



# 8th meeting of the Committee on Statistics and Macroeconomic Analysis of Tourism

» The Portuguese TSA: Analysis of volume measures

National Statistical Institute

Macroeconomic Statistics Department/Unit for Satellite Accounts

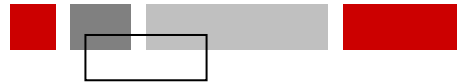
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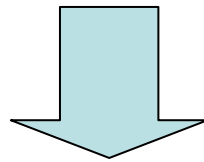
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 March 26-28, 2007  
Lisbon, Portugal

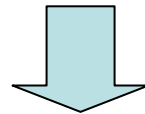
# The Portuguese TSA – Analysis of volume measures



**On a first stage:** we have compiled the main tables for TSA at current prices and associated employment. We are still missing some tables, namely consumption of outbound tourism, investment of characteristic industries, collective consumption but we can measure tourism expenditure, productivity, all in current prices.



What's next?



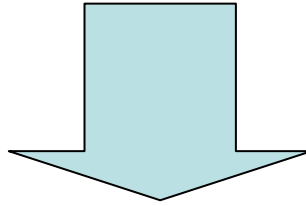
We know how much tourists spend every year and in nominal variation but how much did it really grow up?

Do we have enough information to assess the quality of the data we produce?

## The Portuguese TSA – Analysis of volume measures

- For purposes of economic analysis it is important to know if tourism expenditure is increasing because we are offering more or because we are offering the same or even less and in the end we just have high prices. This is an important question for policy-making.
- When governments want to know in which way they should promote development of tourism, which touristic industries should be more incentivated, it is very important to have answers to these questions.
- Also users need to have information to measure productivity growth and nominal changes don't provide these information.

# The Portuguese TSA – Analysis of volume measures



Nominal changes do not provide an overview of the items that have contributed to the variation, in terms of whether it is a change in prices or a change in the volumes or both and in which extent. This means that in a nominal change it is possible to decompose the value into “price effect” and “volume effect”.

Therefore having nominal changes for the TSA variables only allow to measure structures of products, structures of industries, ratios in relation to GDP, for instance, but no answers for the issues mentioned above.

# The Portuguese TSA – Analysis of volume measures

The purpose of this presentation is to call out the attention to the need of having price and volume measures in the TSA variables to measure volume growth, productivity changes.

Price and volume measures would enable to know how much a nominal increase in the touristic expenditure is due to an increase in our volume or not.

The users want to have TSA at constant prices to meet their needs.

## The Portuguese TSA – Analysis of volume measures

To have TSA at constant prices mean to split nominal changes into price changes and volume changes.

Based on the identity,

$$\text{Value} = \text{price} \times \text{quantity}$$

$$\text{Value index} = \text{Price index} \times \text{Quantity Index}$$

## The Portuguese TSA – Analysis of volume measures

- The most common indices used in the National Accounts and that can also be applied to the Tourism Satellite Accounts are Laspeyres, Paasche and Fisher, each for price and volumes.
  - Laspeyres uses weighters of a base year.
  - Paasche uses weighters of a current year.
  - Fisher is the geometric average of Laspeyres and Paasche, combining the weighters of two periods.
- Fisher indices have the advantage of reducing bias because the weighters are more representative for the two periods. However Fisher indices are non-additive and this is a problem for estimating values at constant prices in a balancing procedure.
- On the other hand Laspeyres volume indices have the advantage of being additive which is very important for balancing.

## The Portuguese TSA – Analysis of volume measures

We want to measure volume growth in the Portuguese TSA. Therefore we want to estimate deflators of volume indices to calculate TSA variables at prices of previous year.

We'll apply Laspeyres Volume Indices and Paasche Price Indices.

Because some characteristic industries and characteristic products represent 90% or more of the same industries and products of the National Accounts, the same deflators can be used while the volume measures can be implicitly derived. Whilst the volume in the TSA is the same when the TSA figure represent 100%, it may not be the same when represent less.



## The Portuguese TSA – Analysis of volume measures

- In this presentation no deflators or volume indices were calculated but an analysis to which extent the deflators of the National Accounts could be used and which couldn't. The analysis only covered characteristics activities and products and the connected products that represent 100% of the same product in the National Accounts. In cases where we applied deflators of the National Accounts we have derived implicitly volume indices.
- This work must be done at the most detailed level of products and industries in order to apply elementary indices and then aggregate.
- National Accounts have available a detail 426 products and 149 industries. In many situations we can use the same deflators.
- We have disaggregated the TSA classification in order to meet the same detail of products and industries as in the National Accounts.

## The Portuguese TSA – Analysis of volume measures

- All the products and industries that are included in each category were selected and its representativity checked in the respective variable and product detailed classification.
- It was decided to test the products that represented 80% or more and those representing between 60% and 79%, assuming that there were no changes in quality. For instance touristic internal consumption of restaurants represent in all the series around 28% of the total of final consumption and therefore we can not use the same deflators of the final consumption of the National Accounts because we need volume weighters for tourists.
- Business tourism was compared to intermediate consumption and the same procedure was followed.
- For the non-market output (non-monetary component) we feel the need to explore more source because when we have applied the input method we have obtained biased volume indices.

## The Portuguese TSA – Analysis of volume measures

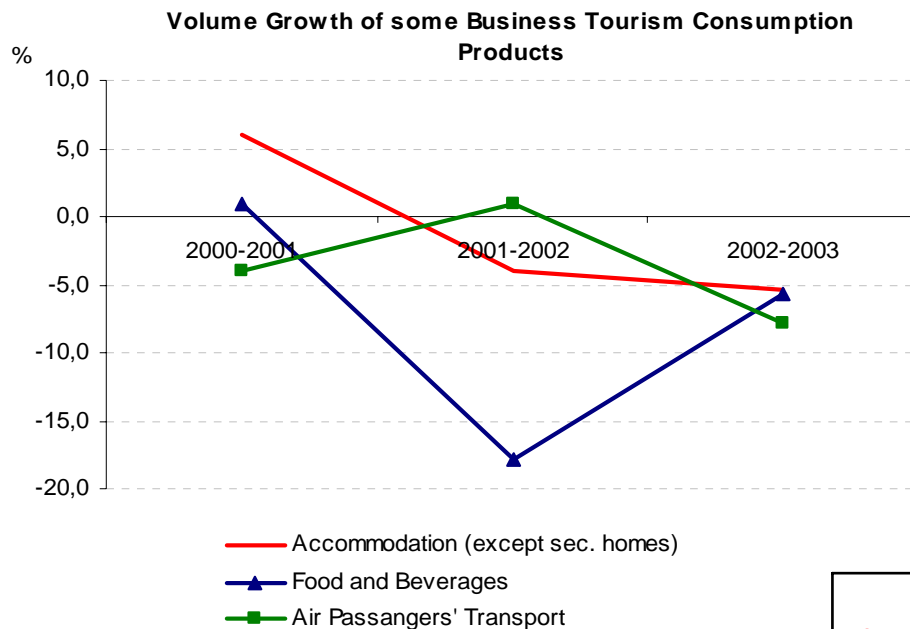
- The main advantages of this study are:
  - One conclusion to be taken is that a lot that has been calculated in the National Accounts can be used, especially in the characteristics, industries and products, and a couple of connected with quality and saving a lot of work. The deflators that have been applied and that were considered as consistent and useful in the future, provided consistent results with National Accounts and also with tourism indicators.
  - This work allows the assessment of the quality of the estimates in in the characteristics, industries and products, especially the touristic output.

## The Portuguese TSA – Analysis of volume measures

- The main limitations of this study are:
  - It is not possible to use National Accounts for some of the characteristics, industries and products (especially in the tourism component), for almost the connected and for the tourism component of the non-specific which requires a big investment in searching new sources and find a way of calculating deflators. An alternative is to invest mainly in the specific industries and specific products;
  - The problem increases in calculating deflators, from the national accounts, for characteristics industries, since the most detailed working level is 149 industries. However for some industries we think it can be used. The problem also covers intermediate consumption

# Some results of measuring Volume growth

# Business Tourism Consumption

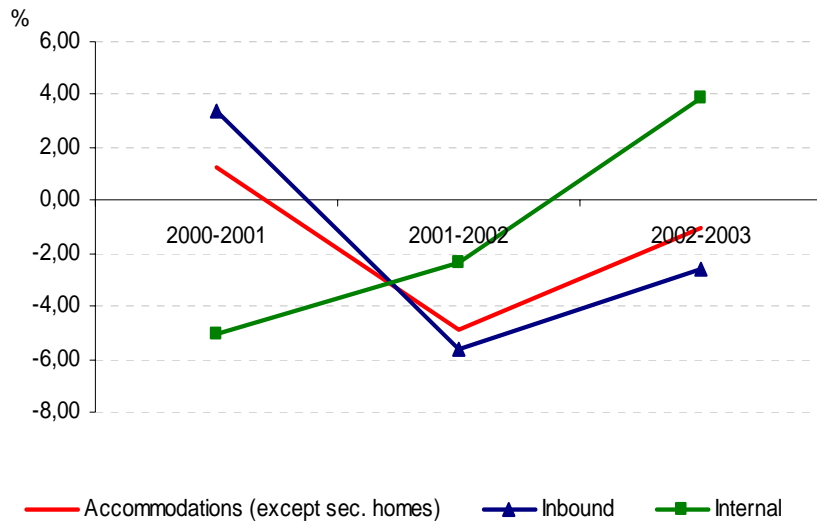


	Volume Indexes		
	2000-2001	2001-2002	2002-2003
Accommodations services (except sec. homes)	106,0	96,0	94,6
Food and Beverages	100,9	82,2	94,4
Air Passengers Transports	96,0	100,9	92,2

# Q1 + Q2 – Accommodation Services



Volume Growth of Accommodation Services except Second Homes

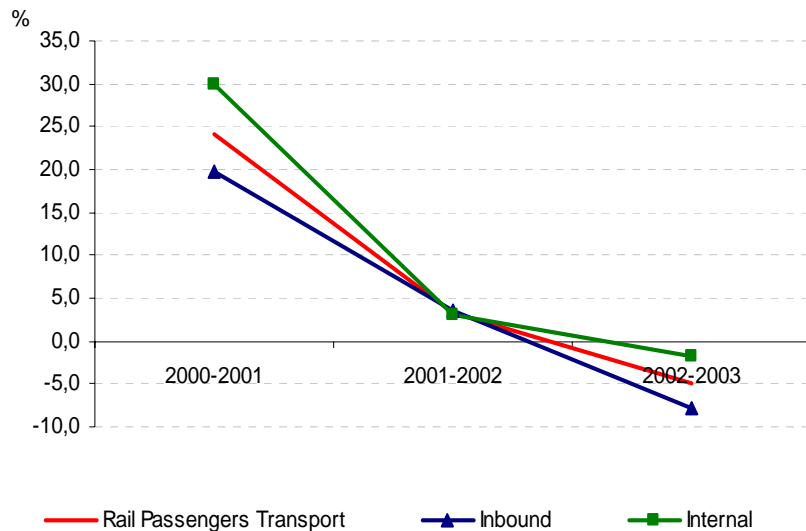


	Volume Indexes		
	2000-2001	2001-2002	2002-2003
<b>Accommodations (except sec. homes)</b>	<b>101,24</b>	<b>95,13</b>	<b>98,96</b>
Inbound	103,37	94,33	97,39
Internal	94,96	97,68	103,85

# Q1 + Q2 – Rail Passengers Transportation Services



Volume Growth of Rail Passengers Transport



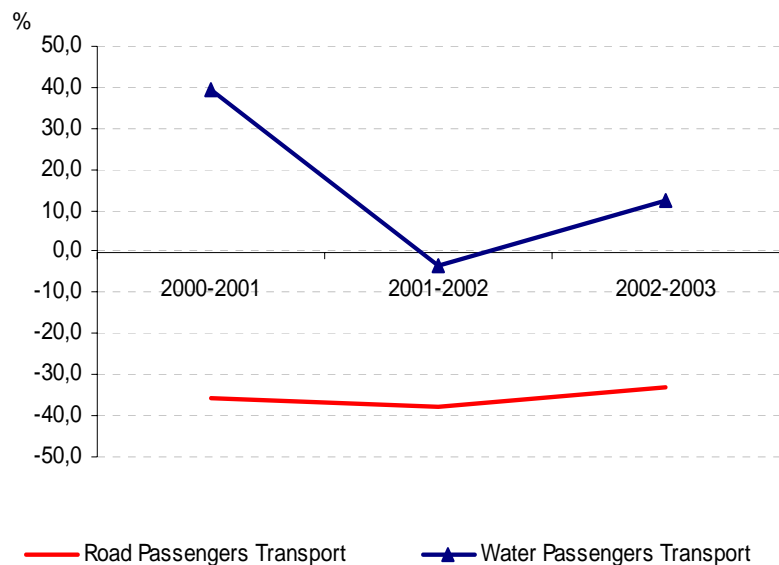
	Volume Indexes		
	2000-2001	2001-2002	2002-2003
<b>Rail Passengers Transport</b>	<b>124,08</b>	<b>103,35</b>	<b>94,97</b>
Inbound	119,74	103,57	92,28
Internal	129,87	103,08	98,30



# Q1 + Q2 – Road and Water Passengers Transportation Services



Volume Growth of Road and Water Passengers Transport

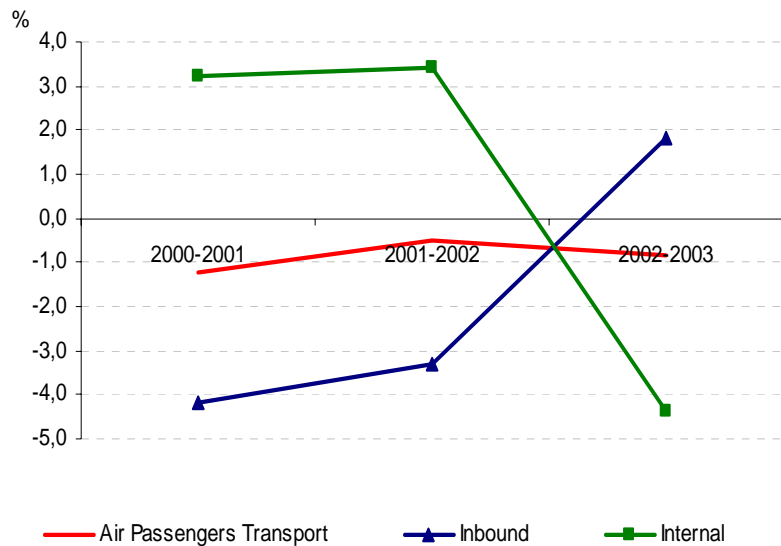


	Volume Indexes		
	2000-2001	2001-2002	2002-2003
<b>Road Passengers Transport</b>	64,03	62,21	66,68
<b>Water Passengers Transport</b>	139,33	96,65	112,54

# Q1 + Q2 – Air Passengers Transportation Services

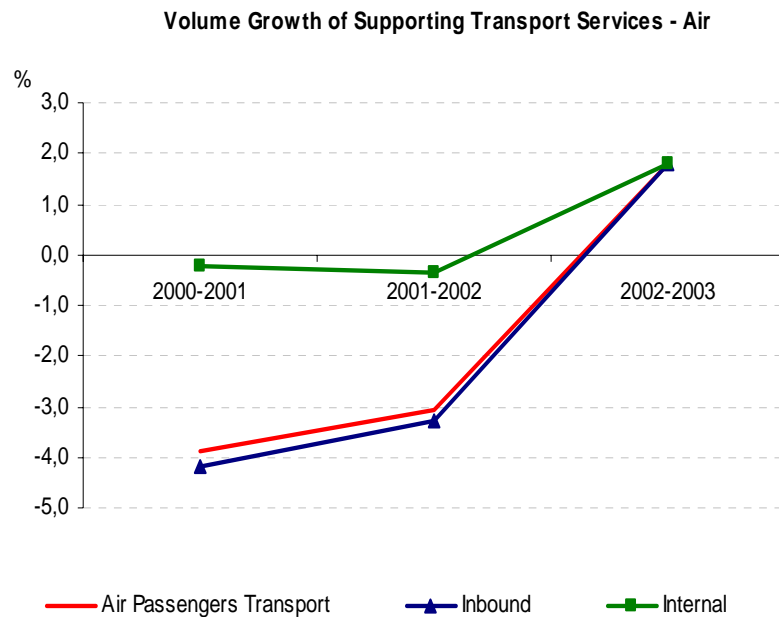


Volume Growth of Air Passengers Transport



	Volume Indexes		
	2000-2001	2001-2002	2002-2003
<b>Air Passengers Transport</b>	<b>98,76</b>	<b>99,48</b>	<b>99,15</b>
Inbound	95,82	96,71	101,80
Internal	103,24	103,40	95,64

# Q1 + Q2 – Supporting Transport Services – Air

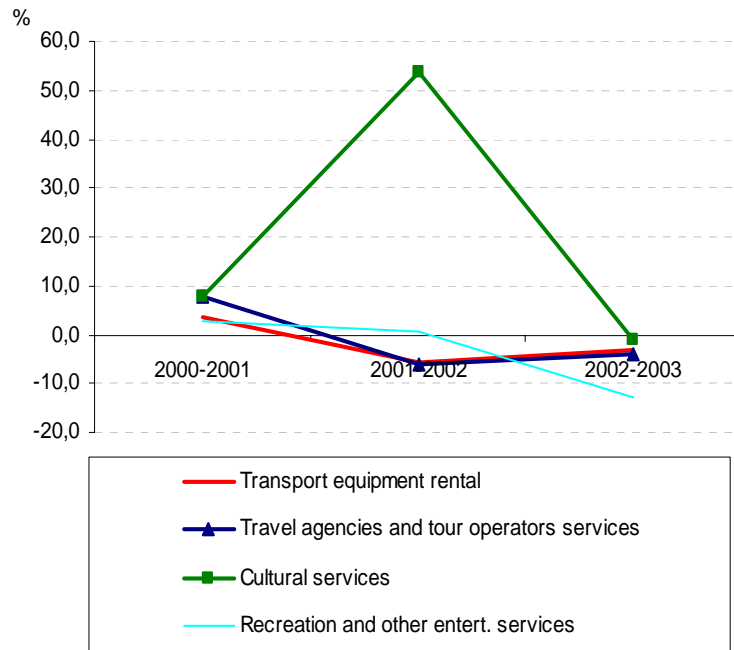


	Volume Indexes		
	2000-2001	2001-2002	2002-2003
<b>Supporting Transport Services - Air</b>	<b>96,13</b>	<b>96,94</b>	<b>101,80</b>
Inbound	95,82	96,71	101,80
Internal	99,79	99,66	101,79

# Q1 + Q2 – Travel Agencies, Rent, Cultural and Recreational Services



Volume Growth of Travel Agencies, rental, Cultural and Recreational Services

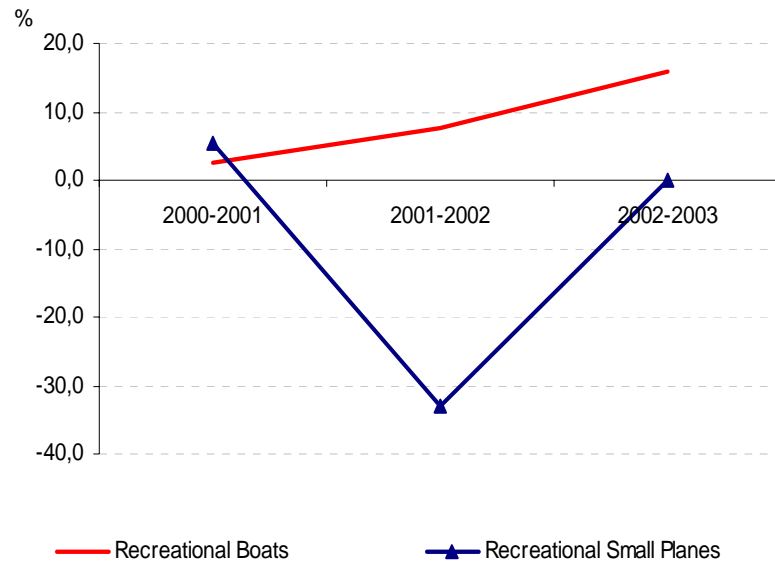


	Volume Indexes		
	2000-2001	2001-2002	2002-2003
Transport equipment rental	103,59	94,44	96,64
Travel agencies and tour operators services	107,80	94,09	96,14
Cultural services	107,73	153,58	99,02
Recreation and other entert. services	102,80	100,80	87,35

# Q1 + Q2 – Connected



Volume Growth of some connected Products

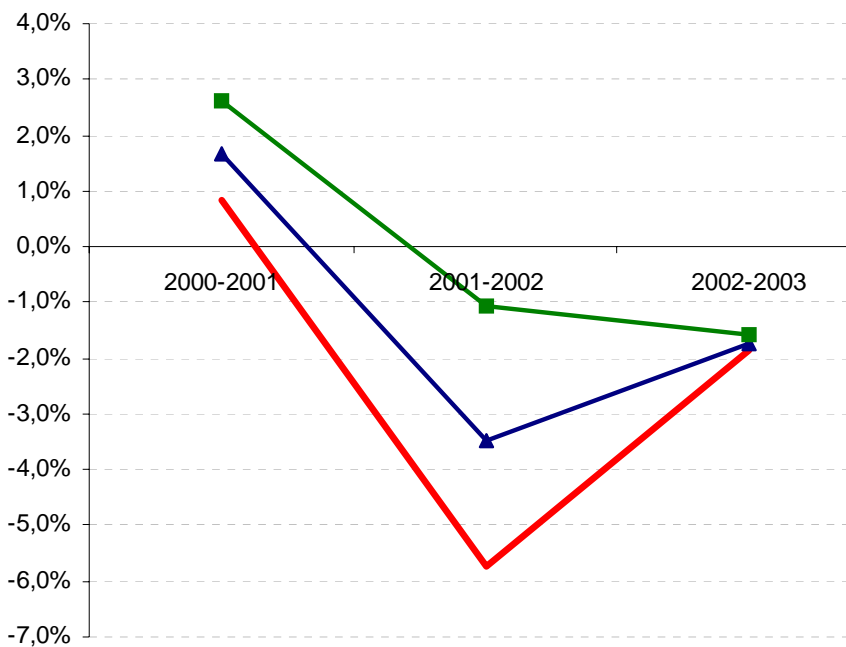


	Volume Indexes		
	2000-2001	2001-2002	2002-2003
<b>Recreational Boats</b>	102,66	107,71	115,96
<b>Recreational Small Planes</b>	105,43	66,99	100,00

# Volume Growth of the GVA of the Characteristic Activities of the PTSA (1)

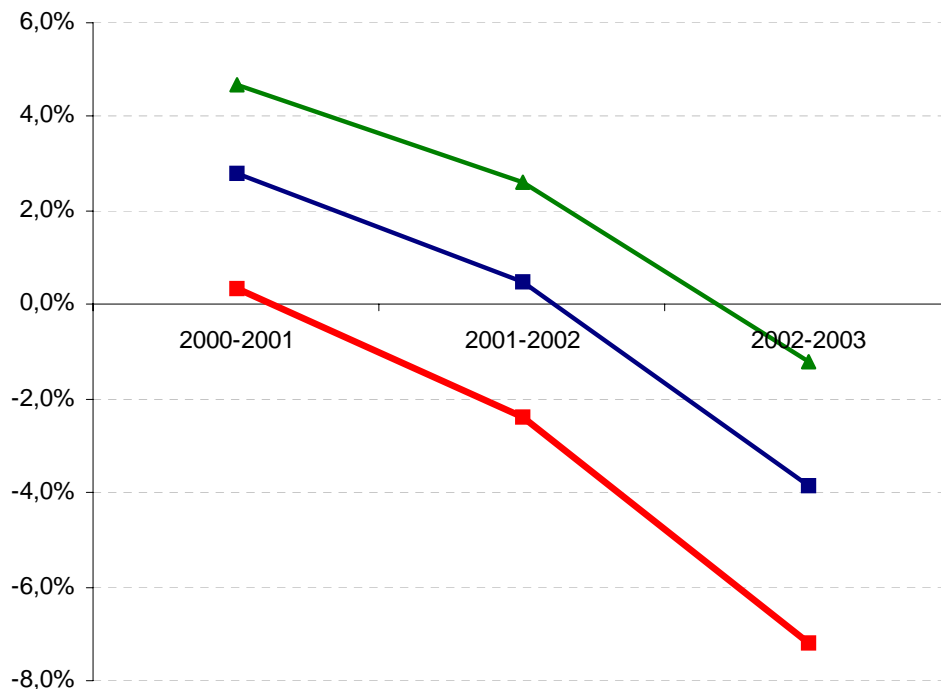


## Accommodation services (excl Sec. Homes)



—■— GVA —▲— Production —■— Intermediate Consumption

## Food and beverage serving services

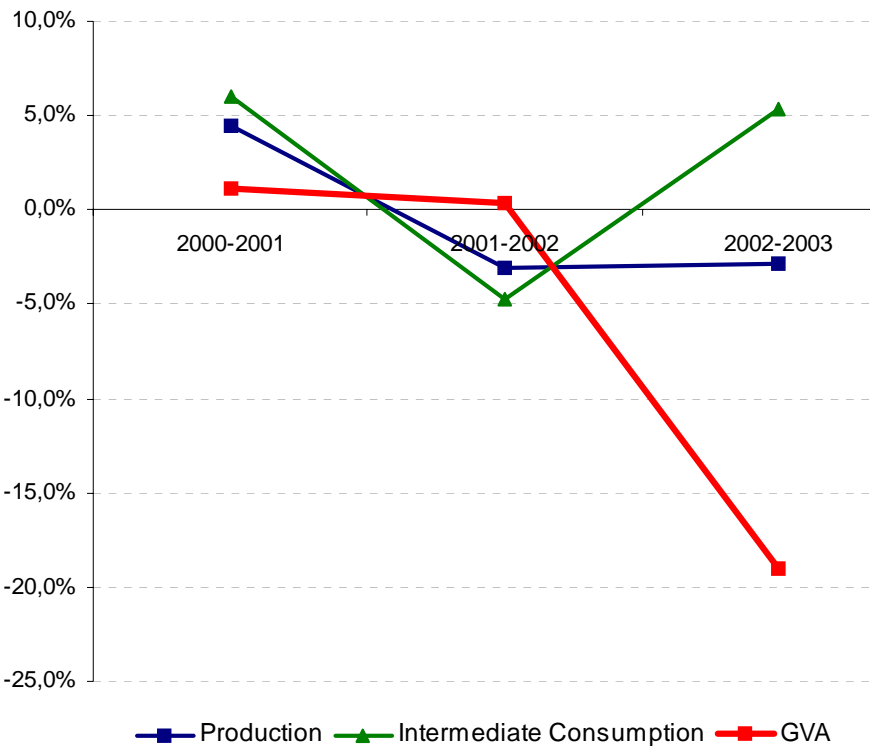


—■— Production —▲— Intermediate Consumption —■— GVA

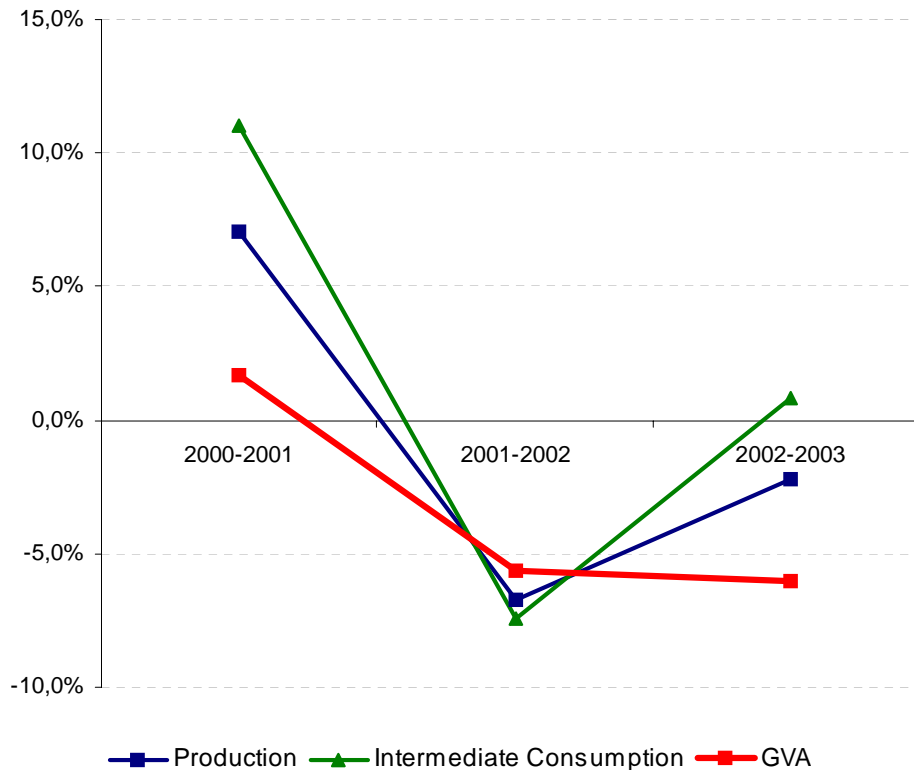
# Volume Growth of the GVA of the Characteristic Activities of the PTSA (2)



## Air Passengers Transport



## Travel Agencies and Tour Operators



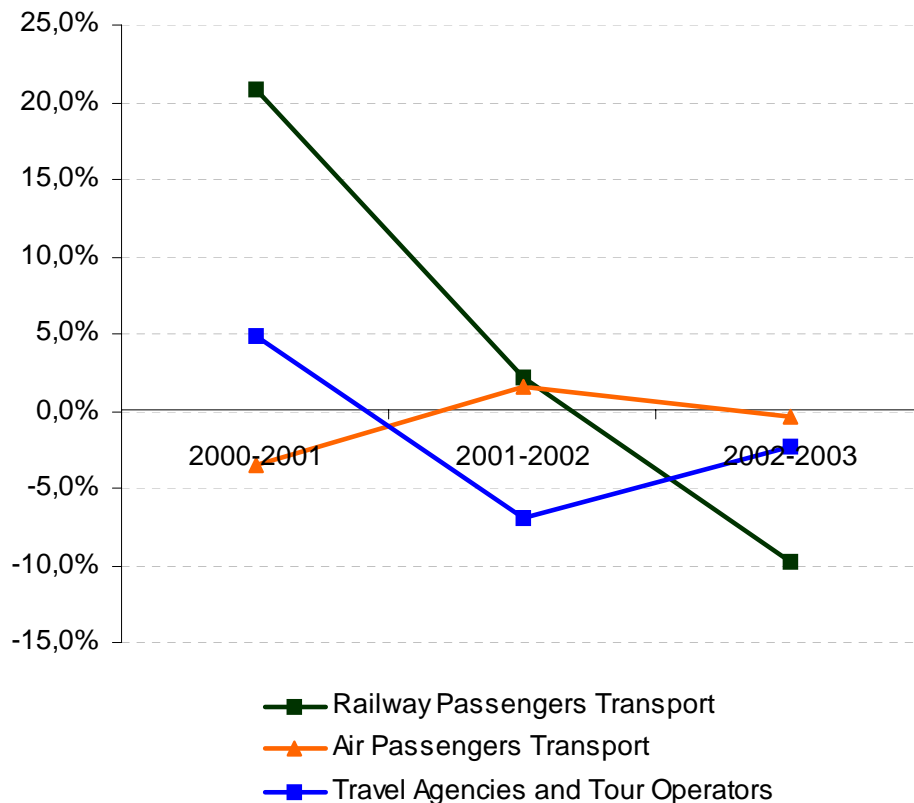
# Volume Growth of the Tourism Output of the Characteristic Products of the PTSA



## Accommodation Services



## Passengers Transport & Travel Agencies







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**WE THANK YOU FOR YOUR ATTENTION**

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