production cost of products in the rest of the economy. The corresponding deviation in 2010 was 73.3%, indicating an increase of 14 percentage points over the last decade.

- The sum of tax and social security burdens (net taxes plus employer contributions) constitutes nearly 1/4 of the production cost of the hotel product (23.5%), having increased significantly compared to 2010, when it accounted for nearly 1/5 of the production cost of the hotel product (19.9%). The corresponding burden for the rest of the Greek economy is at 15.6%, having increased by only 1 percentage point compared to 2010, when it represented 14.6% of the production cost of final products in the Greek economy.
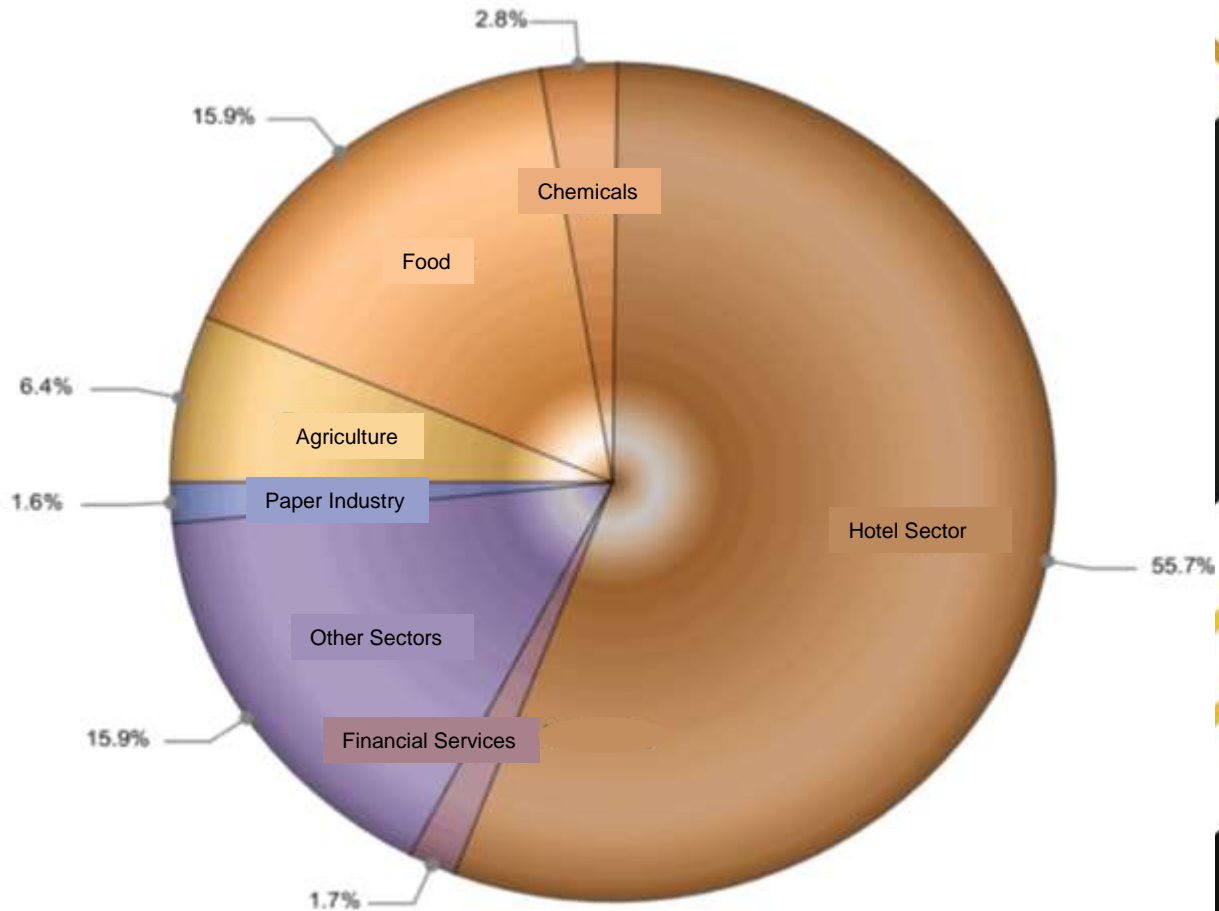
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Cost Structure of the Final Hotel Product

The above findings regarding the decomposition of the production cost of the final product in the hotel sector into various cost categories refer both to **direct** costs originating from the hotel sector and to **indirect** costs originating from other sectors of the Greek economy and are incorporated into the rate of the hotel product through the intermediate inputs used by the hotel sector.

In Figures 1-2 below, the production cost of the final hotel product is decomposed into the sectors of cost origin associated with the hotel product.
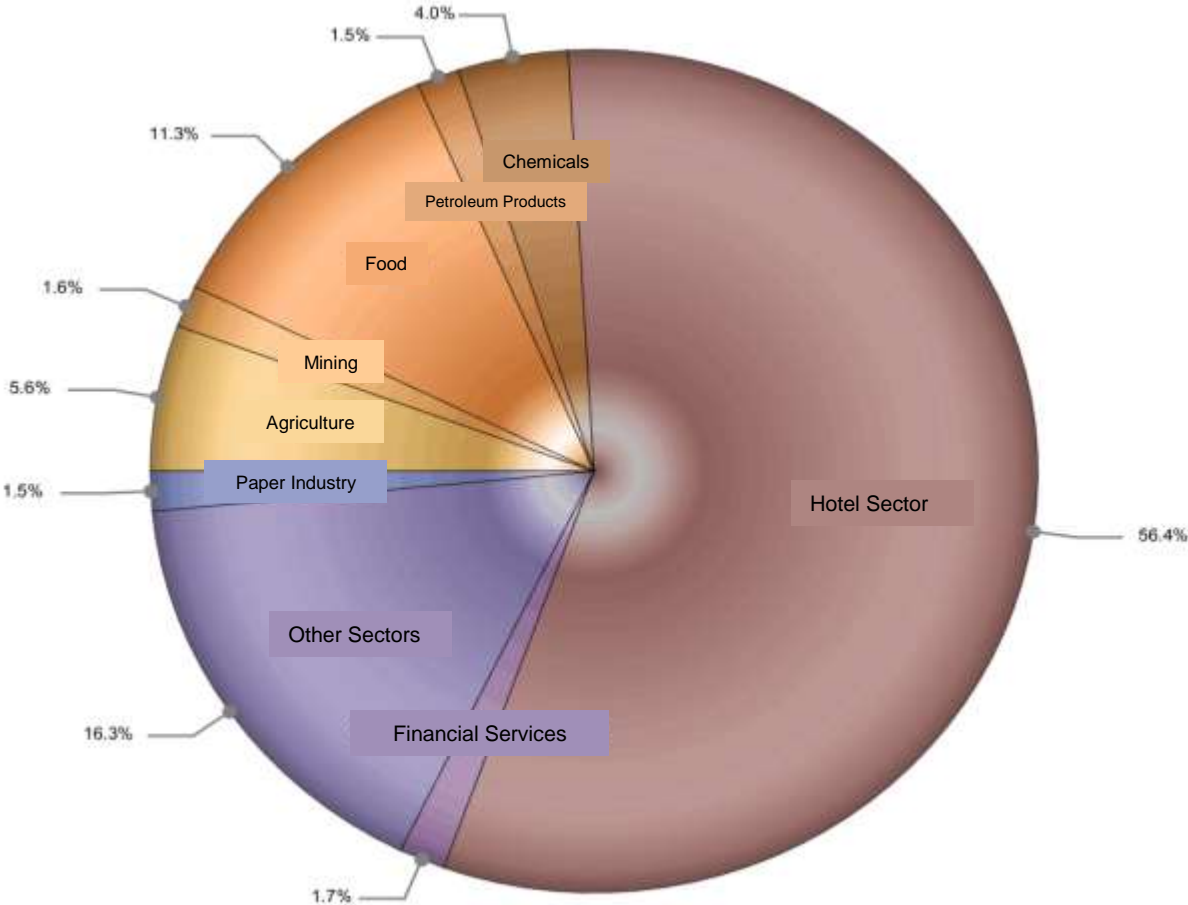
Decomposition of the Production Cost of the Final Hotel Product by Sector of Origin

Figure 1.
Hotel Product Cost
Source Sectors, **2010**

2.8%

15.9%

Chemicals

Food

6.4%

Agriculture

1.6%

Paper Industry

Hotel Sector

55.7%

Other Sectors

Financial Services

15.9%

1.7%

Decomposition of the Production Cost of the Final Hotel Product by Sector of Origin

Figure 2.
Hotel Product Cost Source Sectors, **2019**

...e income ...ed by the ...of the hotel ...tributed to ...ectors.

4.0%
1.5%
11.3%
Chemicals
Petroleum Products
Food
1.6%
Mining
5.6%
Agriculture
1.5%
Paper Industry
Hotel Sector
56.4%
Other Sectors
16.3%
Financial Services
1.7%

Key Findings from the Comparative Analysis of Hotel Product Cost Structure

- The hotel sector consistently **shows strong connection** with other sectors of the Greek economy, as approximately **44%** of the cost of hotel product originates from sectors outside the hotel sector.

- The sectors with which the hotel sector demonstrates the strongest connection are the **Food**, **Agriculture**, and **Chemicals** sectors.

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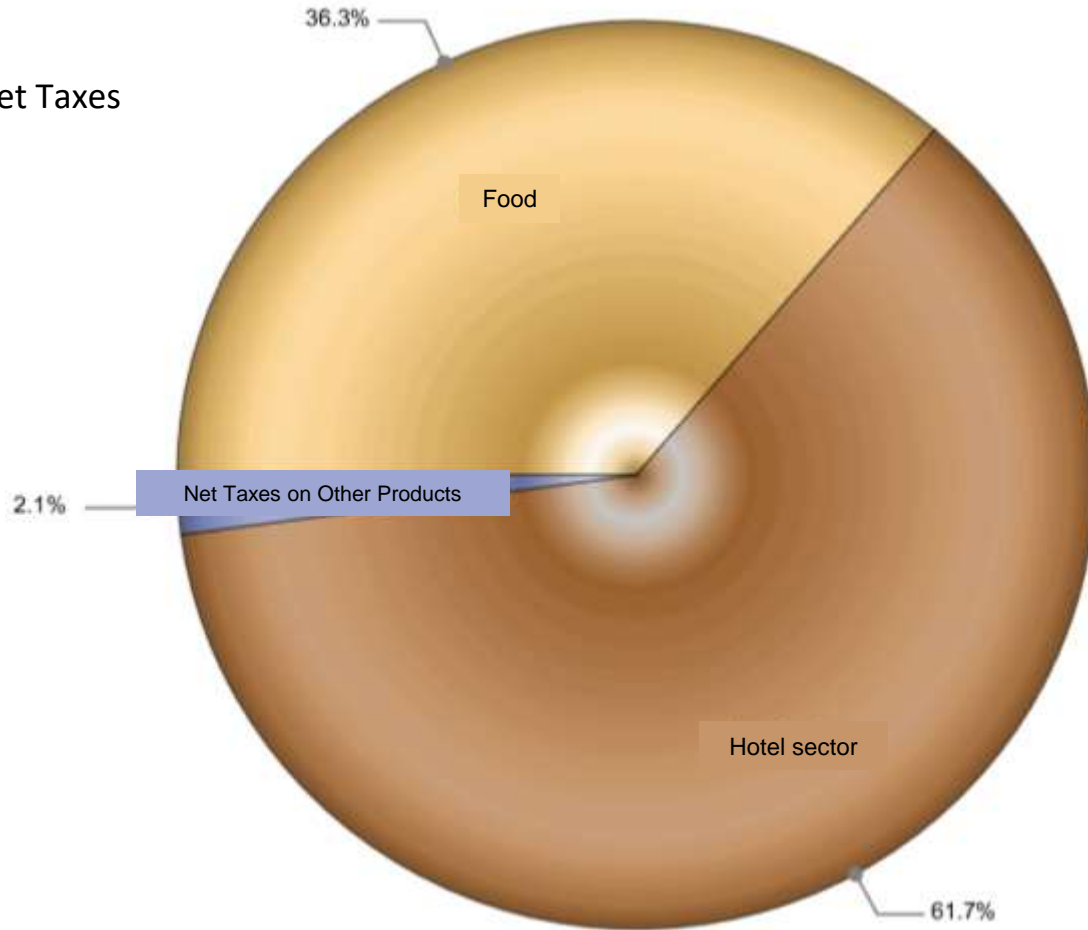**Decomposition of Cost into Net Taxes on the Final Rate of the Hotel Product**

Approximately 44% of the income generated by the hotel sector is distributed to sectors other than the hotel sector.

This **contribution of the hotel sector** to income generating across the entire economy **is significantly higher than the corresponding contribution of other sectors**. On average, other sectors of the Greek economy distribute 28% of the income they generate to other sectors of the economy.

Figures 3-4 below illustrate the decomposition of net taxes that burden the cost of the hotel product by sector of origin.

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Decomposition of Costs into Net Taxes on the Hotel Product by Sector of Origin

Figure 3.
Sectors of Origin of Net Taxes
on the Hotel Product,
2010

- 36.3% — Food
- 2.1% — Net Taxes on Other Products
- 61.7% — Hotel sector

Decomposition of Costs into Net Taxes on the Hotel Product by Sector of Origin

Figure 4.
Sectors of Origin
Taxes on the Hot
Product,
2019

19.5%

Food

Net Taxes on Other Products

7.9%

Hotel sector

72.6%
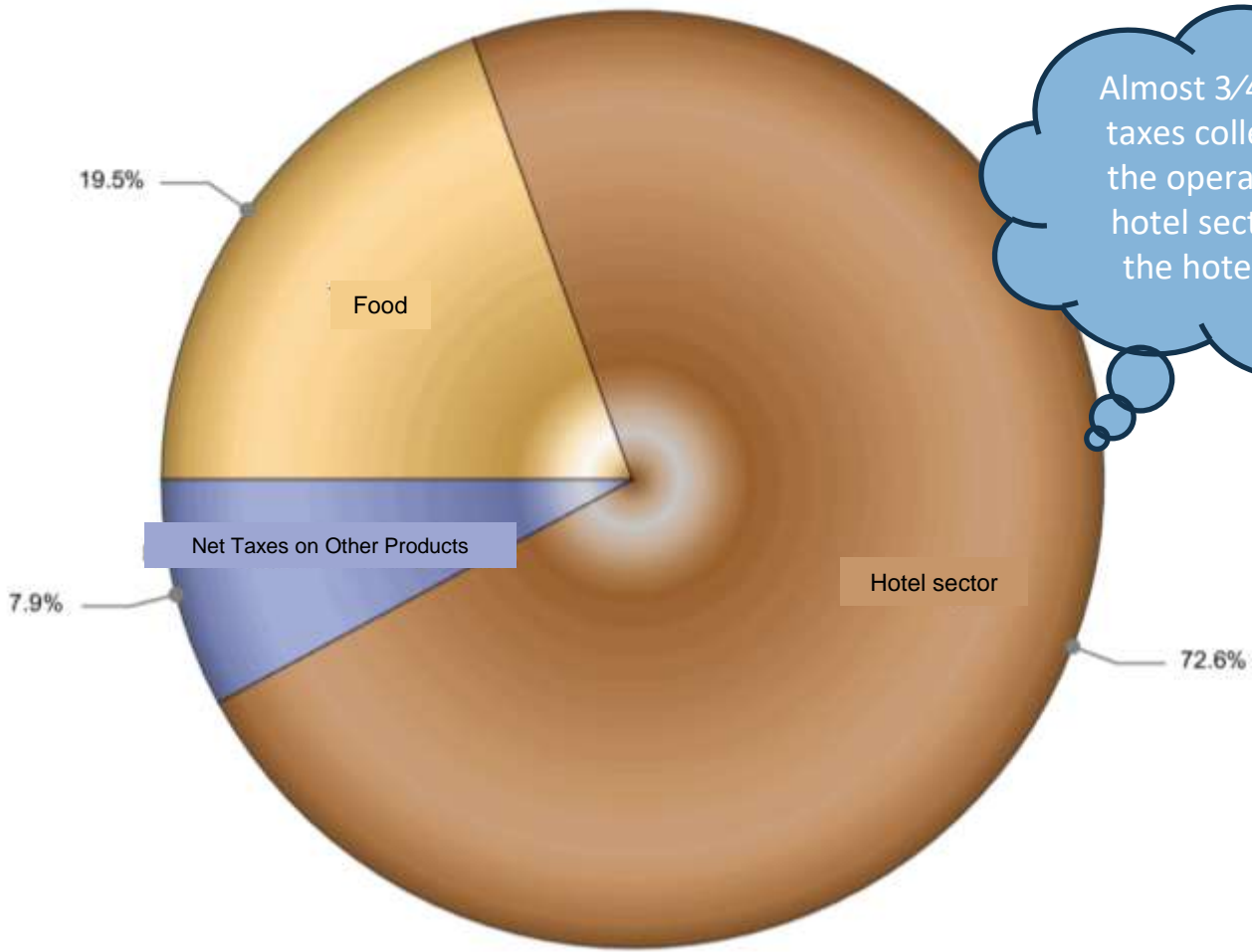
Almost 3⁄4 of the net taxes collected from the operation of the hotel sector burden the hotel product.

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Key Findings from the Comparative Analysis of the Origin of Net Taxes on the Hotel Product

- Nearly $^3/_4$ **(72.6%)** of the direct and indirect net taxes that burden the production cost of the hotel product are taxes imposed directly on the hotel product itself, while approximately $^1/_5$ **(19.5%)** of these taxes originate from taxes on food used as intermediate inputs by the hotel sector.

- **The above disproportionate tax burden on the hotel product has significantly intensified in recent years**, as the share of net taxes on the hotel product in the total net taxes burdening the cost of the hotel product **was 61.7% in 2010, while in 2019, this share increased to 72.6%.**

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Summary of Conclusions

- ✓ **The total net taxes** collected from the hotel operation have historically been significantly higher than the taxes collected, on average, from other sectors of the Greek economy, while **they have also increased significantly in recent years**.
- ✓ Furthermore, the taxes collected from the operation of the hotel industry **burden the hotel product itself to a disproportionate extent**, thus creating a situation of **over-taxation of the sector**.

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