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Tarigant, B.

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THE MARKETS AND THE PROFILE OF THE COMPANIES DEALING WITH MEAT AND MEAT PROCESSING IN THE EUROPEAN ECONOMIC COMMUNITY (E.E.C.) MARKET

IR. B. TARRIGANT
A STUDY OF THE MARKETS AND THE PROFILE OF THE COMPANIES DEALING WITH MEAT AND MEAT PROCESSING IN THE EUROPEAN ECONOMIC COMMUNITY

By: Ir. B. Tarigant
The Eindhoven University of Technology

Program report July - November 1974
The Eindhoven University of Technology
Fellowship Program 1974
Eindhoven - The Netherlands.
## CORRIGENDUM

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Preface

This study is concerned with the markets and the profile of the companies dealing with meat and meat processing in the European Economic Community (E.E.C.) market.

The main goal of this study is to see the future possibilities of the market for slaughterhouses and meat processing business here in the EEC-market. Companies sell not merely products but the functions that those product can serve in satisfying customer need.

This, the demand for slaughterhouses and meat processing plans depends on the demand for meat production, which in turn depend on the consumption of meat by consumers. The overall objectives of the study is to provide a thorough and practical analysis in a forecasting context, of meat markets, and the analysis of the profile of the companies as the suppliers to the slaughterhouses and meat processing installations in the E.E.C. market, as a guide information to business strategy.

This implies a serie of sub-objectives.

A. General study:
- general back ground about the European Economic Community market
- general back ground of meat, meat processing and meat consumption.

B. Market Analysis:
- to analyse the present and forecast the future demand for meat, especially beef (including calvesmeat), and as the main group of meat consumption in the E.E.C.
- to analyse and evaluate the pattern of meat consumption as the function of price itself and the substitution meat prices.
- to analyse and forecast of meat supply, domestic production and total local meat production nett (total slaughtering of domestic production and import.
- general policy of the E.E.C.-council over meat market and development planning over meat supply in the E.E.C.

C. The suppliers analysis:
- to analyse and evaluate the suppliers of the slaughterhouses and meat processing installations here in the E.E.C., their types, the types of companies who are successful here in the E.E.C.-market the back ground of their successful, their general marketing strategy, their aggressiveness etc.
to analyse and evaluate the present and probable future of the suppliers to the slaughterhouses and meat processing installations.

It is of utmost importance that a company be kept informed about the possible future development and extension of its market and about the other companies who are dealing with the same products or fields of activities. Where-as no military commander or athletic coach would think seriously entering into an engagement without a good idea of the opposing forces industrial marketers make decisions occasionally without any information on competitors and its fields. The views expressed in this report can be a usefull information to the decision maker of a company dealing with meat and meat processing business, especially to the company who is active or is going to penetrate its market here in the E.E.C.-market.

The scope of the study:

1. Types of meat.
   The emphasis of the study is placed on two red meats: beef, veal and pork.
   These are the main and the largest tonnage and value of meat consumption here in the E.E.C. The study of these meats will cover both fresh and processed meat (cooked and preserved meats, canned meats, convenienced meat meals etc.).

2. Types of suppliers.
   The companies dealing with meat and processing means all kinds of companies as the suppliers to the slaughterhouses and meat processing installations, it is including:
   - the consulting engineering services company
   - the contracting engineering services company
   - the manufacturer of slaughterhouse or meat processing equipments
   - the trading company as the sales agents in slaughterhouse or meat processing equipments.

3. The geographical area.
   This study is limited to the European Economic Community Market.
(Belgium, Netherlands, Luxemburg, West Germany, France, Italy, United Kingdom, Ireland and Denmark).

The market analysis are mainly on Euro-6 (Belgium, Netherlands, Luxemburg, West Germany, France and Italy) by the reason of the unavailability of the data for the three new members (United Kingdom, Ireland and Denmark) in the E.E.C.-institutions information service. The accessions of these three new members of the enlarged community has been effective since 1 February 1973.

4. Time Scale.
The study constrates on:
- the past developments with a serie in general from 1962/1963
- the latest situation 1972
- the forecasts terms to 1975 - 1980.

5. The methods.
The projection for the next 6 years of the market size for meat here in the E.E.C. were approach by counter section analysis:
1. via supply
2. via demand.
Via supply means that the forecasts are based on the production statistics data, and via demand means that the forecasts are based on the consumption statistics data. The forecasts of meat supply and demand are done separately for different countries, for every country has a different pattern of meat consumption and different trend of meat supply.
- The meat consumption and demand and the meat supply were forecast by two different methods: 1. simple repression analysis method and 2. double exponential smoothing method.
- The pattern of meat consumption analysis for every country, that is the relation-ship between meat consumption per capita, the price itself and the prices of substitution meats was analysed by Multiple Regression analysis method.
The contents of this report are not as intensive as I would have wished by the limitation of time and fellowship stipends restricted broader and deeper study. Consequently, many details to describe the markets and the companies dealing with meat and meat processing are not included as they are supposed to be.

The writing of this report is accomplished in the Netherlands during the period of a fellowship program sponsored by the Eindhoven University of Technology, The Netherlands. This study is done in close contact with Grenco B.V. in 's-Hertogenbosch.

This program helped me build up a valuable experience in understanding of marketing, particularly in marketing research.

Suggestions and comments on the approaches and information in this report from the reader or user will be gratefully received.

Ir. B. Tarrigant.
Acknowledgement

In accomplishing this study I have had the numerous cooperation of the following organizations and firms, to whom I wish to acknowledge my obligations:

- Europese Gemeenschappen, the Haque, Netherlands
- Productschap voor Vee en Vlees, the Hague
- Central Bureau of Statistics, the Hague
- Landbouw-Economisch Instituut, the Hague
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- F.W. Stappelberg B.V. - Zeist
- H. Langen B.V. - Cuijk
- Seffelaar & Looyen B.V. - Oldenzaal
- Nijhuis B.V. - Winterswijk
- UNOX - Oss
- Hendrix B.V. - Druten
- Gemeente slachthuis - 's-Hertogenbosch
- Gemeente slachthuis - Nijmegen
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- Krupp - Düsseldorf - West-Germany
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- Atlas - Copenhagen - Denmark

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- Mr. L.G. Donk - " - "
- Mr. J. Lammers msc - Grenco B.V. - "
Mr. W.A. van Sonsbeeck - Grenco B.V. - 's-Hertogenbosch
Mr. Bais

And many other persons and companies, which are not included in the above list.

B. Tarigant
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Summary of conclusions and Recommendations.

Conclusions:

1. Meat is one of the most important daily food in the E.E.C.-countries. Meats have a very high biological protein value, that is they are very valuable in replacing and maintenance body protein and in building up the body cells. However, many people eat meat do not realize it, they eat meat because it is a delicious food.

2. There are many benefits can be got from meat processing:
   - meat can only be eaten as a meat by slaughtering animal or livestock.
   - slaughtered animal is easier to transport and easier
   - meat processing industry is important to economie growth and to the health of people.
   - meat processing makes house-wives freedom from "food slavery", easier to prepare and higher quality food, higher hygienic control.

3. Meat consumption in the E.E.C.-countries has been increasing rapidly during the last decade. Total meat consumption in the E.E.C.-6 rose by 36,2 % (in 1962/63: 11.208.000 tons - in 1971/72: 15.268.000 tons), meat consumption percapita rose by 28,5 % (in 1962/63: 6,2 kg./cap. - in 1971/72: 80,2 kg./cap.).
   The largest single item in this is consumption of pork 40,6 % of total, followed by beef and veal 32,2 % of total. The highest percentage of pork consumption is in West Germany: 55,3 % of total (in 1971/72). The greater part of meat consumption in the E.E.C. are France, West Germany and Italy.

4. The rate of increased of the meat consumption varied however for different countries, even for different types of meat. The highest rate of increased is in Italy, during the period 1962/63 - 1971/72 - rose by 66 %, in West Germany is only rose by 22 %. The lowest is in France, only 18 %.

5. There is a tendency of beef and veal consumption changes to pork and poultry, especially in France, West Germany and Netherlands.

6. The increasing of meat consumption is mainly influenced by the growth of income and the growth of population. The consumption of meat is expected still considerably increasing in the next few years.
7. The forecast of meat supply and demand in the E.E.C.

**Forecast of supply and demand for Pigs meat (pork)**

<table>
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<tr>
<td>1. West Germany</td>
<td>2771</td>
<td>3263</td>
<td>+ 18%</td>
<td>3005</td>
<td>3650</td>
<td>+ 21%</td>
<td>- 231</td>
<td>- 387</td>
</tr>
<tr>
<td>2. France</td>
<td>1434</td>
<td>1595</td>
<td>+ 11%</td>
<td>1662</td>
<td>1905</td>
<td>+ 15%</td>
<td>- 228</td>
<td>- 310</td>
</tr>
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<td>3. Italy</td>
<td>656</td>
<td>843</td>
<td>- 29%</td>
<td>765</td>
<td>1029</td>
<td>+ 35%</td>
<td>- 109</td>
<td>- 186</td>
</tr>
<tr>
<td>4. Netherlands</td>
<td>893</td>
<td>1238</td>
<td>+ 39%</td>
<td>434</td>
<td>542</td>
<td>+ 25%</td>
<td>+ 458</td>
<td>+ 696</td>
</tr>
<tr>
<td>5. Belgium/Luxemburg</td>
<td>656</td>
<td>969</td>
<td>+ 48%</td>
<td>364</td>
<td>448</td>
<td>+ 23%</td>
<td>+ 292</td>
<td>+ 521</td>
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<tr>
<td>Euro-6</td>
<td>6410</td>
<td>7907</td>
<td>+ 23%</td>
<td>6424</td>
<td>7574</td>
<td>+ 18%</td>
<td>- 14</td>
<td>+ 333</td>
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Source: Agricultural Statistics E.E.C.

**Forecast of supply and demand for Beef and Veal.**

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<tr>
<td>1. West Germany</td>
<td>1270</td>
<td>1351</td>
<td>+ 6%</td>
<td>1536</td>
<td>1752</td>
<td>+ 14%</td>
<td>- 266</td>
<td>- 401</td>
</tr>
<tr>
<td>2. France</td>
<td>1695</td>
<td>1872</td>
<td>+ 10%</td>
<td>1499</td>
<td>1478</td>
<td>- 1,4%</td>
<td>+ 196</td>
<td>+ 394</td>
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<tr>
<td>3. Italy</td>
<td>864</td>
<td>1043</td>
<td>+ 21%</td>
<td>1490</td>
<td>1993</td>
<td>+ 34%</td>
<td>- 626</td>
<td>- 950</td>
</tr>
<tr>
<td>4. Netherlands</td>
<td>305</td>
<td>307</td>
<td>+ 1%</td>
<td>281</td>
<td>300</td>
<td>+ 7%</td>
<td>+ 24</td>
<td>+ 7</td>
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<tr>
<td>5. Belgium/Luxemburg</td>
<td>238</td>
<td>241</td>
<td>+ 4%</td>
<td>281</td>
<td>313</td>
<td>+ 11%</td>
<td>- 43</td>
<td>- 66</td>
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<tr>
<td>Euro-6</td>
<td>4354</td>
<td>4815</td>
<td>+ 11%</td>
<td>5087</td>
<td>5836</td>
<td>+ 15%</td>
<td>- 733</td>
<td>+1021</td>
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Source:
The forecast of supply and demand for Beef and Veal taking into account the enlarged community done by FAO.

<table>
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<th>A. Production</th>
<th>B. Consumption</th>
<th>Balance A - B</th>
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<tr>
<td>The six original member countries</td>
<td></td>
<td></td>
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<tr>
<td>3410 4830 + 41,3</td>
<td>3970 5990 + 50,4</td>
<td>- 560 - 1160</td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>232 190 + 18,1</td>
<td>69 67 - 2,9</td>
<td>+ 163 + 123</td>
</tr>
<tr>
<td>Ireland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>386 451 + 57,8</td>
<td>50 42 - 16,0</td>
<td>+ 236 + 409</td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>808 1176 + 45,5</td>
<td>1304 1407 + 7,9</td>
<td>+ 496 - 231</td>
</tr>
<tr>
<td>Total for the 3</td>
<td>1326 1871 + 37,0</td>
<td>1423 1516 + 6,6</td>
</tr>
<tr>
<td>Total for the 9</td>
<td>4736 6647 + 40,4</td>
<td>5393 7506 + 39,1</td>
</tr>
</tbody>
</table>

Source FAO

The forecast of demand for all kinds of meat in the E.E.C. (Euro-6)

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption (1,000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972/73</td>
<td>1979/80</td>
</tr>
<tr>
<td>West Germany</td>
<td>5468</td>
</tr>
<tr>
<td>France</td>
<td>5025</td>
</tr>
<tr>
<td>Italy</td>
<td>3403</td>
</tr>
<tr>
<td>Netherlands</td>
<td>909</td>
</tr>
<tr>
<td>Belgium/Luxembourg</td>
<td>861</td>
</tr>
<tr>
<td>Euro-6</td>
<td>15666</td>
</tr>
</tbody>
</table>

- West Germany, France and Italy are the most important market in the future years.
- The highest rate of annual growth of meat consumption is in Italy, followed by West Germany and then France.
- Netherlands, Belgium and Luxemburg are still important market, but not as big as the first three big countries.
- In beef and veal consumption, United Kingdom is comparable with France, but in production we found that the highest deficit is in United Kingdom and the highest surplus is in France.
8. The lack of statistical data makes this market analysis is mainly concentrated in Euro-6.

9. In the meat supply, there are two kinds of facilities:

   1. Municipal slaughterhouses
   2. Private slaughterhouses (including cooperative plants)

   - Most of the municipal slaughterhouses are rather poorly equipped, too small, cannot handle the real industrial scale of meat industry. There are many bigger meat wholesalers leaving the municipal slaughterhouses and starting with their own plants. The user of the municipal slaughterhouses today are the smaller companies who do not have enough ability to build their own plant.
   - The utilization of municipal slaughterhouses are too low (only around 40 to 60% of the total capacity). There are many of them closed now.
   - Thus there is almost no need for new plants of municipal slaughterhouses, except in Italy and some in France for modernization.
   - The private and the cooperatives plants are increasing and will be increasing in the next future. The increasing of meat demand especially for pigs which are mainly handled by private companies, makes the private or cooperatives plants also increasing.

   There is a tendency change in the system of meat production. Old system, the slaughterhouses and meat processing are located together in one site in the city, but now it is changed, the slaughterhouse and processing will be located in the production area of livestock, while the meat processing plant will be located on the consumption area, in the city.
   - The change of the structure from municipal to private plant and the change of the system of meat production will need many new plants of slaughterhouses or meat processing.

10. The most successful companies as the supplier to slaughterhouses or meat processing plants in the E.E.C. are the companies who can supply a single machine or equipment, i.e. the manufacturers or sales trading companies. Smaller manufacturers have a very important position in the supplying the local market. Most of the customers or the users prefer to purchase their equipments and machines to these smaller manufacturers, in order to get a lower price and flexible order.

   The private companies who mostly handle the new establishment of the slaughterhouses or meat processing, would not like to give the order to one contracting engineering to deliver the whole of their plant.
They prefer to do it by themselves, they have enough experiences and know how in this field. They know what is the best equipment and the best method, they choose the most suitable for them and they buy the cheaper one to the manufacturer or sales agent directly. They only need some assistance of the consulting engineering office. They always try to handle their project as much as possible: they give to a certain specialized contractor only some parts of their plant and never for a complete plant.

11. At the moment in the E.E.C.-countries cannot be hoped too much a contracting work for a complete plant except in Italy and a little bit in France. There is still the market for a contracting work but mainly only for one part or unit of a plant. Thus specialization is more important.

12. The Contracting Engineering Companies here in the E.E.C. are mainly exporting their products into the world market outside E.E.C. There is almost no contracting engineering Company successful in the E.E.C.-market except Kirchefeld in Italy.

13. The most aggressive suppliers in the E.E.C.-market are: Kirchefeld, Atlas, Beck & Henckel, Grenco, Seffelar & Looyen, and H. Langen. There are many other suppliers, but mainly only supplying single machines or equipments.

14. The market information is one of the most important in setting the market program and strategy. A good relationship with the consulting engineering offices (in slaughterhouses and meat processing) is one of the most effective way in getting the market information.

15. Development program of the suppliers are mainly extending their activities to the whole scope of food industry and extending their market mainly to the Eastern Europe, Middle East and other developing countries. The main problem of these suppliers is the lack of the skilled staff in the field of slaughterhouse and meat processing.
16. Competing in the market, there are several determining factors, here in the E.E.C., the most important factors are: - price
- quality
- process (economical design)
- reputation of the supplier
followed by: - presentation
- experiences and
- relation of the supplier to the customer.
Nationality is still an important factor, many companies even consultants prefer to choose or to give the first priority to the national supplier. This situation is more seen in France and West Germany.

17. Developing the relationship with the customers is one of the very effective way in promoting the name of the company.

**Recommendations for action** (especially for a contracting engineering company.)

1. The marketing operation of a contracting engineering for slaughterhouses and meat processing is recommended to be more aggressive in Italy. There are some studies been done for some area in Italy for the slaughterhouse and meat processing projects.

2. To be more intensive in marketing operation to get a contracting work in the specialized field.
The customers which are more big private companies prefer to choose a specialized contractor for every unit of their plant. Sales promotion, developing relation with all big companies in meat business by visiting them regularly, are some of the suggested marketing activities in the E.E.C.-market.

3. Creating and developing the relationship with all important consulting engineering offices is very important in the marketing operation. There are many benefits can be got from this good relationship, market information, technical information, competitors information etc.
PART I
INTRODUCTION

1.1. EURO-6 and EURO-9

The European Economic Community (E.E.C.) was only consisting six countries before February 1973, i.e.: Belgium, the Netherlands, Luxembourg, Federal Republic of Germany, France and Italy. We call this community EURO-6. Since February 1973, this community was enlarged by three new members: United Kingdom, Denmark, and Italy. The enlarged community is called EURO-9.

The Euro-6 covers an area of 1167500 km², since EURO-9 covers 1523400 km². The population density was 164 person/km² for EURO-6 and 167 person/km² for EURO-9 in 1972.

The growth of population and gross national product (GNP) in the last few years can be seen in table 1.

### TABLE 1

<table>
<thead>
<tr>
<th>YEAR</th>
<th>The growth of population</th>
<th>The growth of GNP (Mrd Eur)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Euro-6 index</td>
<td>Euro-9 index</td>
</tr>
<tr>
<td>1963</td>
<td>177962</td>
<td>100</td>
</tr>
<tr>
<td>1964</td>
<td>179679</td>
<td>101,0</td>
</tr>
<tr>
<td>1965</td>
<td>181411</td>
<td>102,0</td>
</tr>
<tr>
<td>1966</td>
<td>182905</td>
<td>102,8</td>
</tr>
<tr>
<td>1967</td>
<td>183948</td>
<td>103,4</td>
</tr>
<tr>
<td>1968</td>
<td>185009</td>
<td>104,0</td>
</tr>
<tr>
<td>1969</td>
<td>186474</td>
<td>104,8</td>
</tr>
<tr>
<td>1970</td>
<td>188019</td>
<td>105,7</td>
</tr>
<tr>
<td>1971</td>
<td>189662</td>
<td>106,6</td>
</tr>
<tr>
<td>1972</td>
<td>191031</td>
<td>107,3</td>
</tr>
</tbody>
</table>

Source: General statistics EEC-1974 (7-9)

Mrd. = Milliard - Eur. = European Community account

= 0,888671 Gram fine gold

It can be seen so fast the growth of GNP compare to the growth of population. Average the annual rate of population growth was 0,73% for Euro-6 or about 0,66% for Euro-9. Since the average annual growth of GNP was about 5,6 % for Euro-6 and 4,86 % vor Euro-9 between 1963 and 1972.
The increase of the standard of living realized by the EEC people in the past ten years can be seen on their income per capita and their private consumption expenditure listed in table 1.2.

**TABLE 1.2.**

GNP per capita and private consumption expenditure per capita in EEC

<table>
<thead>
<tr>
<th>Year</th>
<th>GNP - per capita</th>
<th>Private Consumption Exp. per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EURO-6 (Eur)</td>
<td>EURO-9 (Eur)</td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>Index</td>
</tr>
<tr>
<td></td>
<td>(Eur)</td>
<td>(Eur)</td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>Index</td>
</tr>
<tr>
<td></td>
<td>(Eur)</td>
<td>(Eur)</td>
</tr>
<tr>
<td>1963</td>
<td>1453</td>
<td>100,0</td>
</tr>
<tr>
<td>1964</td>
<td>1590</td>
<td>105,0</td>
</tr>
<tr>
<td>1965</td>
<td>1709</td>
<td>109,0</td>
</tr>
<tr>
<td>1966</td>
<td>1826</td>
<td>112,8</td>
</tr>
<tr>
<td>1967</td>
<td>1922</td>
<td>116,0</td>
</tr>
<tr>
<td>1968</td>
<td>2082</td>
<td>122,4</td>
</tr>
<tr>
<td>1969</td>
<td>2303</td>
<td>130,4</td>
</tr>
<tr>
<td>1970</td>
<td>2580</td>
<td>136,8</td>
</tr>
<tr>
<td>1971</td>
<td>2830</td>
<td>140,4</td>
</tr>
<tr>
<td>1972</td>
<td>3165</td>
<td>145,3</td>
</tr>
</tbody>
</table>

It can be seen that income per capita rose by 45,3 percent in Euro-6 or 39,3 percent in Euro-9, since the private consumption expenditure rose around 45 percent in Euro-6 or 38,2 percent in Euro-9, between 1963 and 1972. If we take the annual average growth of GNP per capita in Euro-6 or Eur-9 it will be around 4,5% and 3,9% respectively, since the average annual growth of the private consumption per capita will be around 4,5% in Euro-6 or 3,8% in Euro-9. It can be seen that the index of the private consumption expenditure was growing almost the same to the growth GNP-per capita index.
TABLE 1.3.

Gross national product per capita (at market price) (EUR.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>1673</td>
<td>1815</td>
<td>1964</td>
<td>2074</td>
<td>2089</td>
<td>2269</td>
<td>2558</td>
<td>3089</td>
<td>3401</td>
<td>3868</td>
<td>4510</td>
<td>8,9</td>
</tr>
<tr>
<td>France</td>
<td>1745</td>
<td>1915</td>
<td>2035</td>
<td>2194</td>
<td>2350</td>
<td>2557</td>
<td>2777</td>
<td>2866</td>
<td>3157</td>
<td>3504</td>
<td>3949</td>
<td>11,0</td>
</tr>
<tr>
<td>Italy</td>
<td>911</td>
<td>1060</td>
<td>1133</td>
<td>1218</td>
<td>1331</td>
<td>1428</td>
<td>1563</td>
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<td>1870</td>
<td>2005</td>
<td>2325</td>
<td>8,3</td>
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<tr>
<td>Luxembourg</td>
<td>1220</td>
<td>1416</td>
<td>1559</td>
<td>1672</td>
<td>1820</td>
<td>1990</td>
<td>2228</td>
<td>2475</td>
<td>2759</td>
<td>3193</td>
<td>12,7</td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>1499</td>
<td>1662</td>
<td>1797</td>
<td>1920</td>
<td>2046</td>
<td>2183</td>
<td>2416</td>
<td>2692</td>
<td>2936</td>
<td>3350</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>1689</td>
<td>1915</td>
<td>1889</td>
<td>2071</td>
<td>2113</td>
<td>2302</td>
<td>3630</td>
<td>3004</td>
<td>3125</td>
<td>3431</td>
<td></td>
<td>6,9</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1606</td>
<td>1737</td>
<td>1855</td>
<td>1965</td>
<td>2023</td>
<td>1895</td>
<td>2018</td>
<td>2202</td>
<td>2444</td>
<td>2873</td>
<td></td>
<td>9,3</td>
</tr>
<tr>
<td>Germany</td>
<td>807</td>
<td>912</td>
<td>973</td>
<td>1021</td>
<td>1087</td>
<td>1071</td>
<td>1225</td>
<td>1358</td>
<td>1523</td>
<td>1777</td>
<td></td>
<td>16,7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1689</td>
<td>1916</td>
<td>2135</td>
<td>2324</td>
<td>2500</td>
<td>2548</td>
<td>2899</td>
<td>3186</td>
<td>3474</td>
<td>3884</td>
<td></td>
<td>12,9</td>
</tr>
</tbody>
</table>

Source: General Statistics EEC-1974

1.2. Meat consumption

Meat is a high protein food, which is becoming more and more important in the diet of people in the developed countries.

The growth of meat consumption in the E.E.C. can be seen in table 1.4.

Table 1.4.
The growth of meat consumption for all kinds of meat in E.E.C.-6.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total consumption (1000 tons)</th>
<th>Consumption per capita (kg.)</th>
<th>INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963</td>
<td>11208</td>
<td>62,4</td>
<td>100,0</td>
</tr>
<tr>
<td>1964</td>
<td>11544</td>
<td>62,4</td>
<td>100,0</td>
</tr>
<tr>
<td>1965</td>
<td>11839</td>
<td>63,7</td>
<td>105,3</td>
</tr>
<tr>
<td>1966</td>
<td>11971</td>
<td>65,7</td>
<td>105,3</td>
</tr>
<tr>
<td>1967</td>
<td>12357</td>
<td>67,1</td>
<td>107,5</td>
</tr>
<tr>
<td>1968</td>
<td>13275</td>
<td>71,5</td>
<td>114,6</td>
</tr>
<tr>
<td>1969</td>
<td>13794</td>
<td>73,7</td>
<td>118,1</td>
</tr>
<tr>
<td>1970</td>
<td>14169</td>
<td>75,3</td>
<td>120,7</td>
</tr>
<tr>
<td>1971</td>
<td>14947</td>
<td>79,2</td>
<td>126,9</td>
</tr>
<tr>
<td>1972</td>
<td>15268</td>
<td>80,2</td>
<td>128,5</td>
</tr>
</tbody>
</table>

Source: Agricultural Statistics EEC-1975
From this list can be seen that the consumption of meat is growing very rapidly, either consumption per capita (rose around 28.5%, and total consumption rose 36.2% between 1962/63 and 1971/1972 in E.E.C.). The average meat consumption (without fat) for enlarged community today is around 72 kg/capita, since 36 kg/capita in 1960. The tendency shows that the people of E.E.C. countries are more and more consuming meat which passes a higher income elasticity.

1.3. General background of meat processing
(Why is meat being processed?)

1.3.1. Meat as a food and the need of protein

The animal or human body requires food in order to obtain the necessary energy to repair wastage of tissue and to promote growth. Food consists of all those substances which taken into the living organism producing energy, built tissue, or regulate the life process without any harm accruing to the organism. For supplying of energy in the form of heat, we rely mainly on carbohydrates and fats.

Heat and energy can be obtained from protein, but this is an expensive method, which, if carried too far can place additional strain on the system, as proper elmination of intragenous waste from protein is essential.

Foodstuff may conveniently classified as follows:

| Protein | fat | carbohydrates | \[ \rightarrow \text{organic} \rightarrow \text{inorganic} \rightarrow \text{water} \rightarrow \text{mineral salt} \]

Bodily fuel needs for sedentary and manual order

<table>
<thead>
<tr>
<th></th>
<th>sedentary (g)</th>
<th>manual (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>protein</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>fat</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>carbohydrates</td>
<td>400</td>
<td>500</td>
</tr>
<tr>
<td>approximate caloric value</td>
<td>2900</td>
<td>3300</td>
</tr>
</tbody>
</table>

Protein

Protein may be obtained from both animal and vegetables sources, but the quantity of available protein absorbed by the system is much higher
in those animal origin than those obtained from vegetables. Whereas the system will absorbed about 97% of animal protein, only about 84% of those from vegetable matter are utilized. Thus a diet consisting exclusively of mainly of vegetables must of necessity be more bulky. Meat, liver and kidney in particularly have a very high biological protein value, that is, they are very valuable in replacing and maintaining the body protein and in building up the body cells. But many times people eat meat not by the realization of the necessity of protein but because meat is a delicious food.

1.3.2. Meat and Food Processing

1. Slaughtering and meat processing

Meat is obtained from animal or live-stock, but it can not be eaten as a meat without slaughtering the animal (slaughtering process see Annex 1). The animal is slaughtered in slaughter-houses, produce carcasses and some other internal parts of the animal. The carcasses are than cut in the cutting room and then deboned. Some of these are directly taken to the butchers, or meat-shop, or supermarket to be retailed as a fresh meat, but some are taken to the meat factory or meat processing industry to be processed on a higher stage. (The flow of meat distribution can be seen on fig.2.)

The meat processing can be canning, sausage making and smoking etc.

2. Add up economics progress.

The food processing industry is important to economic growth and to the health of people in developing or developed countries. The benefits from the food processing industry go far beyond calories and nutrition food. Food imports can be reduced as eliminated and food product exported - a two way economic gain. The large markets and the higher prices created by food processing stimulate greater and more efficient agricultural production. Employment is increased not only in the food factories and the fields but also in activities ancillary to food processing. The gains add up to economic progress on a board, sound base. Meat is one the items in the food processing industry.
3. Freedom from slavery, saving time and money.

Freedom from "slavery" to food production and preparation is the great benefit from the food processing industry. Efficiently processed foods are relatively inexpensive, and they can save both time and money. Easy to prepare products free housewives from drudgery from spending of their time preparing food for their families. More than that, an integrated food industry can free entire countries from "food slavery" from spending most of the national effort and income on food and reduce the portion of personal income for food from 70 percent or more to 30 percent as less*. Time and money saved in this way can be directed to the creation and support of other industries and services, generating economic progress.

4. Higher quality food and easier to prepare.

It should be appreciated too that the quality of processed foods has gradually improved over a long span of years in the developed countries. Many products non equal the culinary achievement of chefs in gourmet restaurants, yet sell at popular prices. Many are used in time restaurants to save time, labour, skill and cost of food preparation.

5. Easier to transport and easier to storage.

Smaller size, smaller space needed, and lower weight transported. Slaughtered animal will be:
- 50% less in space of transport
- 20% less in weight, and around
- 25% less in weight for deboned meat.

6. Quality and hygienic control.

(Sanitation and nutritional standard are the need for mechanized processors).
- since food for human consumption must be 100 percent safe, it must be prepared with the utmost care. It must be protected from contamination from whatever source (e.g. pesticides, unsafe chemical preservatives). It must not be permitted to become contaminated with microorganism that

*Food Processing Industry, Monograph no. 9, UNITED NATION, 1969
cause illness or death, such as E. Coli, staphylococcus, Salmonella or botulinum bacteria.
This is one of the main reason—government preparing the public slaughterhouses for sanitation or hygienic control, and not permitted anymore the butchers to slaughter their animal behind their shop as done long time before, without any control.

**Standard quality**

- The product quality of food processing industry should be uniform in all packages, grade, smell and taste, should be the same.
All of these conditions can only be fulfilled by mechanized and sterilized equipment in order to be an effective and efficient method and produce a fully controlled hygienic food.
PART II

2.1. The Distribution channels of livestock and meat in the E.E.C.-market

Generally speaking, the distribution channels of livestock and meat in the E.E.C.-market can be presented as on the figure 2.1. The livestock for meat purposes in the E.E.C.-market are supplied by four main sources:
- traditional rearing by individual farmers.
- industrial rearing by meat processing or distributing companies integrating backwards;
- industrial rearing by farmers grouped into cooperatives
- imports of livestock by the importers from the outside of the E.E.C.

At livestock stage - there three main channels between rearing and slaughtering:
- direct sale of livestock to the local butchers
- sale to the livestock whole salers or dealers, or other intermediaries who re-sell through cattle markets
- sale to the agricultural cooperatives companies.

At the slaughtering stage, in fact there are two kinds of slaughterhouses:
- municipal slaughterhouse
- private slaughterhouse (it is including the private and the agricultural cooperatives plants).

The commercial channels for red meat in carcass and in quarters in the E.E.C.-market vary per country, but the normal pattern is as the following:
the slaughterhouses in rearing areas generally operated by cooperatives, and the slaughterhouses operated by wholesalers - selling to:
- butchers
- meat processors
- institutional / caterers
- meat trade wholesalers
- integrated retail chains.
Country butchers and private meat processing companies with their own slaughtering facilities are vertically integrated and do not enter into the market of meats or slaughtered animals.

Meat processing and preparation:
Traditionally, portioning and preparing meat was carried out by the butchers who bought quarters or carcasses and then deboned and cut up into final portions to suit the requirements of the individual customer.
The de-boning and bulk-cutting up is carried out in large meat processing plants which go to the stage of vacuum sealed meat blocks and in some cases to retail size portions. This eliminating any further butcher intervention.
The meat processing plants are in the hands of processors (private and cooperatives companies), integrated distribution or industrial slaughterhouses.
For meat, retail distribution in the E.E.C.-market is spread among:
- retail meat shops or butcher shops for beef, veal, pork, mutton and poultry;
- supermarkets, department stores etc.
There is a market trend in every European country towards a reduction in the number of butcher-shops due to the shortage of butchers and the increasing importance of supermarkets. Due to the importance of meat purchases in household food budgets and the appearance of processed meat, the supermarkets and department stores moved rapidly into meat distribution
<table>
<thead>
<tr>
<th>Supply of livestock</th>
<th>agricultural coop. rearing</th>
<th>traditional farmers</th>
<th>import livestock</th>
<th>meat processing ind. rearing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>livestock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collection &amp; Centralization</td>
<td>agr.cooperatives</td>
<td>local butchers</td>
<td>livestock dealers/whole salers</td>
<td>agent</td>
</tr>
<tr>
<td>Slaughtering</td>
<td>agr.coop. slaughterhouse</td>
<td>municipal slaughterhouse</td>
<td>private slaughterhouse</td>
<td></td>
</tr>
<tr>
<td>meat wholesale</td>
<td>meat whole salers</td>
<td>import meat</td>
<td>export</td>
<td></td>
</tr>
<tr>
<td>Meat processing &amp; preparation</td>
<td>agr.coop.meat proc.factory</td>
<td>butchers</td>
<td>private meat processing faq.</td>
<td>export</td>
</tr>
<tr>
<td>wholesale in meat and meat product</td>
<td></td>
<td></td>
<td>wholesale in meat and meat product</td>
<td></td>
</tr>
<tr>
<td>retailers</td>
<td>caterers - butcher shops - dep.stores - supermarkets - others</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>consumers</td>
<td>consumers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fig. 2-1
Flowchart and intermediaries in livestock and meat distribution channels in the E.E.C.-market.
PART III

THE PATTERN OF MEAT CONSUMPTION IN THE E.E.C.

3.1. DIFFERENT PATTERNS OF MEAT CONSUMPTION IN THE E.E.C.

Consumption of meat in the E.E.C. is still growing and growing; meat consumption percapita in EURO-6 in 1971/1972 was more than 28,5 % higher than in 1962/1963. The total meat consumption rose by around 36,2 % during that period. The rate of increased varied however for different countries even for different types of meat.

Consumption of meat in Italy rose by 66 %, since in West Germany rose by 22 %, and in France rose by only 18 % during the period 1962/63 - 1971/72. In West Germany beef and veal consumption rose by 10 % since pork consumption rose by 28 %. In France beef and veal consumption percapita decreased by 11 % during the period 1962/63 - 1971/72, since pork consumption rose by 19 %. It is quite different in Italy, where beef and veal consumption percapita rose by 46 % and pork consumption rose by 70 %.

It can be seen that the patterns of meat consumption are different for different countries in the E.E.C. The background of this situation is discussed in the next paragraph of this chapter. By this reason the next analysis of meat consumption is done separately for every country.

3.2. THE MAIN GROUP OF MEAT CONSUMPTION.

In fact there are several kinds of meat consumed in the E.E.C., beef, veal, pork, mutton, lamb and goat, horse meat, poultry etc. The distribution of these various types of meat consumed in the E.E.C. in 1971/72 can be seen on the table 3.1.

Table 3.1. The Distribution of the various types of meat in the total consumption during 1971/72 in the E.E.C. (Euro-6)

<table>
<thead>
<tr>
<th>types of meat</th>
<th>country</th>
<th>West Germany</th>
<th>France</th>
<th>Italy</th>
<th>Netherlands</th>
<th>Belgium/Luxemburg</th>
<th>Euro-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef and veal (%)</td>
<td></td>
<td>27,8</td>
<td>30,3</td>
<td>43,0</td>
<td>29,9</td>
<td>33,0</td>
<td>32,2</td>
</tr>
<tr>
<td>Pork (%)</td>
<td></td>
<td>55,3</td>
<td>33,6</td>
<td>24,1</td>
<td>49,2</td>
<td>41,5</td>
<td>40,6</td>
</tr>
<tr>
<td>Mutton, lamb and goat (%)</td>
<td></td>
<td>0,3</td>
<td>3,5</td>
<td>1,9</td>
<td>0,5</td>
<td>1,1</td>
<td>1,7</td>
</tr>
<tr>
<td>Horse meat (%)</td>
<td></td>
<td>0,1</td>
<td>1,7</td>
<td>1,5</td>
<td>3,7</td>
<td>4,0</td>
<td>1,5</td>
</tr>
<tr>
<td>Poultry (%)</td>
<td></td>
<td>10,1</td>
<td>15,4</td>
<td>20,7</td>
<td>9,2</td>
<td>11,2</td>
<td>14,0</td>
</tr>
<tr>
<td>Other animals (%)</td>
<td></td>
<td>1,1</td>
<td>6,2</td>
<td>3,7</td>
<td>7,6</td>
<td>1,8</td>
<td>3,3</td>
</tr>
<tr>
<td>Internal parts (%)</td>
<td></td>
<td>5,3</td>
<td>9,3</td>
<td>5,1</td>
<td>7,6</td>
<td>7,4</td>
<td>6,8</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
<td>100 %</td>
</tr>
</tbody>
</table>

It can be seen that the main group of meat consumption in the E.E.C. are beef and veal (32.2%) and pork (40.6%).

If we take the average of annual meat consumption per capita for the period 1962/63 - 1971/72 is estimated to have been:

- Beef, veal = 24.4 kg. = 37.7%
- Pork = 28.0 kg. = 40.0%
- All other kinds of meat = 17.2 kg. = 25.3%

Total meat consumption per capita = 70.12 kg. = 100%

A complete figure of the average of annual meat consumption per capita, the growth and the shares of beef, veal and pork consumption in different countries in the E.E.C. during the period 1962/63 - 1971/72 can be seen on the table 3.2.

By the limitation of time available this study is more concentrated in this main group of meat consumption: beef, veal and pork.

The growth of meat consumption (beef, veal and pork and all kinds of meat) for every country in the E.E.C. for the period of 1962/63 - 1971/72 can be seen on the table 3.3.
Table 3.2. The average of annual meat consumption, annual growth and shares of beef and pork consumption in the E.E.C. in the period 1962/63 - 1971/72.

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption (y) (1962/63 - 1971/72)</th>
<th>beef, veal</th>
<th>pork</th>
<th>all kinds of meat</th>
<th>Average annual cons./cap. (kg.)</th>
<th>Average annual growth (kg.)</th>
<th>Average share of cons. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Germany</td>
<td></td>
<td>22,9</td>
<td>41,8</td>
<td>77,4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0,22</td>
<td>1,06</td>
<td>1,61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>29,6</td>
<td>54,0</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Germany</td>
<td></td>
<td>30,5</td>
<td>29,6</td>
<td>88,8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 0,37</td>
<td>0,51</td>
<td>1,46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>34,4</td>
<td>33,3</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>20,7</td>
<td>10,5</td>
<td>45,7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0,8</td>
<td>0,58</td>
<td>2,34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>45,2</td>
<td>23,1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>21,2</td>
<td>27,6</td>
<td>59,8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 0,26</td>
<td>0,89</td>
<td>1,31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>35,4</td>
<td>46,2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium &amp; Luxembourg</td>
<td></td>
<td>25,8</td>
<td>30,2</td>
<td>75,4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0,25</td>
<td>0,89</td>
<td>1,56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>34,3</td>
<td>40,1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro-6</td>
<td></td>
<td>24,4</td>
<td>28,0</td>
<td>70,12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0,21</td>
<td>0,75</td>
<td>1,78</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>34,7</td>
<td>40,0</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3.3.

THE DEVELOPMENT OF MEAT CONSUMPTION IN THE E.E.C. (EURO-6)

<table>
<thead>
<tr>
<th>Year</th>
<th>W.Germany</th>
<th>France</th>
<th>Italy</th>
<th>Netherlands</th>
<th>Belgium/Luxembourg</th>
<th>E.E.C.-6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beef</td>
<td>Pork</td>
<td>Others</td>
<td>Total</td>
<td>Beef</td>
<td>Pork</td>
</tr>
<tr>
<td>62/63</td>
<td>22.0</td>
<td>37.6</td>
<td>11.4</td>
<td>71.0</td>
<td>1267</td>
<td>2156</td>
</tr>
<tr>
<td>63/64</td>
<td>22.2</td>
<td>36.7</td>
<td>11.4</td>
<td>70.3</td>
<td>1285</td>
<td>2128</td>
</tr>
<tr>
<td>64/65</td>
<td>21.3</td>
<td>39.8</td>
<td>11.5</td>
<td>72.6</td>
<td>1249</td>
<td>2335</td>
</tr>
<tr>
<td>65/66</td>
<td>21.8</td>
<td>39.5</td>
<td>11.7</td>
<td>73.0</td>
<td>1294</td>
<td>2345</td>
</tr>
<tr>
<td>66/67</td>
<td>22.4</td>
<td>39.2</td>
<td>12.4</td>
<td>74.0</td>
<td>1337</td>
<td>2351</td>
</tr>
<tr>
<td>67/68</td>
<td>22.5</td>
<td>42.2</td>
<td>12.7</td>
<td>77.4</td>
<td>1349</td>
<td>2531</td>
</tr>
<tr>
<td>68/69</td>
<td>23.5</td>
<td>43.8</td>
<td>13.0</td>
<td>80.3</td>
<td>1419</td>
<td>2648</td>
</tr>
<tr>
<td>69/70</td>
<td>24.1</td>
<td>44.1</td>
<td>13.7</td>
<td>81.9</td>
<td>1457</td>
<td>2661</td>
</tr>
<tr>
<td>70/71</td>
<td>24.9</td>
<td>47.1</td>
<td>14.5</td>
<td>86.5</td>
<td>1510</td>
<td>2827</td>
</tr>
<tr>
<td>71/72</td>
<td>24.2</td>
<td>48.2</td>
<td>14.7</td>
<td>87.1</td>
<td>1485</td>
<td>2965</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Meat Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>62/63</td>
<td>23.8 25.0 13.6 62.4</td>
</tr>
<tr>
<td>63/64</td>
<td>24.0 25.0 13.4 62.4</td>
</tr>
<tr>
<td>64/65</td>
<td>22.4 26.8 14.5 63.7</td>
</tr>
<tr>
<td>65/66</td>
<td>22.5 26.5 16.7 65.7</td>
</tr>
<tr>
<td>66/67</td>
<td>23.3 26.6 17.2 67.1</td>
</tr>
<tr>
<td>67/68</td>
<td>25.2 31.3 18.0 74.5</td>
</tr>
<tr>
<td>68/69</td>
<td>25.1 29.0 19.6 73.7</td>
</tr>
<tr>
<td>69/70</td>
<td>25.7 29.1 20.5 75.3</td>
</tr>
<tr>
<td>70/71</td>
<td>26.4 31.4 21.4 79.2</td>
</tr>
<tr>
<td>71/72</td>
<td>25.9 32.5 21.8 80.2</td>
</tr>
</tbody>
</table>

Source: Agricultural Statistics EEC.
3.3. **CHANGES OF MEAT CONSUMPTION HABIT IN THE E.E.C.**

It has been presented in the previous paragraph that the growth of meat consumption varied for different types of meat, even for different countries. In France, beef and veal consumption per capita is decreasing around 0.37 kg. in average per year in the last ten years, since pork consumption is increasing around 0.51 kg. in average per year per capita. In West Germany beef and veal consumption per capita is growing very slightly compare to the growth of pork consumption, where beef and veal consumption per capita is increasing around 0.22 kg. in average per year, pork consumption per capita is increasing around 1.06 kg. in average per year.

The shares of beef, veal and pork consumption in the total meat consumption are changing year by year.

In 1962/63, the share of beef and veal consumption in the total meat consumption in E.E.C. was around 38.2 percent, in 1966/67 it was 34.7 % and in 1971/72 it decreased to 32.3 %.

Pork consumption in 1962/63 was 40.1 % in 1966/67 it was 39.6 % and in 1971/72 it increased to 40.5 %.

It is quite different in poultry consumption, in 1962/63 the share of poultry consumption was only 9.9 %, in 1966/67 it increased to 12.4 %, and in 1971/72 it became 14.1 %.

A roughly figure of these changes presented in figure 3.1.

<table>
<thead>
<tr>
<th>Year</th>
<th>Beef and veal</th>
<th>Pork</th>
<th>Poultry</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962/63</td>
<td>38.1</td>
<td>40.1</td>
<td>9.9</td>
<td>11.9</td>
<td>100</td>
</tr>
<tr>
<td>1966/67</td>
<td>34.7</td>
<td>39.6</td>
<td>12.4</td>
<td>13.3</td>
<td>100</td>
</tr>
<tr>
<td>1971/72</td>
<td>32.3</td>
<td>40.5</td>
<td>14.1</td>
<td>12.8</td>
<td>100</td>
</tr>
</tbody>
</table>

Fig. 3.1. The changes of Shares in the total of meat consumption in the EEC
It can be seen that generally beef and veal consumption share in E.E.C. is decreasing since the shares of pork and poultry consumption are increasing.

There is a tendency that beef and veal consumption changes to pork and poultry consumption, however it is varied for different countries.

A complete figure of these changes and the growth of the consumption for different types of meat in different countries presented on the table 3.4.
Table 3.4.: The development and the changes of meat consumption habit in the E.E.C.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>beef</td>
<td>pork</td>
<td>all kinds</td>
</tr>
<tr>
<td></td>
<td>veal</td>
<td>poultry</td>
<td>of meat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Germany</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amount</td>
<td>Index</td>
<td>Share</td>
</tr>
<tr>
<td></td>
<td>(kg.)</td>
<td>(62/63=100)</td>
<td>(%)</td>
</tr>
<tr>
<td>West Germany</td>
<td>22,0</td>
<td>37,6</td>
<td>5,6</td>
</tr>
<tr>
<td></td>
<td>100 100</td>
<td>100 100</td>
<td>100 100</td>
</tr>
<tr>
<td></td>
<td>31,0 53,0 7,8 100 30,3 53,0 9,7 100 27,8 55,3 10,2 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>32,8</td>
<td>27,2</td>
<td>10,9</td>
</tr>
<tr>
<td></td>
<td>100 100</td>
<td>100 100</td>
<td>100 100</td>
</tr>
<tr>
<td></td>
<td>40,3 33,5 13,4 100 33,5 32,3 14,6 100 30,3 33,7 15,7 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>17,2</td>
<td>8,3</td>
<td>6,0</td>
</tr>
<tr>
<td></td>
<td>100 100</td>
<td>100 100</td>
<td>100 100</td>
</tr>
<tr>
<td></td>
<td>48,7 23,5 17,0 100 46,4 23,2 25,2 100 42,9 24,0 22,8 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>22,8</td>
<td>24,3</td>
<td>3,2</td>
</tr>
<tr>
<td></td>
<td>100 100</td>
<td>100 100</td>
<td>100 100</td>
</tr>
<tr>
<td></td>
<td>41,9 44,7 5,9 100 35,5 46,7 8,7 100 29,9 49,2 10,4 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>25,5</td>
<td>26,4</td>
<td>8,2</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>36,8</td>
<td>38,1</td>
<td>11,8</td>
</tr>
<tr>
<td>Belgium</td>
<td>25,5</td>
<td>26,4</td>
<td>8,2</td>
</tr>
<tr>
<td></td>
<td>100 100</td>
<td>100 100</td>
<td>100 100</td>
</tr>
<tr>
<td></td>
<td>36,8 38,1 11,8 100 34,7 41,1 9,4 100 33,0 41,6 11,0 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Euro-6</td>
<td>23,8</td>
<td>25,0</td>
<td>6,2</td>
</tr>
<tr>
<td></td>
<td>100 100</td>
<td>100 100</td>
<td>100 100</td>
</tr>
<tr>
<td></td>
<td>38,1 40,1 9,9 100 34,7 39,6 12,4 100 32,3 40,5 14,1 100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meat consumption per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount (kg.)</td>
</tr>
<tr>
<td>Index (62/63=100)</td>
</tr>
<tr>
<td>Share (%)</td>
</tr>
</tbody>
</table>

...
### 3.4. The factors influencing meat consumption in the E.E.C.

Meat consumption is mainly determined by the following factors:
- The number of population.
- Income.
- Price of meat.
- Price of substitution goods.

The development of these factors is different for every country in the E.E.C.-market, consequently the development of meat consumption for every country has a different pattern. The development of these determining factors during the last ten years is shown in table 3.5. (1-5)

In this study the multiple Regression Analysis method is applied to find the most important determining factors of meat consumption for every country; by applying this method we can also find the relationship, the regression coefficient, as well as the coefficient of correlation between meat consumption, Income per capita, price of a certain meat and the prices of the substitution meats.

To analyse the beef and veal consumption per capita we take the variables:
- income per capita
- beef price
- pork price
- poultry price

For pork consumption per capita, the variables are:
- income per capita
- pork price
- beef price
- poultry price

By applying the multiple linear Regression Analysis Method we find the results on the table 3.6. and table 3.7.
### Table 3.5.1. Development of the causes influencing meat consumption.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population growth (1000 heads)</th>
<th>GNP-per capita (Eur)</th>
<th>Beef &amp; calves consumption per cap. (kg)</th>
<th>Pigsmeat (pork) cons. per cap. (kg)</th>
<th>Poultry consumption per cap. (kg)</th>
<th>Beef price (medium quality eur/100 kg)</th>
<th>Pork price (75-100 kg) Eur/100 kg</th>
<th>Poultry price Eur/100 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963</td>
<td>57389</td>
<td>1673</td>
<td>22,2</td>
<td>36,7</td>
<td>5,6</td>
<td>48,8</td>
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### Table 3.5.2. Development of the causes influencing meat consumption (France).

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<th>Beef &amp; calves consumption per cap. (kg)</th>
<th>Pigsmeat (pork) cons. per cap. (kg)</th>
<th>Poultry consumption per cap. (kg)</th>
<th>Beef price (medium quality) Eur/100 kg</th>
<th>Pork price (75-100 kg) Eur/100 kg</th>
<th>Poultry price Eur/100 kg</th>
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<td>47.8</td>
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<td>69.2</td>
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<td>7</td>
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<td>8</td>
<td>Poultry price Eur/100 kg.</td>
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### Table 3.6.

#### Beef and veal consumption per capita (kg.), per year.

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<th>Country</th>
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<th>X2 beef price (Eur/100 kg.)</th>
<th>X3 pork price (Eur/100 kg.)</th>
<th>X4 poultry price (Eur/100 kg.)</th>
<th>C constant</th>
<th>Standard error of estimate</th>
<th>Confidence level</th>
<th>Conclusion (the main factors influencing beef, veal consumption)</th>
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- **Very high**
- **High**
- **Low**
- **Very Low**

**Beef & veal consumption** = F (GNP/cap., beef price, pork price, poultry price)
Table 3.7. Pork consumption per capita (kg.) year.

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<th>Country</th>
<th>Regression Coefficient</th>
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<th>Partial Correlation Coeff.</th>
<th>Confidence level</th>
<th>Conclusion (the main factors influencing pork consumption)</th>
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<td>0.00664 0.9025</td>
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<td>0.4869</td>
<td>99.97%</td>
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<td>99.89%</td>
<td>Income (GNP/cap)pork price</td>
</tr>
<tr>
<td>Belgium &amp; Lux.</td>
<td>0.00357 0.7593</td>
<td>6.3803</td>
<td>0.93983</td>
<td>99.88%</td>
<td>Income (GNP/cap) Pork price, Poultry price</td>
</tr>
</tbody>
</table>

The formulation of the Relationship see Annex-2
1. West Germany.
The main factors influencing the beef and veal consumption are the income and the price of beef itself. There is also the effect of pork price (substitution to beef consumption). The poultry price has a unlogical relationship, (negative regression coefficient) it might there is the relationship between the change in beef price and poultry price.
In pork consumption, the main factors are also the income and the pork price itself, but there is almost no influence of the beef price. It can be seen that people in Germany like to eat pork more than beef.

2. France.
The main factors influencing the beef and veal consumption are the beef price and the pork price, however these effects are not too much. We can not see the effect of income in beef and veal consumption. In the pork consumption, the main factor is income per capita. There is a tendency beef consumption is changing to pork consumption to poultry consumption in France. During the period 1962/63 - 1971/72 beef, veal consumption per capita decreased by 11,3 %, since pork consumption rose by 18,8 % and poultry consumption rose by 42,2 % (see table 3.4.).
The meat consumption per capita in France seems to be maximum. There is not so much increasing anymore. France is the highest amount in meat consumption per capita in the E.E.C. (1971/72 per capita 95,9 kg./year. The increase of meat consumption in France will be mostly caused by the growth of population.

3. Italy.
The main factors influencing the beef and veal consumption are income and beef price itself. There is also the effect of pork and poultry prices but not as much as income and beef price factors.
In pork consumption, the main factors are also the income and the price of pork itself, and a little bit the effect of beef price.
By the increasing of income, meat consumption in Italy increasing very rapidly. During the period 1962/63 - 1971/72, income per capita rose by 105 %, caused the beef consumption rose by 46,5 %, pork consumption rose by 70 %, and all kinds of meat rose by 66,3 % (see table 3.4.).
In beef consumption is seen only pork price factors, but in pork consumption there are income and pork price factors which have a very big influence in pork consumption. There is almost no effect of beef price in pork consumption. It seems people like to eat pork more than beef in Netherlands. There is also a tendency beef consumption in changing to pork and poultry consumption.
This situation is possible by two reasons:
- the consumption habit is changing, people like to eat pork more than beef and veal, or
- the price of beef, veal is too expensive compare to the income and too high compare to the prices of pork and poultry.

During the period 1962/63 - 1971/72, beef consumption per capita decreased by 11,4 %, since pork consumption rose by 36,6 % and poultry consumption rose by 161,7 % (see table 3.4. and table 3.5.4.).

5. Belgium and Luxemburg.
The most important factor in beef consumption is the income. The influence of beef price and pork price are not so much compare to the influence of the income.
In pork consumption, the main factors are income, pork price itself, and the prices of poultry and beef as the substitution to pork consumption.

During the period 1962/63 - 1971/72, beef and veal consumption per capita rose by 9,8 %, since pork consumption rose by 33,7 %, and poultry consumption rose by 13,4 %. It seems people in Belgium/Luxemburg like to eat pork more than beef, veal and poultry.

It can be seen that the most important factor, influencing the meat consumption in the E.E.C. is the income. The price of the concerned meat is also quite important, but it is not as high as the income factor.
The influence of the substitution meat prices varied in different countries; it is mostly depended on the level of income and the habit of meat consumption.

Generally speaking, people in the E.E.C. like to eat pork more than beef and poultry. In 1971/72, pork consumption in the E.E.C. 40,5 %, beef and veal 32,3 %, poultry 14,1 %, other kinds of meat 13,1 %. By the increasing of income, pork consumption increasing more than beef and veal, and poultry (in kg. per capita). In 1962/63, pork consumption per capita (average in E.E.C.) = 25 kg., beef and veal: 23,8 kg, poultry: 6,2 kg. and in 1971/72,
pork consumption per capita: 14.5 kg. (rose by 15.5 kg.), beef and veal consumption: 25.9 kg. (rose by 2.1 kg.) and poultry consumption 11.3 kg. (rose by 5.1 kg.).
PART IV

FORECASTS OF MEAT DEMAND IN THE E.E.C.

4.1. A forecast of total meat demand in the E.E.C.

In chapter 3 it has been discussed the main factors influencing the development of meat consumption i.e.
- the growth of population
- the growth of income
- the price of meat
- the price of its substitution.

In fact it is a very good analysis to make a forecast of meat demand in future years based on these variables.

If: $D = \text{total demand (total consumption)}$

$D = \text{Consumption per capita} \times \text{total population}.$

$$D = C_e \cdot P$$

$C_e = \text{consumption per capita}$

$P = \text{total population}$

$C = F \left( \text{Income/cap., Price, Price}_{\text{substitution}} \right)$

$$D = F \left( P, \text{Income/cap.}, \text{Price}, \text{Price/}_{\text{subst.}} \right)$$

We do have the relationship between meat consumption per capita and the income/cap., Price itself and the prices of its substitution meat, however doing some forecasting based on this relationship firstly it must be forecasted the development of each factor. The growth of population and income can be forecasted as a function of time based on the historical statistical data, but it is almost impossible to forecast the growth of price.

There is a structural change in the development of price, especially in the E.E.C.-market where the meat prices is under controlled of the E.E.C. price policy.
By this reason the researcher thought it is wiser to make a forecast in direct method, the growth of meat consumption as a function of time. It is including all the factors: the population, the income, growth and the prices as a function of time.

The meat consumption in the E.E.C. in the past ten years enjoyed a steady growth and this tendency is believed to continue during the next few years. The total meat consumption statistics obtained from E.E.C. organizations is shown in the table 4.1.

Table 4.1. Total meat Consumption in the E.E.C. (all kinds of meat).

<table>
<thead>
<tr>
<th>Year</th>
<th>Volumes (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962/63</td>
<td>11.208</td>
</tr>
<tr>
<td>1963/64</td>
<td>11.544</td>
</tr>
<tr>
<td>1964/65</td>
<td>11.839</td>
</tr>
<tr>
<td>1965/66</td>
<td>11.971</td>
</tr>
<tr>
<td>1966/67</td>
<td>12.357</td>
</tr>
<tr>
<td>1967/68</td>
<td>13.275</td>
</tr>
<tr>
<td>1968/69</td>
<td>13.794</td>
</tr>
<tr>
<td>1969/70</td>
<td>14.169</td>
</tr>
<tr>
<td>1970/71</td>
<td>14.997</td>
</tr>
<tr>
<td>1971/72</td>
<td>15.268</td>
</tr>
<tr>
<td>1972/73</td>
<td>15.666*</td>
</tr>
</tbody>
</table>


The development curve of meat consumption in past ten years in the E.E.C. is presented on the fig. 4.1. The random fluctuation of the pattern of curve shown in fig. 4.1. can be smoothed by taking twice three year moving averages. After eliminating random fluctuations, the development of meat consumption trend in the E.E.C. is to be a progressive linear. The trend of the 10 years time series turns out to be a simple straight line.
Figure 4.1. TRENDS OF MEAT CONSUMPTION IN THE EEC

Source: Agr. Statistics

EEC-1973
The development of meat consumption in the future years in the E.E.C. can be predictable by applying the regression equations which are found by applying the linear Regression Analysis Method. The next analysis of meat demand is estimated by this method.

By applying the linear regression analysis method we found the following results on the table 4.2. (The formula of Regression Equations of meat consumption in the E.E.C.-countries).

Table: 4.2.a. The formula of regression equations of meat consumption in the E.E.C.-countries (in thousand tons)

<table>
<thead>
<tr>
<th>Country</th>
<th>Formula of Regression</th>
<th>Standard error of estimate</th>
<th>Test of significance</th>
<th>Correlation coefficient</th>
<th>Confidence level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. West Germany</td>
<td>( \hat{y} = 154.1091X_1 - 5781.7636 )</td>
<td>84.0</td>
<td>16,7</td>
<td>3.3555</td>
<td>0.9859</td>
</tr>
<tr>
<td>2. France</td>
<td>( \hat{y} = 94.9636X_1 - 1907.5455 )</td>
<td>91.9</td>
<td>9.4</td>
<td>3.355</td>
<td>0.9575</td>
</tr>
<tr>
<td>3. Italy</td>
<td>( \hat{y} = 177.6788X_1 - 9567.8182 )</td>
<td>124.9</td>
<td>12.9</td>
<td>3.355</td>
<td>0.9769</td>
</tr>
<tr>
<td>4. Netherlands</td>
<td>( \hat{y} = 27.9576X_1 - 1131.4364 )</td>
<td>22.0</td>
<td>11.6</td>
<td>3.355</td>
<td>0.9713</td>
</tr>
<tr>
<td>5. Belgium/Luxemburg</td>
<td>( \hat{y} = 22.2788X_2 - 765.4182 )</td>
<td>14.3</td>
<td>14.11</td>
<td>3.355</td>
<td>0.9805</td>
</tr>
</tbody>
</table>

\( X_j = \text{years, where } X_1 = 63, X_2 = 64, \ldots \ldots \) 

(to predict the \( y \) in 1975, \( X_j = 75 \))

**Test of significance:** To evaluate these relationships as a realistic statement, we use the criteria t-value of t-test. The variable meat demand \( (y) \) and the time \( (X_j) \) are significantly related if \( |t_{c,j}| > |t_{T,j}| \)

where \( t_{c,j} \) = computed value t-statistic
\( t_{T,j} \) = the table t-statistics.
\( n = \text{number of observation, here } n=10 \)
\( k = \text{number of variables, here } k=2 \)
\( d.f. = \text{degree of freedom} \)
\( d.f. = n-k \rightarrow d.f. = 10-2=8 \)
\( c.l = \text{confidence level} \rightarrow c.l = 100 \% \)}

\( t_{T,j} = 3.355 \)

(table of t-value)
Forecast of the total meat demand in E.E.C. countries (Euro-6) in future years up to 1980 (present year: 1974)

<table>
<thead>
<tr>
<th>Year</th>
<th>Historical data</th>
<th>Forecast</th>
<th>Standard error of estimate</th>
<th>Annual growth estimate (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1963</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Germany</td>
<td></td>
<td>4055</td>
<td>4061</td>
<td>4258</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>4057</td>
<td>4299</td>
<td>4351</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>1780</td>
<td>1886</td>
<td>1903</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>655</td>
<td>642</td>
<td>657</td>
</tr>
<tr>
<td>Belgium/Luxembourg</td>
<td></td>
<td>666</td>
<td>656</td>
<td>670</td>
</tr>
<tr>
<td>Eur-6</td>
<td></td>
<td>11208</td>
<td>11544</td>
<td>11839</td>
</tr>
</tbody>
</table>

Table 4.2.b. The consumption of all kinds of meat (1,000 tons)
The estimated development of meat demand in the E.E.C. countries (Euro-6) in the future years presented on the table 4.2.b. These estimation are with a possible of error of estimate within the limits $\pm (Syx)$, which are presented on the column "Standard error of Estimate", table 4.2.a.

We are sure these estimations will be true by the criteria of high $t$-value (computed) compare to the $t$-value (table), and the high value of Correlation Coefficient of meat consumption ($y$) as a function of time ($X_j$).

It can be seen on the table 4.2.b. there are three big countries consume meat that can also be a greater part of meat i.e.: West Germany (in 1980 is estimated to consume meat 6547 thousand tons), France (5590 thousand tons) and Italy (4646 thousand tons).

The biggest trend or annual growth of meat consumption is Italy (estimated 177,68 thousand tons per year). It is easy to understand in Italy, the national income in the last ten years growth rapidly, and the further increase of overall national income will help expend the absolute volume of meat consumption.

West Germany seems to be bigest market and still growing and growing. Estimated annual growth of meat consumption in absolute volume is around 154,11 thousand tons a year.
4.2. Forecasts of Beef, Veal and Pork Demand.

The total demand for all kinds of meat in the E.E.C. countries has been discussed in the previous paragraph. However, the development of meat consumption in the E.E.C. countries varied for different types of meat. By this reason, it is necessary to make a separate analysis for different types of meat in different countries. The next analysis is more concentrated in beef, veal, and pork as the main group of meat consumption in the E.E.C.

There are two kinds of methods applied in forecasting of beef, veal, and pork demand in this study:

- Linear Regression Analysis Method
- Double Exponential Smoothing Method.

Linear Regression Analysis Method is preferred than Double Exponential Smoothing Method, because it allows us to fit a line or its mathematical equivalent, in a n-variable model, to any combination of variables, and their significance and precision can be evaluated or measured. This, the next analyses, the Linear Regression Analysis Method is applied as far as it is applicable. Its applicability is evaluated based on the criterion of t-value (test of significance) and the correlation coefficient between the dependent and independent variables. Where else the Linear Regression Method is unapplicable, the double exponential smoothing method will be applied. In the next analysis, in France for instance, we apply the double exponential smoothing method to forecast, the beef, and veal demand, the linear Regression Analysis Method is unapplicable since $|t_{c,j}| < |t_{T,j}| \Rightarrow$ insignificant. (see table 4.3.).

By applying these two kinds method we found the following results on the table 4.3.

(The forecasts of beef, veal, and pork demand in the E.E.C. countries in the future years).

(A complete formula and application of these methods see on the annex-4c).
### Table: 4.3. A Beef and Veal consumption.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Historical data (1000 tons)</th>
<th>Forecast (1000 tons)</th>
<th>Standard error of estimate</th>
<th>Test of significance (t-value)</th>
<th>Correlation coeff.</th>
<th>Confidence level</th>
<th>Estimated annual growth (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>West Germany</strong></td>
<td>1262</td>
<td>1285</td>
<td>1249</td>
<td>1294</td>
<td>1337</td>
<td>1349</td>
<td>1419</td>
</tr>
<tr>
<td><strong>France</strong></td>
<td>1561</td>
<td>1580</td>
<td>1554</td>
<td>1419</td>
<td>1458</td>
<td>1472</td>
<td>1524</td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td>865</td>
<td>908</td>
<td>793</td>
<td>908</td>
<td>981</td>
<td>1174</td>
<td>1324</td>
</tr>
<tr>
<td><strong>Netherlands</strong></td>
<td>271</td>
<td>266</td>
<td>227</td>
<td>249</td>
<td>266</td>
<td>275</td>
<td>281</td>
</tr>
<tr>
<td><strong>Belgium</strong></td>
<td>244</td>
<td>250</td>
<td>231</td>
<td>239</td>
<td>251</td>
<td>254</td>
<td>273</td>
</tr>
<tr>
<td><strong>Euro-6</strong></td>
<td>4203</td>
<td>4289</td>
<td>4054</td>
<td>4109</td>
<td>4293</td>
<td>4521</td>
<td>4704</td>
</tr>
</tbody>
</table>

### B Pork consumption

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Historical data (1000 tons)</th>
<th>Forecast (1000 tons)</th>
<th>Standard error of estimate</th>
<th>Test of significance (t-value)</th>
<th>Correlation coeff.</th>
<th>Confidence level</th>
<th>Estimated annual growth (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>West Germany</strong></td>
<td>2156</td>
<td>2128</td>
<td>2235</td>
<td>2345</td>
<td>2357</td>
<td>2531</td>
<td>2531</td>
</tr>
<tr>
<td><strong>France</strong></td>
<td>1293</td>
<td>1305</td>
<td>1341</td>
<td>1377</td>
<td>1405</td>
<td>1505</td>
<td>1551</td>
</tr>
<tr>
<td><strong>Italy</strong></td>
<td>418</td>
<td>431</td>
<td>499</td>
<td>478</td>
<td>488</td>
<td>566</td>
<td>592</td>
</tr>
<tr>
<td><strong>Netherlands</strong></td>
<td>289</td>
<td>269</td>
<td>312</td>
<td>348</td>
<td>349</td>
<td>363</td>
<td>366</td>
</tr>
<tr>
<td><strong>Belgium</strong></td>
<td>253</td>
<td>240</td>
<td>270</td>
<td>285</td>
<td>298</td>
<td>311</td>
<td>311</td>
</tr>
<tr>
<td><strong>Euro-6</strong></td>
<td>4409</td>
<td>4463</td>
<td>4847</td>
<td>4833</td>
<td>4891</td>
<td>5276</td>
<td>5437</td>
</tr>
</tbody>
</table>

1) Linear Regression Analysis Method is applied
2) Double exponential smoothing method is applied ((1) is unapplicable)}

Note: 1963 means 1962/63
1964 means 1963/64
etc. etc.
It can be seen, that in the future time, Italy will be the most important market for beef and veal, although today West Germany, France and Italy have the same level in absolute volume of beef and veal.

Consumption (1973: West Germany: 1,536,000 tons, France: 1,499,000 tons, Italy: 1,490,000 tons. In 1980 is estimated: West Germany 1,752,000 tons, France 1,478,000 tons (decreasing ± 1,5 %), Italy 1,993,000 tons); Netherland and Belgium/Luxemburg are only the small parts in beef and veal consumption. (In 1973: Netherland: 281,000 tons, Belgium/Luxemburg: 281,000 tons, in 1980 is estimated: Netherlands: 300,000 tons, Belgium/Luxemburg: 313,000 tons).

In pork demand, West Germany seems to be the biggest market, which can absorb 3,005,000 tons, it is 48,23 % of the total pork consumption in the E.E.C. (Euro-6) in 1973, and is estimated in 1980, pork demand in West Germany 3,650,000 tons, it is 48,2 % of the total pork demand in the E.E.C.

Generally speaking, pork consumption is still increasing in the E.E.C.-countries, and this tendency is believe to continue during the next few years. The estimated annual growth of absolute volume of meat consumption (beef, veal and pork) in every country can be seen on the last column of the table 4.3.

It seems, the growth of meat demand is higher in pork sector than in beef and veal sector. Pork sector will be a very attractive market in the whole countries in the E.E.C., especially in West Germany. In beef and veal sector.

Italy seems to be the largest market in the future time.
PART V

MEAT SUPPLY IN THE E.E.C.-MARKET.

5.1. Flow of meat supply.

Generally speaking, the following flow of chart will present an exact of meat supply flow in the E.E.C.-market.

Livestock in E.E.C. for meat purposes are supplied by two different sources: - domestic production - import of livestock.

Domestic production means the local production of livestock for meat purposes. Mostly this domestic production consumed locally, it is only a very small part of it exported to outside E.E.C. for it is not sufficient to supply the whole requirements of meat in the E.E.C. There is still import of livestock or meat to fulfill the local demand. The domestic production (minus exports), plus the imports of livestock for meat purposes slaughtering locally called Net-Production. This Net-Production is still not sufficient to supply the meat demand in the E.E.C., there is still import of meat, either fresh or frozen meat. The distribution of flow of meat in the E.E.C.-market in 1971/72 shown in the following figure.
It can be seen that domestic production (14,173 thousand tons) was only 92.83% of total meat consumption in the Community (Euro-6). Total meat imports (live animal and fresh/frozen meat) was 9.74%, and the total meat export was about 2.5% of total meat consumption.

In fact the main interest of this study is in the net production which very close related to the slaughter house business. However the aims of the E.E.C. policy to be self-supporting in meat sector (long term planning), this it will be more important, to analyse the balance trends between domestic production imports and consumption of meat in the E.E.C.

5.2. Meat Self-sufficiency in the E.E.C. (Euro-6.)

Since 1962 the Community of Six has never able to provide its own requirements of meat, especially in beef, veal and mutton/lamb. The domestic production of beef and veal has never more than 90% of its requirements and has had to import an average of 500 - 600,000 metric tons per year. The self sufficiency figure of meat supply in the community Six in the last ten years shown in the table 5.1.
Table 5.1. Meat self-sufficiency figure in the Community Six.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Self sufficiency</th>
<th>Total (%)</th>
<th>Beef (%)</th>
<th>Pork (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962/63/64/65/66/67/68/69/70/71/72</td>
<td>63/64/65/66/67/68/69/70/71/72</td>
<td>95.2/91.9/93.0/90.92/92.1/94.1/93.1/93.5/94.5/92.8</td>
<td>93.6/97.5/86.8/84.0/97.2/89.2/89.0/88.8/88.8/86.3</td>
<td>100.4/98.0/100.5/98.0/98.0/100.4/98.8/100.0/101.2/101.0</td>
</tr>
</tbody>
</table>

It can be seen that the E.E.C. has never succeeded to supply its own requirements of meat by its domestic production. This deficit in meat supply in fact mainly concerns beef and veal. According to the estimate of E.E.C.-commission at present available, this deficit can be expected to increase between now and 1978 in the enlarged Community although (Denmark and Ireland are the biggest exporters of meat. Denmark's rate of self-sufficiency is very high (217% in 1971) and the Ireland's rate of self-sufficiency is the highest in the Community: about 658% in 1971) The rate of self-sufficiency has increased in the original member states except Italy; in the Community as a whole it has decreased by the very fact that massive imports have been made by Italy.

In pigs meat (pork) sector, the Community is always self-supporting every year as well as in poultry. By this reason, the development policy of the E.E.C. is different in every sector of meat. Principally the E.E.C. would like to be self-supporting in any types of meat in the long term.

5.3. Meat Balance in the E.E.C.

The figure of meat balance in the Community Six in the last ten years shown on the table 5.2.
Table 5.2. Meat Balance in the E.E.C. (Euro-6) (all types of meat) in 1,000 tons

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic Prod.</td>
<td>10671</td>
<td>10604</td>
<td>11009</td>
<td>10885</td>
<td>11385</td>
<td>12492</td>
<td>12843</td>
<td>13257</td>
<td>14209</td>
<td>14173</td>
</tr>
<tr>
<td>Export (A)</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>9</td>
<td>49</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>(B)</td>
<td>285</td>
<td>206</td>
<td>205</td>
<td>202</td>
<td>228</td>
<td>315</td>
<td>237</td>
<td>316</td>
<td>377</td>
<td>361</td>
</tr>
<tr>
<td>Import (A)</td>
<td>297</td>
<td>331</td>
<td>306</td>
<td>407</td>
<td>321</td>
<td>341</td>
<td>359</td>
<td>416</td>
<td>378</td>
<td>484</td>
</tr>
<tr>
<td>(B)</td>
<td>515</td>
<td>782</td>
<td>754</td>
<td>868</td>
<td>881</td>
<td>817</td>
<td>777</td>
<td>852</td>
<td>849</td>
<td>973</td>
</tr>
<tr>
<td>Variation in stock</td>
<td>+ 9</td>
<td>-34</td>
<td>+24</td>
<td>-16</td>
<td>0</td>
<td>+54</td>
<td>-61</td>
<td>-15</td>
<td>+9</td>
<td>-6</td>
</tr>
<tr>
<td>Consumption</td>
<td>11208</td>
<td>11544</td>
<td>11839</td>
<td>11971</td>
<td>12357</td>
<td>13275</td>
<td>13794</td>
<td>14169</td>
<td>15042</td>
<td>15268</td>
</tr>
</tbody>
</table>

A = live animal (for meat purposes)  B = Fresh/frozen meat  Source: Agricultural Statistics E.E.C.

It can be seen that the import of meat into the E.E.C. was far bigger than exports. The exports of meat in fact was mainly to United Kingdom (at this period United Kindom had not been the member of the Community).

Exports to non-member countries consisted almost exclusively of meat from full-grown cattle, and increased steadily over the years although there was set back in 1972 because of the sortages that year.

The increase of meat production locally is not sufficient to supply.

The increase of meat consumption, thus the imports of meat into the E.E.C. from the outside E.E.C.-countries is also increasing year by year. The imports of meat is mainly in beef and veal.

Table 5.3. "Production/consumption" balance per member state expressed in metric tons of meat with bone (1970).

<table>
<thead>
<tr>
<th>Country</th>
<th>full-grown cattle</th>
<th>calves</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Germany</td>
<td>- 134.000</td>
<td>- 33.500</td>
<td>- 167.500</td>
</tr>
<tr>
<td>France</td>
<td>+ 101.000</td>
<td>+ 2.600</td>
<td>+ 103.600</td>
</tr>
<tr>
<td>Italy</td>
<td>- 360.000</td>
<td>- 142.000</td>
<td>- 502.700</td>
</tr>
<tr>
<td>Netherlands</td>
<td>- 32.000</td>
<td>+ 92.600</td>
<td>+ 60.600</td>
</tr>
<tr>
<td>Belgium</td>
<td>- 20.000</td>
<td>+ 2.000</td>
<td>+ 18.000</td>
</tr>
<tr>
<td>Luxemburg</td>
<td>+ 3.300</td>
<td>- 2.000</td>
<td>+ 1.300</td>
</tr>
</tbody>
</table>

Source: D6 for Agriculture - Cattle and meat Division

The French surplus of beef and the Netherlands surplus of veal are thus completely absorbed by Italy and Germany.
5.1 The imports of meat and live animal into the E.E.C.-market.

The imports of livestock or meat into the E.E.C. countries can be classified as two different sources: - the import from other E.E.C.-countries and the import from the rest of the world. The import of meat from other E.E.C.-countries can actually be treated as into circulation of merchandise within the same market. So they should deducted from the imports of outside E.E.C.

Types of meat and animals imported.

Deep_frozen_meat

This type of meat was the most largely imported, and represented more than a third of all imports; Argentina, Brazil and Uruguay are the main suppliers.

Fresh_and_frozen_meat.

Imports of this type of meat increased considerably in 1972, exceeding the weight of full-grown cattle imported live.

In 1972 (still in relation to the Community of the Six) Denmark, Ireland and the United Kingdom played an important part as regards this type of import.

Veal:

In the period preceding the enlayement of the Community, veal came mainly from Denmark and nearly all of it was exported to Italy. In 1972 there was a big decrease in imports.

Live_cattle:

Full-grown cattle imported live play a quite important part. They are used either for fattening as for immediate slaughter.

Poland and Hungary supply most of the cattle for fattening, followed by Austria, the German Democratic Republic, Yugoslavia and Romania.

Live_calves:

Are generally imported from Eastern Europe, and imports of this type of animal, particularly the younger ones, have tender to decline in recent years as most of these countries have taken the fattening their calves in order to sell the meat.
Live pigs:

The imports of pigs into the E.E.C. is only a very small amount compared to the domestic production. The E.E.C. is in fact self-supporting in pigs meat since a few years ago.

The development figure of meat and live animals imported into the E.E.C. shown on the table 5.4.

Table 5.4. The development figure of meat/live animals imports into the E.E.C. market (Euro-6)

<table>
<thead>
<tr>
<th>Year</th>
<th>Beef and Veal</th>
<th>Pork</th>
<th>Total (all types of meat)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>live animals</td>
<td>meat total index</td>
<td>live animals</td>
</tr>
<tr>
<td>1962/63</td>
<td>184</td>
<td>238</td>
<td>422</td>
</tr>
<tr>
<td>1963/64</td>
<td>216</td>
<td>376</td>
<td>592</td>
</tr>
<tr>
<td>1964/65</td>
<td>200</td>
<td>396</td>
<td>596</td>
</tr>
<tr>
<td>1965/66</td>
<td>261</td>
<td>425</td>
<td>686</td>
</tr>
<tr>
<td>1966/67</td>
<td>200</td>
<td>420</td>
<td>620</td>
</tr>
<tr>
<td>1967/68</td>
<td>222</td>
<td>384</td>
<td>606</td>
</tr>
<tr>
<td>1968/69</td>
<td>207</td>
<td>328</td>
<td>535</td>
</tr>
<tr>
<td>1969/70</td>
<td>259</td>
<td>406</td>
<td>665</td>
</tr>
<tr>
<td>1970/71</td>
<td>239</td>
<td>428</td>
<td>667</td>
</tr>
<tr>
<td>1971/72</td>
<td>312</td>
<td>463</td>
<td>775</td>
</tr>
</tbody>
</table>

The percentage of real imported meat in the total meat consumption locally shown on the table 5.5.
Table 5.5. The percentage of meat (Import-Export) in the total of meat consumption in the E.E.C. (Europe-6)

<table>
<thead>
<tr>
<th>Year</th>
<th>Beef &amp; veal (1000 tons)</th>
<th>Pork (1000 tons)</th>
<th>Total (all types of meat) (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>import</td>
<td>export</td>
<td>saldo</td>
</tr>
<tr>
<td>1962/63</td>
<td>422</td>
<td>124</td>
<td>298</td>
</tr>
<tr>
<td>1966/67</td>
<td>620</td>
<td>67</td>
<td>553</td>
</tr>
<tr>
<td>1969/70</td>
<td>665</td>
<td>126</td>
<td>539</td>
</tr>
<tr>
<td>1971/72</td>
<td>775</td>
<td>104</td>
<td>671</td>
</tr>
</tbody>
</table>

Table 5.5. shows that the real imported meat (Imports-Exports) consumed locally is mainly in the beef and veal sector, it is about 7 to 13 percent every year.

The increased of pork imports is balanced by the increased of exports, thus the real imported (imports-exports) of pigs meat consumed locally almost zero. The local or domestic production is sufficient to provide the total requirements of pigs meat in the E.E.C.

Total meat imports (all types of meat) is about 5 to 7 percent of the total meat consumption.
5.5 **Domestic Production.**

According to the statistics compiled by the E.E.C. organizations, the development of meat domestic production to supply the E.E.C.-market (Euro-6) in past ten years shown in table 5.3.

**Table 5.6. Domestic Production Development Figure.**

*(in the E.E.C. (Eur-6))*

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Volume (1000 tons)</th>
<th>Index</th>
<th>Beef &amp; veal Volume (1000 tons)</th>
<th>Index</th>
<th>Pork Volume (1000 tons)</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962/63</td>
<td>10671</td>
<td>100</td>
<td>3935</td>
<td>100</td>
<td>4428</td>
<td>100</td>
</tr>
<tr>
<td>1963/64</td>
<td>10604</td>
<td>99.4</td>
<td>3753</td>
<td>95.4</td>
<td>4372</td>
<td>98.7</td>
</tr>
<tr>
<td>1964/65</td>
<td>11009</td>
<td>103.2</td>
<td>3519</td>
<td>89.4</td>
<td>4872</td>
<td>110.0</td>
</tr>
<tr>
<td>1965/66</td>
<td>10885</td>
<td>102.0</td>
<td>3451</td>
<td>87.7</td>
<td>4734</td>
<td>106.9</td>
</tr>
<tr>
<td>1966/67</td>
<td>11385</td>
<td>106.7</td>
<td>3743</td>
<td>95.1</td>
<td>4795</td>
<td>108.3</td>
</tr>
<tr>
<td>1967/68</td>
<td>12492</td>
<td>117.1</td>
<td>4031</td>
<td>102.4</td>
<td>5296</td>
<td>119.6</td>
</tr>
<tr>
<td>1968/69</td>
<td>12843</td>
<td>120.4</td>
<td>4188</td>
<td>106.4</td>
<td>5371</td>
<td>121.3</td>
</tr>
<tr>
<td>1969/70</td>
<td>13251</td>
<td>124.2</td>
<td>4298</td>
<td>109.2</td>
<td>5462</td>
<td>123.4</td>
</tr>
<tr>
<td>1970/71</td>
<td>14209</td>
<td>133.2</td>
<td>4446</td>
<td>113.0</td>
<td>6044</td>
<td>136.5</td>
</tr>
<tr>
<td>1971/72</td>
<td>14173</td>
<td>132.8</td>
<td>4249</td>
<td>108.0</td>
<td>6256</td>
<td>141.3</td>
</tr>
</tbody>
</table>

*Source: Agricultural Statistics E.E.C.*

It can be seen that production is increasing continually. The production of all kinds of meat rose by about 33% during the period 1962-63 - 1971/72, pork rose by 41.3% and beef and veal rose by only about 10%. In fact, trends in production rates have varied considerably from one country to another. The increase of beef and veal production in Netherlands seems to be mainly a result of the possibility of exporting large quantity of veal particularly to Italy. The development figure of meat production (beef, veal and pork) in the Community in the last ten years shown on the table 5.7. The highest rate of increase in beef and veal production was in fact during the period 1964 - 1971. In 1972 the production was decreasing in the whole of E.E.C. Countries. In 1973 the production was increasing again rapidly till 1974.
This increasing is so fast, continuously until today. Since the middle of this year (1974) the E.E.C. has been over supply of meat. The crisis of the meat over supply in the E.E.C. is caused by some effect of the structural change in the E.E.C.-development policy in the meat sector. This problem will be discussed in the next paragraph. Pork production seems to be growing continuously in the whole E.E.C.-countries.

If we make a prediction of meat production based on the statistical data, by applying some time series analysis (Regression Analysis or Double Exponential smoothing methods) we found the results on the table 5.7. This analysis sure is not including the factor of structural change in the production development, thus the over production of meat at the present is not on the estimate. But in the long terms this estimation we believe it will be true.
Forecasts of beef, veal and pork production in the E.E.C.-countries up to 1980 (present year 1974).

Table 5.7. A. Beef and veal (1000 tons).

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Historical Data (1000 tons)</th>
<th>Forecast (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Germany</td>
<td></td>
<td>1131</td>
<td>1090</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>1476</td>
<td>1405</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>525</td>
<td>530</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>320</td>
<td>236</td>
</tr>
<tr>
<td>Belgium &amp; Luxemburg</td>
<td></td>
<td>258</td>
<td>197</td>
</tr>
<tr>
<td>Euro-6</td>
<td></td>
<td>3710</td>
<td>3458</td>
</tr>
</tbody>
</table>

B. Pork (1000 tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Historical Data (1000 tons)</th>
<th>Forecast (1000 tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Germany</td>
<td></td>
<td>2064</td>
<td>2174</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>1208</td>
<td>1194</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>366</td>
<td>471</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>427</td>
<td>456</td>
</tr>
<tr>
<td>Belgium &amp; Luxemburg</td>
<td></td>
<td>257</td>
<td>252</td>
</tr>
<tr>
<td>Euro-6</td>
<td></td>
<td>4322</td>
<td>4547</td>
</tr>
</tbody>
</table>

Estimated Linear Regression Analysis Method is applied
Double Exponential Smoothing Method is applied.

5.6. Development Prospects For Beef and Veal, taking into account the enlargement of the Community.

The development achieved by the six countries of the Community as originally constituted over the past decade resulted in a continuing and growing shortage of beef and veal: consumption has increased by an average of 3% per year and production by only 2.4%.

What will be happened in the enlarged Community?

As far as the Common Agricultural Policy is concerned, the accession of the three new members of the enlarged Community (Denmark, Ireland and the United Kingdom) has been effective since 1 February 1973. The enlarged Community, thanks to Ireland, might be able to cover a very large part of its requirements of beef and veal, but nevertheless, continue to have a considerable deficit.

Of all the studies made on the consequences of accession for Community production and consumption, we shall refer to what of the FAO, which seems to us to have best taken into account the way in which the situation has been developing. That study made it possible to draw up the figure on the table 5.8.
**TABLE 5.8**

Forecast of supply and demand for beef and veal, taking into account the enlargement of the community

('000 metric tons)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The six original member countries</td>
<td>3410</td>
<td>4830</td>
<td>41.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>232</td>
<td>190</td>
<td>-18.1</td>
</tr>
<tr>
<td>Ireland</td>
<td>286</td>
<td>451</td>
<td>+57.8</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>808</td>
<td>1176</td>
<td>+45.5</td>
</tr>
<tr>
<td>Total for the 3</td>
<td>1326</td>
<td>1817</td>
<td>+37.0</td>
</tr>
<tr>
<td>Total for the 9</td>
<td>4736</td>
<td>6647</td>
<td>+40.4</td>
</tr>
</tbody>
</table>

**Source:** F.A.O.
5.7. Development Policy of the E.E.C. over meat supply and meat market.

The basic principles of the Common Agricultural Policy were to increase agricultural productivity, to ensure a fair standard of living for those working on the land, to stabilize markets and to ensure reasonable prices to customers. As well as providing for market management by fixing official prices for home production and imports, the common policy was designed to help with the modernization of agriculture in Europe, extending to a Community scale the work which national governments were already doing to increase the average size of farms and take an economic holdings out of production. Thus the basic aims of the C.A.P. of the E.E.C. in the meat sector are: (1) to keep a fair high agricultural (farmers) income (2) to be self-supporting in meat sector.

Market and Price Policy

Official prices are fixed annually by the Community's Council of Ministers on a proposal of the Commission and form basis of the market support mechanism. This maintains market prices to farmers in two ways:
- a variable levy system at the Community frontier ensures that imported food from world market does not undercut internal market prices and
- intervention arrangements exists to tackle the situation when over-production at home threatens to depress prices.
Towards a modern farming economy

It was recognized in the early years of the common agricultural policy that the Community as a whole should be directly involved in modernizing agriculture in the Six, both by increasing the size and efficiency of existing farms and by easing the several social problems felt by those whose holdings were too small to support them.

Community funds were set aside for this purpose. In 1968 the document entitled "Agriculture 1980" the Mansholt Plan, forcibly stated the need for stronger Community action which would ease some of the heavy social pressures in rural regions, would improve the efficiency of Community farming and would bring supply and demand closer together for farm products.

The modernization directives were formally adopted by the Council of Ministers on March 24, 1972 and will be applied in the new member states from 1974: they dealt with:

- modernization of agricultural holdings
- help for older farmers to give up farming and offer their land for improving viability of other farms or other specific purposes.
- provision of information services to give advice on alternative jobs for people wishing to have farming and to offer technical training facilities.
- farming in difficult areas: a special and to farmers in certain difficult farming areas.

Pig-meat

The Community has been successful to be self-supporting in pigmeat sector, since a few years ago.

The volatile nature of the pigmeat-market, brought about because of the ease with which producers can expand or contract their output, tends to complicate any system of market management for pig.
The common market arrangements are designed to put a floor in the home market by occasional intervention, but the intervention price unattractive to producers. Imports are controlled by a system of supplementary and variable levies.

There is no target price for pigs, but a basic price which acts as the trigger for market support at home. Once average market prices, fall below the basic prices, action may be taken to support the market by buying in surplus output. The price for this action is pitched between 85 and 95 percent of basic price. Restitution payments are fixed by the Commission and are payable to exporters, although restrictions in G.A.T.T. limit the extent of these subsidies.

However, they are especially important to processed meat manufacturer in the Community.

**Beef and Veal**

Between five to ten percent of the requirements of the enlarged Community for beef and veal have to be imported, so the market organization for these products concentrates more upon regulating the level of import prices than upon intervention on the home market.

The guide price is central to the arrangements, acts as a target price which it is hoped producers will achieve, and also serving as a trigger mechanism for import control and intervention at home.

Levies on beef and veal cattle are fixed every week, comprising the difference between the price at which the consignments are imported (including duties) and the guide price, but the proportion of the levy payable by the importer depends on the state of the home market.
Such intervention as there is applies only to beef and beefcattle and not to veal or calves, when market prices fall to 93 percent of the guide price then national agencies intervene, coping with local oversupply without involving the whole Community. The expenses of intervention are always carried by the Farm Fund.
5.8. The latest situation in the beef and veal sector in the E.E.C.

During the last months of 1973 and throughout of the first half of 1974 numerous difficulties arose on the beef and veal market.

The scarcity and high price of the previous marketing years, especially in 1972 and 1973, during which the Community guide price exceed by about 20% have been followed by a period of abundance and prices averaging about 12% lower than the guide price.

It was recognized since a long time the Community have never been able to provide more than 95% of its own beef and veal requirements. The E.E.C. has always been a large importer of beef and veal, while producing surpluses of grains and milk products (butter, skin, milk etc.)

The deficit of beef and veal in the E.E.C. was estimated by the Commission to encrease between now and 1978.

The deficit of beef and veal was mainly caused by the limited size of the territory and the farmers prefer keeping their dairy cow herds than to slaughter them producing meat. A common target price was established for milk this being the price which it was thought, producers (farmers) should received for their milk delivered to dairy, subject to market outlets being available inside and outside the Community. Of 22 million cows in 1971/1972, 19 million were intended primarily for milk production. That situation led to existence of large surpluses of milk products.

The Commission and the Council are therefore concerned to encrease beef and veal production without encouraging a parallel increase in milk production.

On 1 May 1973 the Council adopted a regulation introducing a premium system for the conversion of dairy cow herds to meat production, and development premium for the specialized raising of cattle for meat production, increasing the guide price for full-grown cattle by 10,5% and for calves by 7,5%. The application of the premium system, the Council wished to give priority to give priority to the problem of absorbing milk product surpluses.
It should also be mentioned that on 20 December 1972 the Council decided to introduce a permanent intervention system for beef and veal in order to allow stock-breeder to receive 93% of the guide price by selling their cattle or meat to the intervention agencies. This measure, which was extended on 1 May 1973 was suspended on 3 September 1973 following the recovery of production. Since then the situation has changed basically: the considerable increase in production (about 14%) and the standstill in consumption support the assumption that for the first time the E.E.C. will be practically self-sufficient in beef and veal in 1974.

The following table particularly table 5.9 summerize developments on the Community market.

Table 5.9 Development of production and consumption in the Community "Nine" from 1970 - 1974.

<table>
<thead>
<tr>
<th>Year</th>
<th>Headage (1000)</th>
<th>Production (1000 tons)</th>
<th>Consumption (1000 tons)</th>
<th>Degree of self sufficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>72 692</td>
<td>5 784</td>
<td>6 265</td>
<td>92%</td>
</tr>
<tr>
<td>1971</td>
<td>72 338</td>
<td>5 842</td>
<td>6 211</td>
<td>94%</td>
</tr>
<tr>
<td>1972</td>
<td>74 360</td>
<td>5 349</td>
<td>6 093</td>
<td>87%</td>
</tr>
<tr>
<td>1973*</td>
<td>79 209</td>
<td>5 383</td>
<td>6 149</td>
<td>87%</td>
</tr>
<tr>
<td>1974*</td>
<td>-</td>
<td>6 150</td>
<td>6 200</td>
<td>99%</td>
</tr>
</tbody>
</table>

Source: Agricultural Statistics E.E.C.

* Estimate.
Table 5.10 shows Community imports and exports, while table 5.11 shows import licences issued for 1974.

Table 5.10  E.E.C.-9 External Trade Balance in Beef and Veal (1000 tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Imports</th>
<th>Exports</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>595</td>
<td>67</td>
<td>528</td>
</tr>
<tr>
<td>1971</td>
<td>582</td>
<td>68</td>
<td>514</td>
</tr>
<tr>
<td>1972</td>
<td>943</td>
<td>58</td>
<td>825</td>
</tr>
<tr>
<td>1973 *</td>
<td>936</td>
<td>50</td>
<td>886</td>
</tr>
<tr>
<td>1974 up to June</td>
<td>222</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* estimate
Source: Agricultural Statistics E.E.C.

Table 5.11 Licences issued (E.E.C.-9) tons

<table>
<thead>
<tr>
<th>E.E.C.-import licences issued</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. For frozen meat</td>
</tr>
<tr>
<td>January-March</td>
</tr>
<tr>
<td>April</td>
</tr>
<tr>
<td>May</td>
</tr>
<tr>
<td>June</td>
</tr>
<tr>
<td>Total A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. For live animals and fresh, chilled dried/smoked</th>
</tr>
</thead>
<tbody>
<tr>
<td>February-March</td>
</tr>
<tr>
<td>April</td>
</tr>
<tr>
<td>May</td>
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<tr>
<td>June</td>
</tr>
<tr>
<td>Total B</td>
</tr>
<tr>
<td>Total A + B</td>
</tr>
</tbody>
</table>

Source: Agricultural Statistics E.E.C.
The reversal of the market situation led the Community authorities to curb import by applying various measures from the beginning of 1974.

Table 5.11 shows that until June 1974 there was still 222 thousand tons of beef and veal import licences issued for 1974. This amount seemed to be the amount of beef and veal surpluses, for the local production was nearly sufficient to supply the local requirements. Until June 1974, there was 150,000 tons of beef bought into intervention, while sold was only around 33,000 tons. The rest had to be kept on the Community Cold-storage.

On 17 July 1974, the Council decided to stop import of beef untill 1 November 1974, because the intervention system has proved unable to deliver the income guarantee expected from it. This partly because there are insufficient storage facilities for beef bought into intervention. Germany authorities had already limited the amount bought in each week, and in France where stores were bursting at the seams. The beef surpluses is mainly in France Community.

There was talk at that time of sending surpluses to Spain and even to chartering refrigerated ship to keep their surplus beef at see.

The much wished sale of 50,000 tons of surplus beef to Soviet Union, representing nearly one-third of the Community stocks, would therefore come as a welcome relief.

The beef sold to Soviet Union was only 4.50 to 5 France Frank per kg.
The E.E.C.-Councils measures to relieve the market and enable stock to be run down.

Excessive stocks thus now exist at the Community level and this situation is likely to persist since intervention buying is continuing and a difficult period is to be feared when animals come off grass. The market can only be relieved by:
- sales outside the Community
- an upswing in internal consumption

Sales outside the Community have had to be stimulated and for this purpose the amount of the refunds was considerably increased to correspond with the difference between world market and Community prices. This should result in increased opportunities for export which, combined with the gift that the Common market can make through the world food aid programme, would take off about 50,000 tond or even more.

At the same time, the Council in its Decision of July 1974, allowed the Member States to grant national aid to certain categories of consumers to reduce price of beef and veal. Social service institutions may also be allowed to obtain meat held by the intervention agencies at special prices.

In addition, the Council, on 16 July decided on a Community aid measure of 3,000,000 u.a. for national advertising and publicity campagne's for meat consumption.

It seems these measures appear to have had only a limited effect, surpluses of beef and veal is still continuing. Untill November 1974 there is 360,000 tons surpluses bought into intervention, while 130,000 tons has been sold, the rest, 233,000 tons is still in the Community cold storage. The Minister of Agriculture estimates there will be around 400,000 tons of beef and veal surpluses untill the end of this year (1974), and this surpluses will continued untill 1975.
The E.E.C. commission and the Council of Ministers are trying to design a proper system, to tackle the present problems and the longterm planning, reaching the equilibrium between milk and meat production, and to be selfsupporting in both sides, but also bearing in mind farmer's income.
PART VI

THE SUPPLIERS OF SLAUGHTERHOUSE AND MEAT PROCESSING PLANTS IN THE E.E.C.-MARKET.

6.1. Types of suppliers.
This study is including all companies as the suppliers of slaughterhouse and meat processing installations. There are not so much companies specialized in slaughterhouse or meat processing in the E.E.C. even in the world. The main companies dealing with this field in the E.E.C. are around 25 to 30 companies; the whole world is estimated less than 50 companies.
The list on annex-6 shows these main companies; sure this list is uncomplete, there are many other companies which are only active in small area of local market. In U.S.A. and also in Australia there are some big companies but only active in local market.
These companies can be classified into 5 types:
(1) The Consulting Engineering Company
(2) The Contracting Engineering Company
(3) The Manufacturer of Slaughterhouse and meat processing equipments
(4) The trading company or Sales Agent to supply the equipments or machines for slaughterhouse or meat processing plants
(5) The financing Company for slaughterhouse or meat processing plants.

There are some companies active in more than one field, some combinative between (2) and (3), or (4) or (5) etc.
In the E.E.C. one company is not allowed to be a consulting and contracting engineering service. A consulting engineering company must be independent from any contracting engineering or any types of suppliers company.
This regulation keeps the consulting engineering company working fairly and objective in evaluating any suppliers of a project.
Sure, in erecting a project it is some times needed a cooperative work between the consulting and contracting company.
Some of the contracting engineering or other suppliers develop their relationship with the consulting engineering company. By this way they can be helped by the consulting engineering company especially in supplying the information. Surely this kind of cooperative work must be an informal relationship.

There are not so much consulting Engineering Companies specialized in slaughterhouse or meat processing in the E.E.C. The most popular and experienced consulting engineering companies in slaughterhouse and meat processing are:

1. - HELLMUTH HORNUNG  Architekt in Köln - W. Germany
2. - Inginieurbüro Fritz Thier - in Herrsching/Ammersee - W. Germany

There are some other companies also working as a consulting engineering for slaughterhouse or meat processing, but they are not specialized or popular in the field of slaughterhouse or meat processing consulting-work. Hellmuth Hornung is very popular and experienced in this field, has been working more than 10 years in the field of slaughterhouse and meat processing consulting work. Mr. Hornung himself has been pensioned at the moment, he is only working part-timer, but his name is still used. This office has been changed into (1) Plannungs Gruppe Hornung + Patner and (2) Planungsgemeinschaft Hornung + Weil.

Mr. Weil has been working 12 years with Hornung, he takes over almost the whole work of Mr. Hornung.

Thier is also a very popular consulting engineering, specialized in slaughterhouse and meat processing, starting with specialization in cooling engineering, now extending to the whole scope of slaughterhouse and meat processing, and developing its future activity to the whole scope of food technology. S.E.T.I.F. is a very good name in France, even in Europe this company is also started in refrigeration specialization later on growing and extending its activity to the whole scope of slaughterhouse and meat processing this company is very successful in France of France speaking countries. It has a very good relationship with the France government.

6.1.2. The Contracting Engineering Companies.

There is not so much Company working as a pure contracting engineering mostly is connecting with manufacturing or trading business activity. The main companies working as the contracting engineering in the E.E.C. are:
- Kirchefeld - in Düsseldorf - W. Germany
- Krupp - in Düsseldorf - W. Germany
- Beck & Henkel - in Kassel - W. Germany
- Grenco - in 's-Hertogenbosch - Netherlands
- Atlas - in Copenhagen - Denmark
- Luchaire - in Paris - France
- Soberi - in Brussel - Belgium.

In fact, the pure contracting engineering companies are only Grenco, Krupp and Soberi. Kirchefeld itself is also only working as a contracting engineering, but it has a close relationship with Banss - the manufacturer for slaughterhouse equipments.

Beck & Henkel is a big enough contracting engineering company, but its activity is mainly in manufacturing specialize in slaughterhouse equipments.

ATLAS is a very popular and big company, working as a contracting engineering, manufacturing and trading of slaughterhouse and meat processing equipments.

Luchaire is a contracting engineering and manufacturing, very good name in France and France speaking countries. It has a very good experience in slaughterhouse.

Soberi, is a contracting engineering and financing company. In fact this company is working only to coordinate some different subsuppliers, and offering a credit to finance a project in a longterm-payment.

Soberi and Krupp are not so big compare to Grenco; Grenco seems to be the biggest pure contracting engineering company. However, Kirchefeld becomes as the biggest company among all of these contracting engineering companies but it has a relationship with Banss - the manufacturer.

Some note that here in the E.E.C., except in Italy, there is almost no a contracting engineering Company get the order to built a complete plant.

Usually a project is built by different contracters; one contractor which is thought specialized in a certain field by the owner, is only given a certain unit or part of the plant.
In Italy there is still a possibility that a contractor gets an order to built a complete plant, because they don't have enough the know-how in the field of slaughterhouse or meat processing. It is easier for them to give the whole responsibility to one company although it is more expensive.

6.1.3. **The manufacturer of slaughterhouses and meat processing equipments.**

There are some manufacturing companies specialized in slaughterhouses or meat processing equipments, but some of the manufacturers producing not only slaughterhouses or meat processing equipments, but also some other products. Even the specialized manufacturer in slaughterhouses or meat processing equipments, has never produced all kinds of equipments for slaughterhouses or meat processing, usually only specialized in some certain parts.

Some of these manufacturers extend their activity to contracting work or trading business.

The main manufacturing companies for slaughterhouses or meat processing equipments in the E.E.C. are:

- Stohrer - in Leonberg - West Germany
- Vogt - Hessen - West Germany
- Beck & Henkel - in Kassel - West Germany
- Bauss - in Lahn - West Germany
- Atlas - in Copenhagen - Denmark
- Luchaire in Paris - France
- Winsberghe - in Veurne - Belgium
- Langen - in Cuyk - Netherlands
- Nijhuis - in Winterswijk - Netherlands
- Noordnet - in Winschoten - Netherlands

There are many other small factories producing the equipment for slaughterhouses or meat processing.

Stohrer seems to be the biggest manufacturer specialized in slaughterhouse and meat processing equipment.

Now this company is also extending its activity to consulting work in different name company but still under one group.
Bauss itself is a pure manufacturer, however it is in one group with Kirchfeld a contracting engineering company. The real pure manufacturer are Vogt, Wijnsberge, and some other small factories. Atlas, Beck & Henkel, Luchaire, Langen are active in manufacturing and contracting work for a complete plant of slaughterhouse or meat processing. Atlas is also doing some trading business. Nijhuis is a medium size manufacturer but it is producing some other products also besides slaughterhouse and meat processing equipments. It is also doing some trading business. Stoppelberg at Zeits - Netherlands is specialized in stunning equipments but it is also doing some trading business.

6.1.4. The Sales Agents or Trading Company. A trading Company or sales agent usually is only doing sales work, to sell some equipments even single machines to the other company who needs the machines or equipments. These products are got or sometimes purchased from the manufacturer, or other company. There are very few companies who are only working as a sales agent or trading business in slaughterhouses or meat processing equipments. Seffelar & Loogen - in Oldenzaal - Netherlands is the biggest trading company specialized in slaughterhouses and meat processing equipments. There are many other small trading companies which only active in a small area of local market. Most of the manufacturing companies are also active in trading business thus they do not only sale their own products but also the other products produced by the other manufacturer, for instance Atlas, Beck & Henkel, Nijhuis etc. they only produce some kinds of equipments but they can supply all kinds of equipments for slaughterhouse and meat processing.

6.1.5. The financing company. This kind of company is found very few in the E.E.C. This company usually becomes as a general contractor, coordinating some different companies as the subsuppliers, but the whole financial responsibility is under its hand.
This company provide or offer a long-term credit to finance a project.
Soberi - in Belgium is one of the company working in this way. Sure its market will be out of the E.E.C., because here in E.E.C. is not needed this type of company.
This type of company is more important in developing countries.

6.2. The Units of slaughterhouse and meat processing plants.
There are several units found in the slaughterhouses or meat processing plants. These units, generally can be divided as the following:

1. Slaughtering and by product treatment unit.
2. Rendering unit.
3. Refrigeration unit.
4. Transportation and conveyors system.
5. Drinking water treatment unit.
7. Steam boiler unit.
8. Meat processing unit.

Generally a modern one or a big plant consists of the whole of the units, even a small modern plant has a complete unit although they are smaller in size or different system.

Here in the E.E.C. although a new modern plant has to built the whole of the units but they are not built by a single contracting engineering company. Usually a certain unit or some time more is given to a certain contractor who is thought specialized in this field by the owner, or some times the owner bought every equipment to the manufacturer. This way of thinking is to get a lower price or lower costs.
Thus, there is almost no turnkey job in the E.E.C. at the moment, except in Italy and some in France.
There are some big companies who can supply the whole units or a complete plant for slaughterhouse or meat processing, but mostly they can only get the market outside the E.E.C.
Some of them are: Kirchefeld, Grenco, Atlas and Beck & Henkel. The contracting engineering company who got the order to build a complete plant are Kirchefeld to build the slaughterhouse and meat processing in Rome, and Luchaire in France. Grenco, Atlas, Beck & Henkel usually only get the order for a certain unit to the project.

The company who are more speciling in slaughtering and by product treatment are: Atlas, Luchaire, Beck & Henkel, Stohrer, Vogt, Winsberghe etc.

In endering are: Atlas, Nijhuis, in refrigeration is Grenco, in transportation and conveyor system are Atlas, Beck & Henkel and Stohrer, in waste-water treatment is Nijhuis, and in meat processing and canning is Langen.
6.3. The suppliers of the E.E.C.-market.

The companies as the suppliers into slaughterhouses or meat processing plants are mostly located in the E.E.C.-countries, however they are mainly active in the world market outside the E.E.C., especially for the contracting engineering companies.

Some of the companies who are supplying the E.E.C.-market are:

1. Atlas (Denmark).
   A manufacturing, sales trading and contracting engineering company for slaughterhouse or meat processing plants - either a complete plant or partley, even supplying single machine or equipment. The special equipments produced are dry-rendering machines and by product treatment. Overheady conveyors - automatic and continuous system.
   Its market in the E.E.C.-countries is mainly in Denmark, some in Benelux - via its Sales Agent.
   In fact its market is mainly in outside the E.E.C.-market.

2. Beck & Henkel (West Germany).
   A manufacturing and engineering contractor for slaughterhouses and meat processing, mainly for pig slaughterhouses.
   The special equipments produced are:
   - pig slaughtering system
   - dehairing and scalding machine
   - pneumatic transport system
   - rendering equipment.
   Its market is mainly in West Germany, some in Italy and formerly also in Belgium, Netherlands, France and Ireland.
   Today mainly exporting to outside E.E.C.

3. Kirchefeld (West Germany).
   A general engineering contractor for complete plant of slaughterhouse or meat processing. Its E.E.C.-market is mainly in Italy, but most of its activity is outside E.E.C.-countries. This is the biggest and the most agressive contracting engineering company in the E.E.C. its financial is very strong. Rome slaughterhouse the biggest in the E.E.C. is built by Kirchefeld.
4. Stohrer (West Germany).
A manufacturing company for slaughterhouse equipments. Its market
is mainly in West Germany, some in Italy, France and Denmark.
Formerly also in Belgium and Netherlands. This company is also
exporting to outside E.E.C.
The special equipments produced are:
- paunch cleaning machine
- transport/conveyor system.
- dehairing machine etc.
Stohrer is one of the biggest manufacturing companies specialized
in slaughterhouse equipments.

5. Vogt (West Germany)
A manufacturing company, producing many kinds of slaughterhouse
equipments. It is a small manufacturer, but is can produce a good
quality product, and a lower price. Most of the private companies
are buying their machines to this company directly.
Its market is mainly in the E.E.C.

A contracting engineering company, for a complete plant or partly
of the slaughterhouse. This company is not so much active in the
E.E.C.-market is mainly in Netherlands, mostly only to supply the
refrigeration unit of the plant. This company is mostly exporting
its product to outside the E.E.C.

7. H. Langen (Netherlands).
A manufacturing company mainly for meat processing machines and
equipments, also a contractor for a complete plant of slaughter-
house or meat processing.
The special equipments produced are:
- vacuum curing installation
- meat press
- ham vacuumpress
- prime-filling machines and other types of filling machines
- can and universal washing machines.
This company can supply even a single machine.
Its market mainly in Netherlands, Italy and some in Denmark, formerly also in West Germany.
Today exporting to outside E.E.C. mainly to Eastern Europe.

8. Nijhuis (Netherlands).
A manufacturing company for slaughterhouse equipments also a contractor for complete plant of slaughterhouse or meat processing, but not succesfull in contracting work. Mainly its activity is to supply a single machine.
Its market is mainly in Netherlands and Belgium, and exporting to outside E.E.C.
The special equipments produced are: - dehairing machine for pig and filtre equipment for waste water treatment.

A sales trading company also in contractor for a complete plant, but mainly only sales of meat processing equipment.
This company is very successful in E.E.C.-market, it supplies all E.E.C.-market, but today is mainly in Benelux.
It becomes as a sales agent of many different manufacturing companies
Its suppliers 30 % Germany, 35 % U.S.A., and the rest Sweden, Denmark, other countries.
This company is developing a slicing cutter for fresh meat. This machine will be manufactured by a manufacturing company under Seffelar & Looyen licence.

10. Noord Nederland Machine Fabriek (Noordned.) (Netherlands.)
A manufacturing company for slaughterhouse equipments.
This company is big enough, but its activity is mainly in Netherlands

11. Bayens, M.I.B. and Stoppelberg (in Netherlands) are small manufacturing companies for slaughterhouse equipments.
They are only active in Netherlands-market.
12. Luchaire (France).
A manufacturing and contracting engineering company for slaughterhouse plants.
This company is a very successful contractor company in France, but its market is limited in France or France speaking countries. The special equipments produced are transport or conveyor systems etc.

13. Wijnsberge (Belgium).
A manufacturing Company specialized in slaughterhouse. This company is successful in Benelux market, not so big company but is still growing.

14. The consulting Engineering who are very popular in E.E.C.-market are:
   - SETIF (France)
   - Hellmuth Hornung (West Germany)
   - Fritz Thier (West Germany)
These consulting offices serve the whole E.E.C.-market even world market.

15. There are many other supplier companies who supply E.E.C.-market. For instance: - ABR in Belgium, Klockner and Rheinstahl-Hinschel in West Germany, Le Gas, and Blezat in France, Lildal and Wernberg in Denmark etc.
These companies are mainly only active in local market and not so popular.
6.4. The successful suppliers in the E.E.C.-market.

In the previous paragraph it has been presented different suppliers in the E.E.C.-market.

It can be seen that there are not all of these companies successful in the E.E.C.-market.

The most successful at the moment are:

(1) The manufacturer.

(2) The trading company or Sales Agent.

(3) The combination (1) and (2) or some of the engineering contractors which have been started before World-War-II and they have been extending their activity to manufacturing.

The engineering contractors who deliver a complete plant for slaughter-house or meat processing especially a new contractor (non manufacturing and non trading) like Krupp, Kirchfeld, Grenco and Soberi almost have no market here in the E.E.C. or in the developed countries.

The successful engineering contractors here in the E.E.C. are mainly the companies which have been started before World-War-II or started during that period, and now they are expanding their activities into manufacturing, like Luchaire in France, Atlas in Denmark, or the manufacturers who are combining with engineering contracting work like Beck & Henkel in West Germany.

The background of this situation will be discussed in the next paragraph.
6.5. Some background of the successful suppliers in the E.E.C.-market.

1. Before World-War-I (WW-I), there was almost no specialized company in slaughterhouses or meat processing equipment. Mostly of these companies started as a small smith factory or a reparation workshop. There were some orders from the butchers or meat processors surrounding its location to supply some equipment. By the increasing of meat consumption these butchers and meat processors were also growing, and they tried to develop their services to the customers. They needed the equipment more and more, even a modern one which more efficient. Surely, these smith factories or reparation workshops were also growing and growing. Later on they tried to produce more equipment not only for the butchers or meat processors surrounding themselves but also for others in different areas in the country.

2. After WW-II there were so many municipal slaughterhouses must be rebuilt, or even to establish the new plants. These companies or even any other companies who have had the know-how related to the slaughterhouse and meat processing got the orders or to establish the new plant of the slaughterhouses.

By these reasons there were so many companies who were producing or dealing with slaughterhouse or meat processing installations growth rapidly and they became bigger and bigger. Some of them tried to be specialized in slaughterhouse or meat processing equipment and they supplied a wider market even exporting into the world market.

1. The municipal slaughterhouses are available today here in the E.E.C. are too much, the utilization of their capacities are too low. For cattle slaughterhouses the utilization is only around 60%, while for pigs slaughterhouse the utilization is only around 40%.

In the beginning these slaughterhouses were built without taking into account many important factors, for instance the future change in technology and economic structure, cost optimization etc. The main reason—government preparing these slaughterhouses is for sanitation and hygienic control. The government did not permit anymore the butchers slaughtering their animals behind their shops as done a longtime before without any control. Uncontrolled meat caused many illness or death.

Today these slaughterhouses are used by many different butchers or meat wholesalers.

A butcher or meat wholesaler only uses this slaughterhouse if he needs, it depends on his sales. Sometimes he uses much time, sometimes not at all. It is very often, one butcher gets terrible, because he has to wait for the other butcher who also uses the same facilities. One butcher depends to the other. However, many times the facilities are not use at all, there is no continuous process and very much delay time. A bigger meat wholesaler would not like to use the municipal slaughterhouse anymore, he prefers to have his own plant, because using the public slaughterhouse is not economical and not free (dependent with the other tradesman). There are many municipal slaughterhouses too small, and very poor organization, can not handle the real industrial scale of meat industry.

It is impossible for a big company to do the business by using the public slaughterhouse because the volume of his sales is too big. By having his own plant he can reduce inspection, cost is $0.16/kg. Slaughtering in the private slaughterhouse the inspection cost is only $0.25/pig.

Slaughtering cost in public slaughterhouse is $0.16/kg., it can be reduce by more efficient method in the private plant.

The bigger company is trying to make a shorter live of meat marketing chain to reduce any cost.
The bigger meat wholesalers are leaving the municipal slaughterhouse starting with their own plants which are more modern and efficient and full under their control.

The smaller companies or butchers are still in the municipal slaughterhouses because they do not have enough ability to build their own plant. These smaller could not grow at the moment, they could not complete with the bigger meat wholesalers, even sometime these smaller buying the carcasses/meat from the bigger who has his own plant, it can be cheaper than slaughtering by themselves.

So the municipal slaughterhouses have a very bad position at the moment. The users become decreasing and decreasing. There are some of the municipal slaughterhouses have been closed, and some being sold to the private company. In Netherlands there are around 90 municipal slaughterhouses, 12 of them have been closed, and 24 have a very bad situation.

2. Thus at the moment there is almost no need for new establishment of municipal slaughterhouses, except some need for small part or equipment for replacement and maintenance purposes.

The new slaughterhouses or meat processing plants are only for private or cooperative companies. These new plants are usually built by themselves. The don't need the engineering contractor for the whole plant, because they have the know-how and they have a very good experience in this field.

They only need the consulting engineering assistance, or sometimes they have their own expert.

All the machines and equipments are bought by themselves to the manufacturer or sales agent directly. They only give some part of their plant to the engineering contractor, and never a complete plant. By doing this way they can reduce many costs.

3. By these reasons, the market here in the E.E.C. especially in developed countries is mainly only for the single machine and equipment, or small part of the slaughterhouses and meat processing installations. Except in Italy, they still need the engineering contractor for a complete plant, because they do not have enough the know-how or experience in this field, while they consume meat increasingly.
6.7. The markets of the engineering contractors for slaughterhouses and meat processing plants.

The contracting engineering companies who deliver a complete plant for slaughterhouses or meat processing are mainly active in the outside E.E.C.-market, exporting to the countries which do not have enough experience or know-how in this field.

The interesting markets are Eastern Europe (Russia, Poland, Yugoslavia, Greece), South America, Africa and Middle East Countries. Here in the E.E.C. only Italy is still a good market for this kind of supplier.

There are many companies active and penetrating their market in Italy, for instance Kirchfeld, Langen, Seffelar & Looyen etc.

In the other E.E.C.-countries there is almost no market, except a little bit in France.

France people do not like to invite the foreign companies, thus France market is mostly supplied by local suppliers.
6.8. The customer groups.

The customers of the slaughterhouses and meat processing suppliers, here in the E.E.C. formerly were mainly government, but at the moment it changes to the private or cooperative companies.

In chapter II it has been presented that the consumption habit is a little bit changing from beef to pork.

Pork consumption is increasing rapidly, while the beef consumption is almost constant.

The pork supplies are mainly in the hand of the private or cooperative companies. It is quite different in the market outside E.E.C., their customers are mainly governments. It is easy to understand the private companies do not have enough ability to invest in this field, especially in developing countries.
6.9. Market Information.

The resources of the market information are mainly:

1. financial group, governmental or trade offices.
2. their sales agent (if they have).
3. consultants or persons.
4. conventional market survey traveling or visit the market.
5. systematic and objected market research.

Most of these companies the market information are mainly supplied by governmental, and trade offices or financial group information service. However these information are usually coming too late. Some of the companies have their own sales representatives in different places who can supply the local market information. There are some companies develop their relationship with the consultant, it seems that consultant is one of the best resource of the market information. There are not so many companies doing some objected and systematic market research, perhaps it is too expensive doing this kind of research.

The very active companies to get the market information are: Atlas, Kirchfeld, Beck & Henkel, Seffelar and Looyen, Grenco and Saberi. These companies are doing some intensive traveling for market survey and fact gathering regularly.
6.10. Sales Promotion.

There are 4 types common way of the sales promotion method done by the suppliers:

1. Exhibition.
2. Direct contact, traveling to visit the customers.
3. Advertising through association (membership) media.
4. Leaflet or any other published public information service.

The most aggressive companies in sales promotion are: Atlas, Beck & Henkel, Kirchfeld, Seffalar & Looyen, and Langen and Grenco. They do some traveling regularly to visit their customers besides the other sales promotion activities (Exhibition, advertising, leaflet etc.).

Developing the relationship with the important consultant offices is one of the effective way in sales promotion, especially for the contracting engineering companies. Kirchfeld is successful by doing this way.
6.11. Sales Aggressiveness.

There are two measures in sales aggressiveness:

- the development of sales capability;
- reaching the markets and influencing the customers.

The very aggressive companies in sales or getting the markets are: Kirchefeld, Atals, Grenco, Beck & Henkel and Seffelar and Looyen. In developing the sales capability, they do some sales study and planning, sales training etc. In reaching the markets and influencing the customer they do some traveling to visit the customers (traveling salesmen regularly) and they try having the sales representatives or sales agents in every important market.

There are some companies do not have any sales representatives or sales agent, and they are only traveling if it is needed, while there are some are only waiting their customers in their offices.
6.12. **Pricing.**

In fact here in the E.E.C. there are not so much differences in prices. However the bigger manufacturers usually introduce a little bit higher price, because they have to pay a higher overhead cost. By this reason the contracting engineering companies or the users of the equipments prefer to buy the equipments or machines to these smaller manufacturers.

Thus some time in contracting work for a complete plant, the price offered by the manufacturer-contractor is higher than the price offered by the pure contracting engineering company. For instance Kirchefeld and Grenco as the pure-contractors usually offer a lower price.

The experienced manufacturer usually produce a higher quality product with a higher price.

The consulting cost is usually under the law of the local government. This cost depends on the complexity of the project, it is a percentage of the project value it is around 8% to 20%. The smaller project will be changed a higher percentage cost and the bigger one will be changed in lower percentage.

In consulting work there are very limited companies who had a very good experience in slaughterhouses or meat processing consulting work.

The most popular and experienced consulting engineering companies here in the E.E.C. are:
- SETIF in Paris - France
- BLEZAT in Lyon - France
- HELMUTH - HORNUNG in Köln - West Germany
- FRITZ THIER at Herrsching - West Germany
- WERNBERG in Copenhagen - Denmark.

These consulting engineering companies are very popular here in the E.E.C. even in the world market. They have experience in the field of slaughterhouses and meat processing more than 25 years.

The manufactureres, the most popular and have a good experience are:
- ATLAS - in Copenhagen - Denmark
- STOHRER - in Leonberg - West Germany
- BECK & HENKEL - in Kassel - West Germany
- BAUSS - in Lahn - West Germany
- LANGEN - in Cuyk - Netherlands
- LUCHAIRE - in Paris - France.

These companies have a very good experience, more than 25 years in manufacturing work. There are many other small manufacturers, although they have quite good experience but they are not so popular and mostly only supply the local market, like Vogt in West Germany, Nijhuis, Noordned, Baayens in Netherlands.

In contracting work there is almost no company who has experience more than 25 years. Most of the contracting engineering companies started between 5 - to 10 years ago. The only Luchaire in France, have the experience in contracting work more than 25 years but this company is combining with manufacturing work and only supplying the France market or France speaking countries.

In sales trading, the most successfull is Seffelar & Looyen at Oldenzaal Netherlands. This company has an experience in this business more than 25 years, especially in meat processing equipments trading.
6.14. **Financial ability.**

In fact it is very hard to measure the financial ability of a company because most of the company is active not only in slaughterhouses or meat processing business. Usually one company is working in a wider scope, and the financial is not separated in every field of its activity.

However, by the impression of the researcher visiting many different companies, the most strong in financial are: - Kirchfeld, Atlas and Saberi.

Beck & Henkel, Grenco, Luchaire are rather strong but not as strong as the first group.

The rest are not so strong compare to first and the second group.
6.15. Development program.

Generally speaking, almost all of these suppliers are going to extend their activities to the whole scope of the food industry.

This development is not growing so rapidly, the lack of skilled or experts employee in this field is one of the obstacles.

All of the figures presented in this chapter are summerized on the matrix in annex - 4.
6.6. The competition factors.

Surely one supplier is always competing with the other in getting the market.

In contracting work, all of the candidate contractors are evaluated by the consultant or the owner of the project. There are many factors that must be measured to identify the best contractor.

Here in the E.E.C.-market, the main factors in this competition are:

1. Price.
2. Quality.
3. Process/Economical design (running cost)
4. Presentation.
5. Reputation.
6. Experiences.
7. Relation to customers.

From the questionnaires offered to some consultants, suppliers and customers (based on their experiences and their ideas), the most important factors are: - price and - quality,
followed by: - Process/economical design and - Reputation of the supplier.

The next are: - experiences
- presentation and - relation of the supplier to the customer.

It is quite different in developing countries, there are still many other important factors in the competition, for instance:
- commission
- local content
- financial term/credit.

The most important factors are: 'financial term/credit and price and quality
followed by: - local content and - reputation of the supplier.

The next are: - Process/economical design - Presentation - Experience - Commission - Relation to customers and - Local labour training.
The following table will show the comparison index of every factor.

Table 6.1. The comparison index of the competition factors in the E.E.C.-market/developed countries and in developing countries.

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<thead>
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<th>Factors</th>
<th>Index (E.E.C.-market/developed countries)</th>
<th>Index developing countries</th>
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<td>10. Local labour-training</td>
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<td>11. Financial term/credit</td>
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<td>3.38</td>
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</table>

A complete figure of this study can be seen on annex 5a and 5b.

The nationality factor.
The nationality is still an important factor in this competition. This is the most difficult factor because it is uncontrollable. Many companies even consultants prefer to choose or giving the priority to the national suppliers. This situation is more seen in France also in Germany.

A granting of credit projects from one country to the country. The first priority is always given to the national suppliers.
Annex - I

The Slaughtering Process.

1. Slaughtering of cattle.

1. Stunning.

The stunning takes place in stunning pens. After stunning, the animal is turned out from the pen onto the floor by a mechanism.

2. Lifting to the overhead track.

After the shackling of the hind feet, the animal is hoisted by an electrical equipment with a roller hooked into the shackle, and the roller is placed on the overhead track rail.


The stabbing and bleeding take place above a blood collecting trough. After stabbing the head is skinned by knife, after that the head itself will be cut of.

4. Transfer of the carcass.

At the ankle-joint of the hind feet the hide is opened, thereby the Achilles tendon is freed. The hooks of the rollers are placed here, both hind feet will be hung separately onto a roller. The transfer of the carcass from the higher bleeding rail to the lower dressing rail is performed by an elektrical lowering equipment.

5. Pre-skimming.

The workers standing on platforms being in various height precut the hide of the animal at determined places and presking the animal in a proper width. In the meantime the feet are cut.

6. Hide pulling.

The fore legs of the animal, suspended on the overhead track by its hind feet, are fixed to the floor, the hide edges freed by preskimming are connected to a chain at the height of shoulder-joint, the other end of the chain is placed into any of the hooks being on the endless pull chain of the hide pulling machine. Thereby the pull chain, moving in forced track, removes the hide by pulling it from below to upwards. The hide falls through a chute being behind the machine into the collecting car.
7. **Brisket sawing.**

Dressing of the dehided carcass starts with opening the chest cavity. For this purpose the breast-bone is sawed by elektrical saw. The construction of the saw secures the soundness of the viscera.

8. **Leg spreading.**

For the sake of making the dressing easier, before starting to dress the carcass, an automatic device spreads the two hind legs.

9. **Dressing.**

The worker standing on the top of the evisceration table moving slowly forward lifts the viscera out of the chest cavity of the carcass and drops them onto the top of the table. The table top consists of plate elements and is formed to be an endless conveyor belt.

10. **Inspection of viscera.**

From the dressing table the viscera are placed on the hooks of an auxiliary conveyor for being examined by veterinarian inspectors. The advance speed of this hook line is identical with the speed of the overhead track conveyor.

11. **Carcass splitting.**

The worker, standing on a platform moved hydraulically splits the carcass by electrical saw, in the middle line of the backbone.

12. **Veterinarian inspection.**

The products arising from slaughtering are inspected by veterinary surgeon. Afterwards cleaning, automatic rising and weighing follow.

2. **Pig Slaughtering.**

1. **Stunning, lifting.**

The stunning is performed by elektrical tongs, in which the current intensity can be gradually changed. The stunned animal is lifted by an inclined elevator to the overhead track.
2. **Sticking and bleeding.**

The sticking and bleeding take place above the blood collecting tank.

3. **Scalding and skinning.**

The carcass is lowered into hot water, is mechanically dehaired, afterwards it is singed on roller tube table and sub-cleaned.

4. **Dressing.**

The carcass is forwarded from the cleaning table to the dressing rail by elevator, where the chest and abdominal cavities are opened. Afterwards the viscera and intestines are lifted out and placed into the trays of the evisceration table. The trays are moving at a speed identical with that of the overhead track conveyor.

5. **Splitting.**

The worker, standing on a platform which is movable up- and downwards by hydraulic way, splits the carcass by electric saw in the line of the backbone.

6. **Weighing.**

The weight of the products arising from slaughtering is measured in overhead track balance. About the stated weight the balance gives a check.
The formulation of the relationship of meat consumption as the function of GNP/cap., price and substitution price.

Meat consumption/capita = F (X₁, X₂, X₃, X₄, C)

per year

X₁ = GNP/capita in Eur.
X₂ = Beef price Eur./100 kg.
X₃ = Pork price Eur./100 kg.  substitution meats
X₄ = Poultry price Eur./100 kg.
C = Constant

By applying Standard Multiple Regression analysis we found the following results:

(1) West Germany

Beef and Veal consumption/cap./year:
= \left[ 0.0156 \, X₁ - 0.0886 \, X₂ + 0.0420 \, X₃ - 0.1044 \, X₄ + 26.79115 \right] + 0.30294 kg.

Pork consumption/cap./year:
= \left[ 0.00519 \, X₁ - 0.0416 \, X₂ - 0.1269 \, X₃ - 0.1002 \, X₄ + 46.4847 \right] + 0.64623 kg.

(2) France:

Beef and Veal consumption/cap./year:
= \left[ 0.0123 \, X₁ - 0.1736 \, X₂ + 0.1435 \, X₃ - 0.0478 \, X₄ + 30.06374 \right] + 1.2946 kg.

Pork consumption/cap./year:
= \left[ 0.00357 \, X₁ - 0.0670 \, X₂ - 0.0173 \, X₃ + 0.0141 \, X₄ + 25.25623 \right] + 0.82457 kg.
(3) Italy:

Beef and veal consumption/cap./year:
\[ = \left[ 0,01240 \times X_1 - 0,2688 \times X_2 + 0,0716 \times X_3 + 0,1492 \times X_4 + 6,23188 \right] \pm 0,92147 \text{ kg.} \]

Pork consumption/cap./year:
\[ = \left[ 0,00664 \times X_1 + 0,0376 \times X_2 - 0,0249 \times X_3 - 0,0519 \times X_4 + 4,2912 \right] \pm 0,4869 \text{ kg.} \]

(4) Netherlands:

Beef and veal consumption/cap./year:
\[ = \left[ -0,00052 \times X_1 + 0,0069 \times X_2 + 0,1197 \times X_3 - 0,2782 \times X_4 + 26,67678 \right] \pm 0,070519 \text{ kg.} \]

Pork consumption/cap./year:
\[ = \left[ 0,00491 \times X_1 + 0,0356 \times X_2 - 0,3213 \times X_3 - 0,1709 \times X_4 + 42,59067 \right] \pm 0,83598 \text{ kg.} \]

(5) Belgium / Luxemburg:

Beef and veal consumption/cap./year:
\[ = \left[ 0,00284 \times X_1 - 0,0804 \times X_2 + 0,1202 \times X_3 + 0,0241 \times X_4 + 17,61454 \right] \pm 0,85457 \text{ kg.} \]

Pork consumption/cap./year:
\[ = \left[ 0,00357 \times X_1 + 0,0792 \times X_2 - 0,0951 \times X_3 + 0,3850 \times X_4 + 6,3803 \right] \pm 0,93983 \text{ kg.} \]
Double Exponential Smoothing Method.

The basic concept underlying double exponential smoothing is completely analogous to that of double moving averages.

Column (1): Period (time)
Column (2): Observation data \( (X_t) \)
Column (3): Single Exponential Smoothing
\[
S'_{t+1} = \alpha X_t \times (1-\alpha) S'_t
\]

Column (4): Double Exponential Smoothing:
\[
S''_{t+1} = \alpha S'_{t+1} + (1-\alpha) S''_t
\]

Column (5): Value of \( a \):
\[
a = 2 S'_{t+1} - S''_{t+1}
\]

Column (6): Value of \( b \):
\[
b = \frac{\alpha}{1-\alpha} (S'_{t+1} - S''_{t+1})
\]

Column (7): Value of \( (a+bm) \) — Forecast.
\[
S_{t+m} = a + bm
\]

\( \alpha \) = the exponential smoothing constant
\( m \) = the number of periods ahead that we want to forecast.

A better formulation of this method:

Forecast:
\[
S_{t+m} = a + bm
\]
\[
a = 2 S'_{t+1} - S''_{t+1} = 2[\alpha X_t + (1+\alpha) S'_t] - \alpha S'_t + (1-\alpha) S''_t.
\]
\[
b = \frac{\alpha}{1-\alpha} (S'_{t+1} - S''_{t+1})
\]
\[
S_{t+m} = [2 S'_{t+1} - S''_{t+1}] + \frac{\alpha}{1-\alpha} (S'_{t+1} - S''_{t+1}) m
\]
\[
S'_{t+1} = \alpha (X_t - S'_t) + S'_t
\]
\[
S''_{t+1} = \alpha (S'_t - S''_t) + S''_t
\]
Double exponential smoothing is capable of handling a trend pattern. Another advantage of this technique is that it can also handle the horizontal pattern just as well as a simple exponential smoothing can. *)

*) For a complete detail discussion of this method is recommended to read the book of:

The indexes of the competition factors in developed countries (EEC or Western Europe).

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Symbol Index Degree of importance.

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The indexes of the competition factors in developing countries market.

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**Employee:**
- **T:** TOTAL
- **SH:** SLAUGHTER HOUSE DEPT.
- **E:** ENGINEER

**Sales Aggression:**
- **Very Aggressive:** ▲
- **Normal:** △
- **Passive:** ●

**Financial Ability:**
- **Very Strong:** △
- **Strong Enough:** ▲
- **Weak:** ●