

# The economic impact of Athenian Brewery in Greece



The Hague, February 2008

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## Executive summary

This report describes the results of an Economic Impact Assessment (EIA) of Athenian Brewery S.A. in Greece. The study aims to enable management to analyse the broader socio-economic impact of its decisions and to discuss these issues with stakeholders based on facts and a realistic interpretation of them. The results presented have been obtained by using an economic model which is based on input-output analysis and distinguishes direct value chain impacts (associated with Athenian Brewery and its direct suppliers and trade partners), indirect (related to suppliers further away in the value chain) and induced impacts (related to household spending). In addition to a description of the current economic impact, two scenario studies have been performed. The obtained results are presented in terms of value added (household income, tax revenues and profits and savings) and in terms of employment generated.

In 2006, Athenian Brewery generated revenues of EUR 354 mln<sup>1</sup> and employed 1,274 people. Total taxes generated in the direct Athenian Brewery value chain (i.e. excise duties, value added tax and corporate tax) amount to EUR 336 mln representing 0.75% of Greece's total tax revenues. The total value added that can be attributed directly or indirectly to Athenian Brewery is somewhere in between EUR 1,046 mln (when conservatively excluding household re-spending effects) and EUR 1,492 mln (when household re-spending effects are included).

In the entire value chain of Athenian Brewery approximately 35 thousand jobs are present, the majority of them in retail and distribution of the products. This means that for every job within, 27 are generated outside of Athenian Brewery. When including all indirect and induced (spill over) effects, total employment is approximately 55 thousand, implying a multiplier of 43.

Two scenarios have been analysed:

1. An almost six fold increase of locally produced raw materials (to EUR 3.7 mln), representing the situation that will be achieved in 2008. This will result in an increase of EUR 3.4 mln of value added and the addition of 209 jobs in the Greek economy of which 164 are jobs in the agricultural sector;
2. Estimation of the impact of local production by Athenian Brewery by analysing the situation in which all products were imported rather than produced in Greece. This would lead to a reduction a value added in the Greek economy of EUR 149 mln (EUR 84 mln reduction of household income, EUR 25 mln reduction of tax income and EUR 40 mln reduction of profits and savings). In the value chain 1,902 jobs would be lost and in the overall economy 4,232 jobs. The latter figure would increase unemployment in Greece by 0.1 percentage point (from 8.8% in 2006 to 8.9%).

In essence, Athenian Brewery has an attractive and profitable market position in Greece. The profit that Athenian Brewery generates does not come at the expense of society: Athenian Brewery's presence generates significant value added (it is among the biggest tax payers in Greece) and employment. This becomes clear from the analysis of the situation in which Athenian Brewery were to import rather than locally produce its products. Moreover, by significantly increasing its local procurement, Athenian Brewery strives to enlarge its economic impact in addition to enhancing its profitability.

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<sup>1</sup> Excluding EUR 45 mln excise duties and EUR 4 mln received interest.

## 1 Introduction and objectives

From December 2007 until February 2008, a study was carried out to assess the impact of Athenian Brewery S.A. on the economy of Greece. Athenian Brewery brews, bottles and distributes beers and mineral water and is one of the country's largest companies. Athenian Brewery's shareholders are Heineken International NV (98.7%) and some Greek families (1.3%). The study was carried out by Triple Value Strategy Consulting in co-operation with InReturn Consultancy.

In 2006 Athenian Brewery had revenues of EUR 354 mln<sup>2</sup> and employed 1,274 people. The EUR 85 mln in taxes paid represent 0.2% of the total tax revenues in Greece and put Athenian Brewery among the biggest tax payers in Greece. Because of its size, Athenian Brewery is expected to have a significant economic impact. Until now, no quantitative estimation of this impact was available. The objective of this study is to quantify Athenian Brewery's socio-economic impact in order to enable management to:

1. Analyse the broader socio-economic impact of its decisions;
2. Discuss socio-economic issues with stakeholders based on facts and realistic interpretations

In order to meet these objectives an economic (input-output) model has been formulated. The economic model is introduced in Section 2; a description of the current economic impact of Athenian Brewery is described in Section 3 and the results of two scenario analyses are presented in Section 4.

## 2 Model description

### 2.1 Modelling approach

The model that was developed for this study combines the distribution of Athenian Brewery's revenues over its various financial stakeholders (e.g. suppliers, employees, government, dividends etc) with an input-output description of the Greek economy. Exhibit 1 provides a schematic overview of the modelling approach. Input-output analysis considers inter-industry relations in an economy by depicting how the output of one industry goes to another industry where it serves as an input; It makes industries dependent on one another, both as customer of outputs and as supplier of inputs.

### 2.2 Social Accounting Matrix

The key ingredient of the model is the so-called Social Accounting Matrix (SAM). The SAM represents the flows of all economic transactions that take place within the Greek economy. It is a statistical and static representation of the economic structure of Greece and must reflect fairly recent data. As shown in Exhibit 2, a SAM is square (number of columns and rows are equal) because all sectors or stakeholders (industry sectors, households, governments etc) are both buyers and sellers. Columns represent buyers (expenditures) and rows represent sellers (receipts). As can be seen, there are four quadrants in a SAM. Final *consumption* induces production which leads to money *transfers* between the various sectors which subsequently generates *incomes* for households, governments (taxes) and profits (dividends and savings). The SAM for Greece has been extracted from the GTAP 6 database<sup>3</sup>.

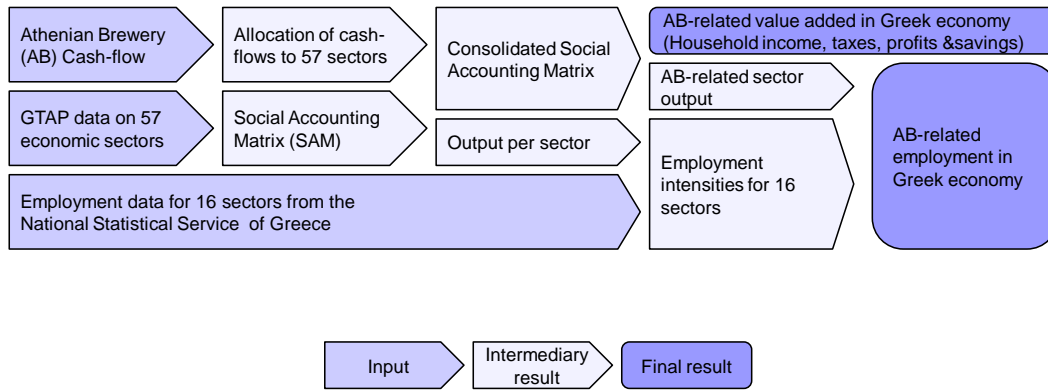
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<sup>2</sup> Excluding EUR 4 mln received interest and EUR 45 mln excise duties.

<sup>3</sup> Global Trade Analysis Project ([www.gtap.agecon.purdue.edu](http://www.gtap.agecon.purdue.edu)). The SAM contains 57 sectors.

## Exhibit 1

### Overview of the modelling approach

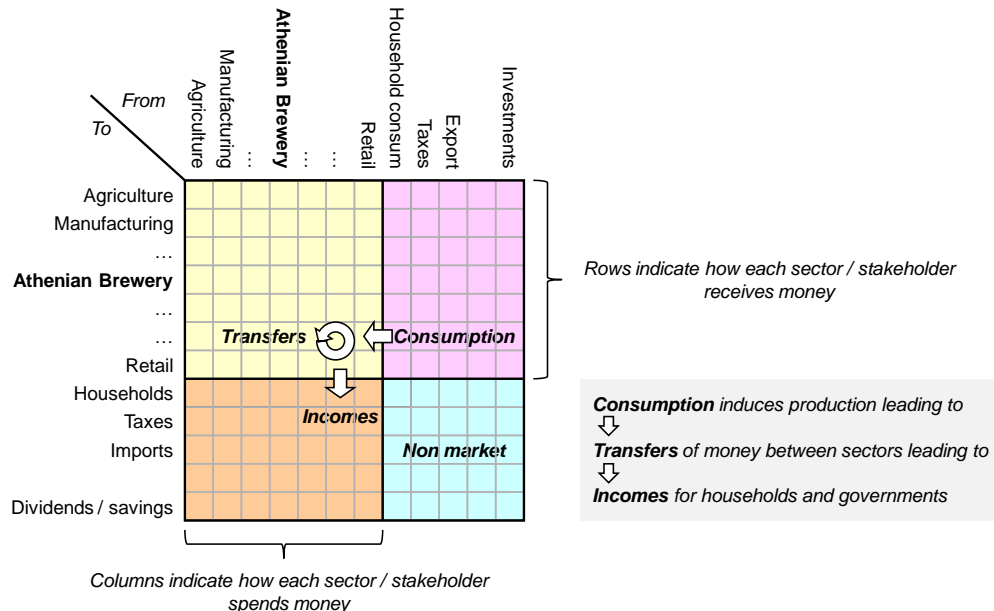


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## Exhibit 2

### Structure of the Social Accounting Matrix (SAM)



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As is indicated in Exhibit 2, Athenian Brewery can be included in the SAM by adding a row and a column. The column is Athenian Brewery's re-aggregated cash-flow statement. The row is left

entirely blank except for the fraction of final Greek beer consumption that flows into Athenian Brewery and the revenues related to export. In this way, Greek beer consumption has been made an exogenous variable.

The last step in constructing the SAM is to normalize it such that all columns add up to one. After that, the final beer consumption can be traced in money terms throughout the economy. In doing so, the total economic effect related to the presence of Athenian Brewery are subdivided into three effects:

1. Direct value chain effects: Value added generated and jobs provided by Athenian Brewery, its direct suppliers (i.e. recipients of cash coming from Athenian Brewery) and the wholesale and retail trade associated with selling Athenian Brewery products (also known as direct and first-round effects);
2. Indirect effects: Value added generated and jobs provided by companies further away in the Athenian Brewery value chain, i.e. the suppliers of Athenian Brewery's suppliers and wholesale and retail trade partners (also known as second-round effects);
3. Induced effects: effects due to the increased expenditures of households due to increasing incomes generated by the direct value chain and indirect effects (also known as third-round effects).

## 2.3 Assumptions

The main assumption in the model described above, especially regarding the induced effects, is that input-output analysis implicitly assumes that an increase in demand can be met by an increase of production at constant prices in all affected sectors of the economy. In reality however there can be sectors that are unable to increase production at constant prices because of shortages in, for example, labour. The latter possibility is not deemed too restrictive, especially if it is unskilled because of the unemployment rate in Greece. Input-output furthermore assumes that domestic or foreign investments will generate similar distributions of incomes and employment, although it quite well accepted that foreign investments are more productive for an economy because of technology and capabilities transfers.

## 3 Current economic impact

The model described in the previous section has been applied to determine the economic impact of Athenian Brewery. In this section, Athenian Brewery's impact on value added and employment within Greece is discussed.

### 3.1 Household income and government taxes

Athenian Brewery's value added consists of three components: household labour income (salaries), taxes paid to the government and company profits<sup>4</sup> and household savings. Each of these components is made up of direct, indirect and induced effects, as was described in Section 2. As is shown in Exhibit 3, Athenian Brewery's presence generates EUR 1,492 mln in value added in the Greek economy (or EUR 1,046 mln when conservatively not including induced effects). Of this, EUR

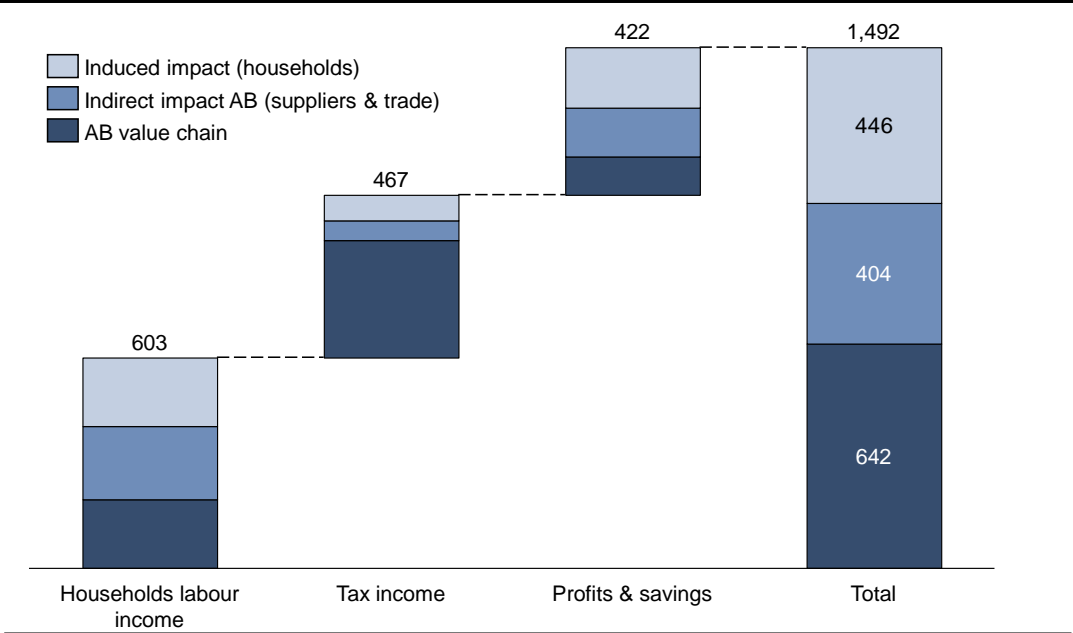
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<sup>4</sup> The profit of Athenian Brewery is included only for 1.3% since 98.7% is paid as dividends to Heineken International N.V. in proportion to its shareholding

642 mln (43%) is related to the direct value chain of Athenian Brewery and EUR 850<sup>5</sup> mln (57%) of indirect and induced effects. Total tax income generated by Athenian Brewery is EUR 467 mln, which represents 1.05% of the total Greek tax revenues. 72% of these taxes (EUR 336 mln) are generated by Athenian Brewery’s direct value chain (i.e. excise duties, value-added tax and corporate taxes), corresponding to 0.75% of Greece’s tax revenues.

**Exhibit 3**

**Breakdown of total value added (mln EUR)**



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**3.2 Employment generation**

Employment figures for 16 sectors were obtained from the National Statistical Service of Greece. By combining these with the output per sector from the SAM, the employment intensity (number of jobs per EUR 1,000 of output) can be determined.

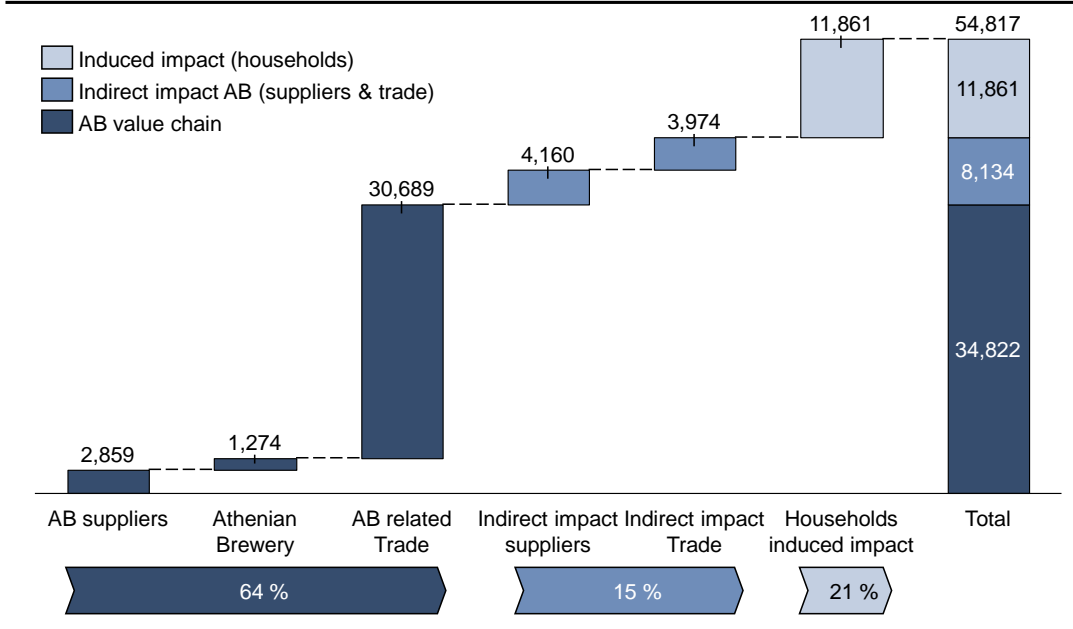
Using the model results of industrial output (corresponding with the “transfers” quadrant in Exhibit 1) and the employment intensities per sector, the employment generated by Athenian Brewery, both in the direct value chain as well as in the broader economy can be computed. The results are shown in Exhibit 4. As can be seen, Athenian Brewery provides employment directly for 1,274 people. Direct suppliers provide another 2,859 jobs and wholesale and retail trade partners provide 30,689 jobs. In the entire value chain (from farmers supplying Barley until small retailers selling the final product) 34,822 jobs are provided. This brings the value chain employment multiplier to 27<sup>6</sup>, i.e. for every job directly provided by Athenian Brewery, a total of 27 jobs exist in the value chain. Because companies in the Athenian Brewery value chain also provide indirect employment and the additional spending of households provides induced employment, the total amount of jobs that are sustained by Athenian Brewery’s presence is almost 55 thousand. This implies an overall employment multiplier of

<sup>5</sup> EUR 404 + 446 mln.  
<sup>6</sup> Job multiplier equals (34,822)/1,274 = 27.

43. In 2006, on average 4.45 mln people held jobs and the jobs sustained by Athenian Brewery constitute 1.2% of that.

### Exhibit 4

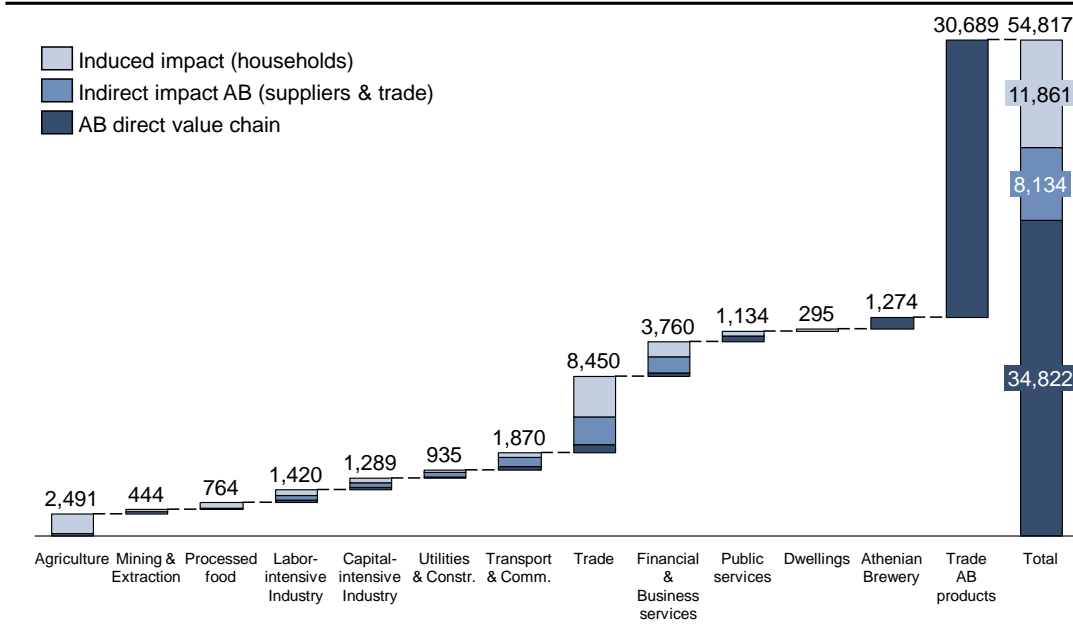
#### Breakdown of jobs generated



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### Exhibit 5

#### Detailed breakdown of jobs generated in the Greek economy



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Exhibit 5 shows a more detailed breakdown of the jobs generated in the entire Greek economy. For every sector the number of jobs generated by the Athenian Brewery direct value chain, indirectly by suppliers further away in the value chain and the jobs induced by households spending part of their incomes are shown. 88%<sup>7</sup> of the jobs generated in the direct Athenian Brewery value chain are associated with trade and distribution.

Overall these results compare very well with the results from an economic impact study that was commissioned by *The Brewers of Europe*<sup>8</sup>. Using the results for Greece from that study and attributing those to Athenian Brewery in proportion to its market share, the difference in the total employment in the Athenian Brewery value chain is about 3%.<sup>9</sup>

## 4 Scenario analyses

One of the objectives of the economic impact model is to enable management to analyse the broader socio-economic impact of its decisions. This section describes two scenarios that have been analysed using the model. The first scenario is an increase of local content in Athenian Brewery's products and the second is the comparison of the impact associated with locally-manufactured products with imported products.

### 4.1 Increasing local content

Currently, Athenian Brewery procures a little over EUR 0.65 mln of Barley from within Greece. For 2008 it is projected that this amount will increase to EUR 3.70 mln<sup>10</sup>. A scenario has been analysed in which the total expenditure to farmers increases by EUR 3.05 mln and the imported Barley reduces by the same amount. Exhibit 6 shows the impact on value added.

As can be seen, the increase of locally-produced Barley by EUR 3.05 mln results in an increase of value added of EUR 3.39 mln. Because the agricultural sector is a net recipient of subsidies<sup>11</sup> (which are accounted for as negative taxes in the model) the positive impact on household labour income and profits & savings is partly offset by lower tax income.

Exhibit 7 shows that the increase of locally-produced Barley purchases generates 209 jobs in the Greek economy. Obviously, the majority of these jobs (172) are in the agricultural sector and are directly related to the Athenian Brewery value chain (164). But because the Barley needs to be processed and transported and the increase of household labour income induces additional demand in the economy there are some indirect and induced effects as well.

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<sup>7</sup> 30,689 wholesale and retail trade jobs on a total of 34,822 jobs in the direct Athenian Brewery value chain.

<sup>8</sup> *The contribution made by beer to the European economy (2005)*, Ernst & Young, 2006.

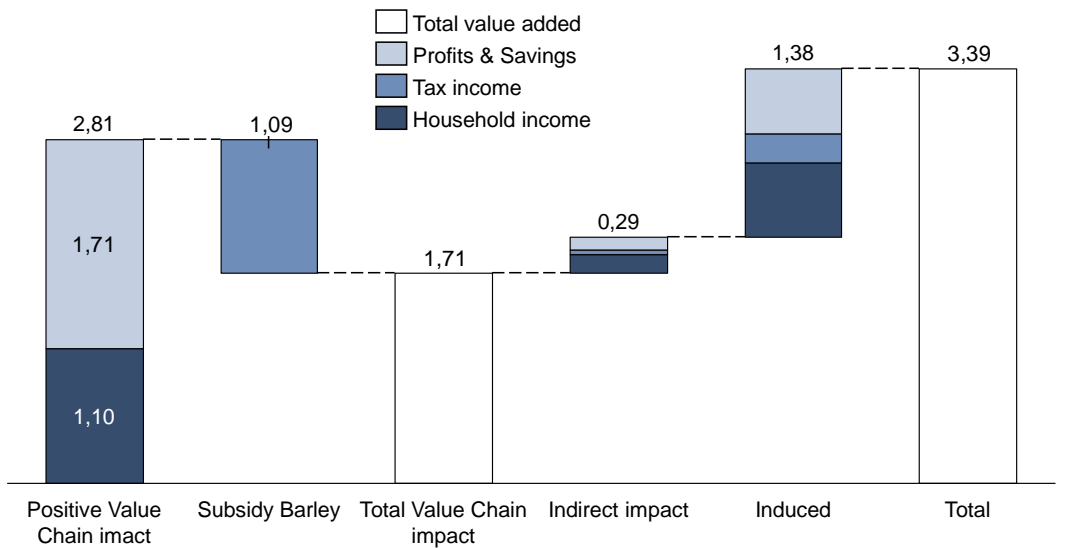
<sup>9</sup> Total employment in value chain in this study is 34,822 jobs vs. 33,682 in the mentioned study.

<sup>10</sup> This represents an increase from 6% to 37% of the total Barley expenditures.

<sup>11</sup> It is not entirely clear from the data whether these are European (Common Agricultural Policy) subsidies or Greek subsidies. In any case, Greece will have to (partly) pay for these subsidies.

## Exhibit 6

### Impact of increasing local Barley purchases on value added (mln EUR)

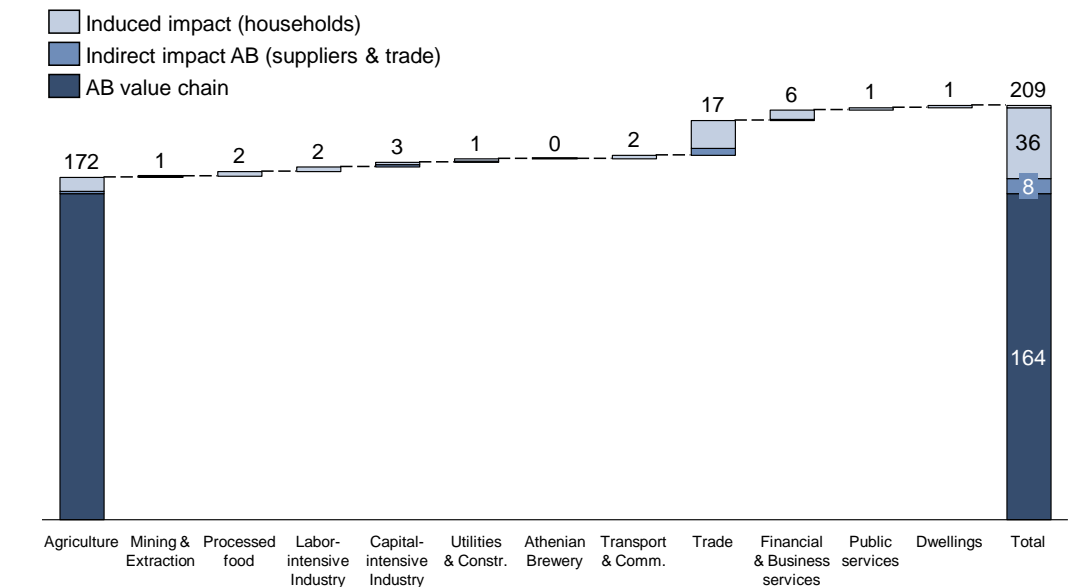


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## Exhibit 7

### Impact of increasing local Barley purchases on employment



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## 4.2 Athenian Brewery as an importer of foreign-produced goods

Athenian Brewery's revenues come from products that are manufactured locally. As was shown already in Section 4.1, local production has a positive economic impact. In order to quantify the

impact of Athenian Brewery’s local production, a scenario has been constructed in which Athenian Brewery transforms into an importer of foreign-produced products. The characteristics of this scenario are:

1. Total Athenian Brewery revenues and profits remain unchanged;
2. Costs of producing locally is identical to producing abroad;
3. A reduction of local spending by EUR 98 mln<sup>12</sup>;
4. A reduction of the workforce of Athenian Brewery of 753 people (-60%) and a reduction of personal income tax payments (withheld by Athenian Brewery) of EUR 6 mln (-55%).

Exhibit 8 shows the reduction in value added by EUR 149 mln associated with this scenario. This corresponds to 10% of the total value added indicated in Exhibit 3. This reduction manifests itself most prominently in the lower household labour income (EUR 84 mln or 14% of the current household labour income in Exhibit 3). With a reduction of EUR 25 mln (5% of the EUR 467 mln indicated in Exhibit 3), tax income is least affected since excise duties and value added tax (the largest components) would still be levied.

**Exhibit 8**

**Impact on value added of importing products (mln EUR)**

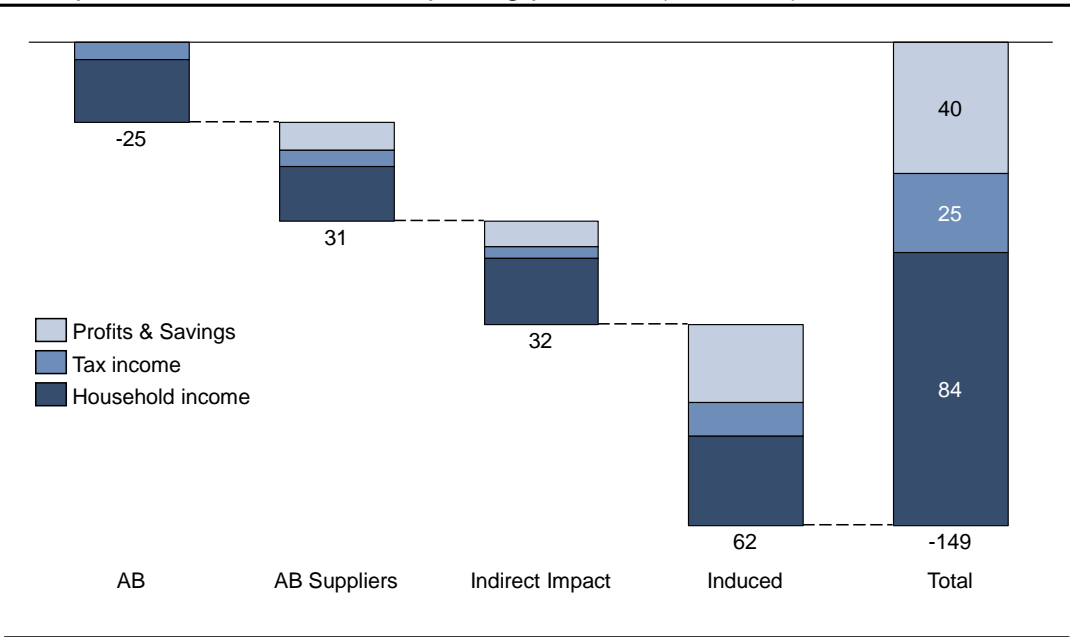


Exhibit 9 depicts the effect of importing all products from abroad on employment. The total job loss associated with this scenario would be 4,232. Relative to the 54,817 jobs mentioned in Exhibit 4, this is a reduction of 7.8%. Although this fraction looks quite small, it must be remembered that most of the jobs are associated with wholesale and retail trade and that these would not be significantly affected. In the more upstream part of the value chain, the relative effects would be significantly

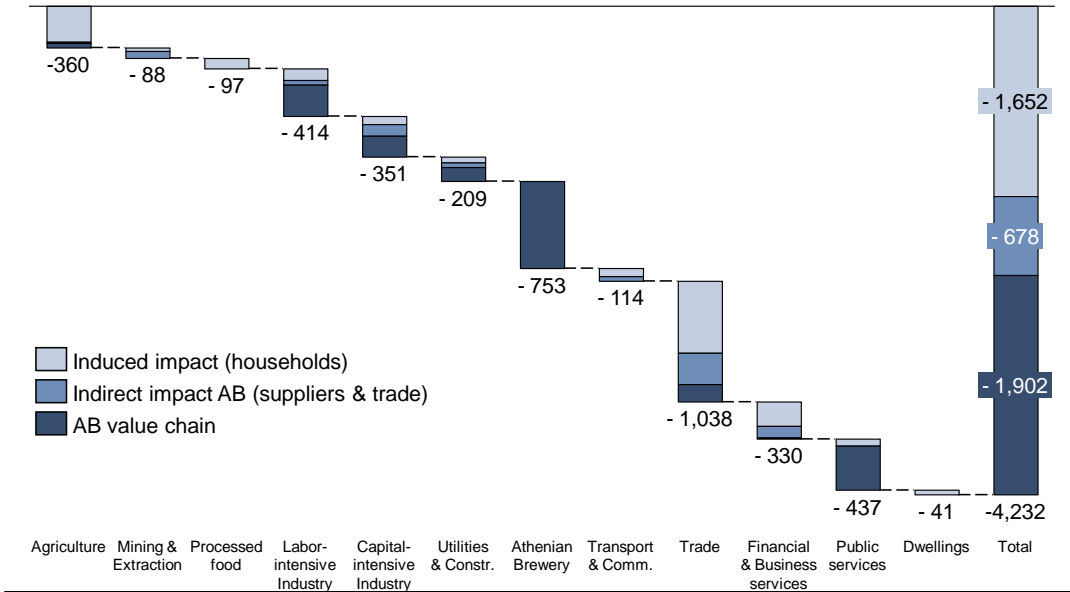
<sup>12</sup> Line items entirely associated with production related expenditures have been set to 0; Personnel costs have been determined to be 45% of current level; energy and building related costs are assumed to be 20% of current level.

larger. For example, the loss of 1,902 jobs directly related to the AB value chain corresponds to 46% of all employment provided by Athenian Brewery and its direct suppliers<sup>13</sup>.

A loss of 4,232 jobs would increase the unemployment in Greece by almost 0.1 percentage point, i.e. from 8.8% in 2006 to 8.9%. This scenario clearly underlines the importance of a local production company and the detrimental effect when imports were to substitute local production.

**Exhibit 9**

**Impact on employment of importing products**



<sup>13</sup> Total employment with Athenian Brewery and its suppliers is 2,859 + 1,274 as is indicated in Exhibit 4.