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**NOTES AND COMMUNICATIONS****SEASONAL MOVEMENT IN THE CONSUMPTION  
OF MEAT IN BENGHAZI**

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**Introduction ;**

Agricultural commodities generally exhibit market variations within a year. In certain months in a year the production of a given commodity is more than in other months. Meat, though not an agricultural commodity itself, shows a set pattern of variation over the seasons. Breeding, live-stock feed and available number of animals in marketable shape all depend on seasons.

In this paper our main interest is to isolate the seasonal component in the data showing the number of lambs, calves and camels butchered in the Benghazi Municipal Slaughtering House. The data was made available to us by the kind co-operation of Mr. Mabrook Buzazia, chief of the department of statistics, Municipality of Benghazi. The data refers to the period July 1963 to June 1968. Number of animals of each type butchered each month together with the prevailing average prices per kilo were available. In a subsequent paper we intend to study the relationship between prices and quantities of various types of meats.

The Municipal Slaughtering House processes most of the meats of

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the above type sold in the Benghazi market. However, sometimes agencies outside the city limits also utilize this service. There are no records showing separately the number of animals of each type processed for consumption outside the city. We feel, however, that this will have effect on the derivation of the demand or the supply functions of meat for Benghazi town but it is not likely to influence much the seasonal pattern in the meat processed. A relevant point worth considering is that major number of animals butchered here are imported. Imports of animals either over land or sea may not be in unison with the natural breeding pattern of the animals. Thus we expect that import of animals is likely to disturb the smooth seasonal movements. However, the following analysis shows that the data does show a seasonal pattern, perhaps the intensity of the movement would have been more had there been no import of the animals.

### **Methodology :**

There are a number of methods available for estimating the seasonal component in a time series. We will use the centred 12 month moving average method. For successful application of this method it is necessary that the seasonal movement have a constant period of twelve months. Another method <sup>1</sup> is applicable if the period does not remain constant but has two components, one with periodicity of 12 months and the other changing slowly over time. If we assume that a given time series has three components namely, trend, seasonal and random variation, then a 12 month moving average will be free from the seasonals but will have the trend component and errors. Division of individual monthly values by the corresponding moving averages will eliminate the trend part leaving the seasonals and errors. Now, averaging these ratios over the years will reduce the errors leaving the seasonals. A final adjustment is made such that the sum of the seasonals over 12 months in a year becomes equal to 1200. If the given series does not have seasonality these calculations will give for each

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(1) Wald A. : Berechnung und Ausschaltung von Saisonchwankungen (Vienna), 1936.

month the value 100. Any deviation from 100 will indicate the effect of seasonality. Unfortunately, standard errors of the seasonal components are not known. Thus we will not be able to state quantitatively the amount of deviation from 100 which may be regarded as significant and not due to random fluctuations.

### Calculations and Results :

Graph 1 (annexed) shows the actual data and corresponding 12 month moving averages plotted for lamb. Graphs 2 and 3 show the figures for beef and camel respectively. From graph 1 it can be seen that the data show an increasing trend together with marked seasonal fluctuations. For beef there is no marked trend and the intensity of seasonals is not as strong as that for lamb. For camel again there is no marked trend but seasonal oscillations are strong.

The moving averages have been correctly centred. Thus the moving average for any month has been calculated by adding half the monthly values six months before and after the particular month and the intermediate values. This sum divided by 12 gives the moving average. As an illustration the first moving average corresponding to the month January 1964 in table 1 is obtained as

$$\begin{aligned} & \left[ \frac{1}{2} (11818) + 8849 + 8749 + 8166 + 7639 + 8206 + 10485 \right. \\ & \quad \left. + 12246 + 20282 + 19987 + 18644 + 15353 + \frac{1}{2} (11540) \right] \\ & \quad \div 12 = 12523.75 \end{aligned}$$

The moving averages are smoother than the observed data and reflect the effect of trend and errors in the data. Tables 2 and 3 show the observed data and 12 month moving averages for beef and camel respectively. Table 4 shows the ratio of observed data to trend values in percentage for lamb. Tables 5 and 6 show the corresponding trend eliminated series for beef and camel respectively.

Averaging these monthly percentages over the years give the seasonal component. The averaging reduces the errors. Table 7

show these averages for the three varieties of meat namely, lamb, beef and camel respectively. A final adjustment is made to the averages such that they add up to 1200. If there were no seasonal effect each monthly index will be nearly 100.

Table 8 shows the adjusted seasonals for each type of meat this table brings out some interesting points. It can be seen that the seasonal indices for lamb in the months of March, April and May are relatively high. This may be explained by the fact that in Spring most of the locally bred lambs come to the market. For beef it is seen that the indices are high for winter months December, January and February. Camel, on the other hand, shows a marked increase in the summer months. Thus the three types of meats show three different seasonal patterns.

Next let us study the relationship between average prices and seasonal indices for the three varieties of meat. The seasonal indices derived are assumed to be typical for any year, thus for this study we need not consider the full data ; instead we concentrate on the most recent year 1967. In 1967 the average price of lamb meat per kilogram for the months of March, April and May were 958 and 717 mils. for the local and imported varieties respectively. For the remaining nine months the average prices for local and imported varieties were respectively 1094 and 940 mils. respectively. We have already noted a strong seasonal effect for these three months and the average price for these months are relatively lower. This is in agreement with the normal laws of demand and supply. In Spring more lambs are available, consequently the prices are lower and the demand is pushed up.

In the same year for beef we find the average price per kilogram for the two varieties of meat namely, small and big, in the months December, January and February were 825 and 708 mils. respectively. For the remaining months the average prices turn out to be 790 and 610 mils. respectively. Beef shows seasonality in the winter months, however, the average price in the winter months is not lower than

the price in other months. This appears to be in contradiction to the accepted idea of demand and supply. Perhaps, the explanation may be that consumers prefer beef in winter in spite of its higher price.

Finally, for the same year the average price for camel meat per kilogram for the months June, July, August and September were 506 mils. for small and 419 mils. for big animals respectively. For the remaining months the average prices for the two varieties were 547 and 466 mils. respectively. Here again we find that for the part of the year when seasonality is strong the average price is lower than in the other part of the year.

### **Summary :**

Monthly data on the number of live-stocks butchered in Benghazi Municipal Slaughtering House has been analysed here. Three varieties of meat have been considered namely, lamb, beef and camel. Consumption of these three varieties of meat show distinct seasonal fluctuations. Seasonal indices for lamb meat are higher in Spring. For beef the indices are higher in winter months and for camel they are high in summer months.

Average prices of the meats, except for beef, show a movement in agreement with the movement of the seasonal indices. For, beef it is felt that consumers prefer this meat in winter.

In a later work we intend to study the pattern of seasonal variation in meat consumption using data for whole of Libya. Also the demand function for meat will be studied.

TABLE 1

Data showing the number of lamb butchered in Benghazi Municipal Slaughtering House between July 1963 and June 1968. Estimated trend values are also shown.

| Year | Month | No. of lamb | 12 month moving sum | Trend* (Col. 4 ÷ 12) | Year | Month | No. of lamb | 12 month moving sum | Trend* (Col. 4 ÷ 12) |
|------|-------|-------------|---------------------|----------------------|------|-------|-------------|---------------------|----------------------|
| 1963 | July  | 11818       |                     |                      | 1966 | Jan.  | 16606       | 165846              | 13820.56             |
|      | Aug.  | 8849        |                     |                      |      | Feb.  | 13192       | 169449              | 14120.75             |
|      | Sept. | 8749        |                     |                      |      | March | 20876       | 176183              | 14681.92             |
|      | Oct.  | 8166        |                     |                      |      | April | 17754       | 184536              | 15378.00             |
|      | Nov.  | 7639        |                     |                      |      | May   | 17414       | 194167              | 16180.58             |
|      | Dec.  | 8206        |                     |                      |      | June  | 10840       | 203611              | 16967.58             |
|      | Jan.  | 10485       |                     |                      |      | July  | 11545       | 209323              | 17443.58             |
|      | Feb.  | 12246       | 150285              | 12523.75             |      | Aug.  | 15750       | 209544              | 17462.00             |
|      | March | 20282       | 151765              | 12550.42             |      | Sept. | 17435       | 206507              | 17208.92             |
|      | April | 19987       | 153839              | 12647.08             |      | Oct.  | 20302       | 204826              | 17068.83             |
|      | May   | 18644       | 156804              | 12819.92             |      | Nov.  | 22960       | 205889              | 17157.42             |
|      | June  | 15853       | 159279              | 13067.00             |      | Dec.  | 23305       | 208591              | 17382.58             |
| 1964 | July  | 11540       | 158330              | 13273.25             | 1967 | Jan.  | 19293       | 213454              | 17787.83             |
|      | Aug.  | 9766        | 155450              | 13194.17             |      | Feb.  | 10947       | 219233              | 18269.42             |
|      | Sept. | 10151       | 153122              | 12954.17             |      | March | 17048       | 224586              | 18715.50             |
|      | Oct.  | 10914       | 148831              | 12760.16             |      | April | 18220       | 229986              | 19165.50             |
|      | Nov.  | 10822       | 144299              | 12402.58             |      | May   | 19074       | 235271              | 19805.92             |
|      | Dec.  | 9972        | 140985              | 12024.92             |      | June  | 14583       | 235444              | 19620.33             |
|      | Jan.  | 6810        | 138535              | 11748.75             |      | July  | 17528       | 236443              | 19703.58             |
|      | Feb.  | 10171       | 137925              | 11544.58             |      | Aug.  | 21325       | 239372              | 19947.67             |
|      | March | 17701       | 137826              | 11493.75             |      | Sept. | 22566       | 244004              | 20333.67             |
|      | April | 13985       | 137808              | 11485.50             |      | Oct.  | 25972       | 247515              | 20626.25             |
|      | May   | 15583       | 138940              | 11484.00             |      | Nov.  | 23490       | 253990              | 21165.83             |
|      | June  | 11785       | 142232              | 11578.33             |      | Dec.  | 27490       | 264332              | 22027.67             |
| 1965 | July  | 10209       | 149428              | 11852.67             | 1968 | Jan.  | 17105       |                     |                      |
|      | Aug.  | 9878        | 155837              | 12452.33             |      | Feb.  | 18994       |                     |                      |
|      | Sept. | 9840        | 158935              | 12986.42             |      | March | 18266       |                     |                      |
|      | Oct.  | 11190       | 162407              | 13244.58             |      | April | 24023       |                     |                      |
|      | Nov.  | 12810       | 165207              | 13533.92             |      | May   | 26222       |                     |                      |
|      | Dec.  | 14568       | 165650              | 13767.25             |      | June  | 28119       |                     |                      |
|      |       |             |                     | 13804.17             |      |       |             |                     |                      |
|      |       |             |                     |                      |      |       |             |                     |                      |
|      |       |             |                     |                      |      |       |             |                     |                      |
|      |       |             |                     |                      |      |       |             |                     |                      |
|      |       |             |                     |                      |      |       |             |                     |                      |
|      |       |             |                     |                      |      |       |             |                     |                      |

(\*) In the 12 month moving average method trend values for the first and last six months are not available.

TABLE 2

Data showing the number of calves butchered in Benghazi Municipal Slaughtering House between July 1963 and June 1968. Estimated trend values are also shown.

| Year | Month | No. of calves | 12 month moving sum | Trend (Col. 4 ÷ 12) | Year | Month | No. of calves | 12 month moving sum | Trend (Col. 4 ÷ 12) |
|------|-------|---------------|---------------------|---------------------|------|-------|---------------|---------------------|---------------------|
| 1963 | July  | 547           |                     |                     | 1966 | Jan.  | 504           | 4943                | 411.92              |
|      | Aug.  | 526           |                     |                     |      | Feb.  | 439           | 5010                | 417.50              |
|      | Sept. | 546           |                     |                     |      | March | 453           | 5105                | 425.42              |
|      | Oct.  | 587           |                     |                     |      | April | 310           | 4963                | 413.58              |
|      | Nov.  | 519           |                     |                     |      | May   | 400           | 4752                | 396.00              |
|      | Dec.  | 539           |                     |                     |      | June  | 342           | 4664                | 388.67              |
|      | Jan.  | 696           |                     |                     |      | July  | 262           | 4823                | 401.92              |
|      | Feb.  | 680           |                     |                     |      | Aug.  | 700           | 5118                | 426.50              |
|      | March | 610           |                     |                     |      | Sept. | 278           | 5368                | 447.33              |
|      | April | 576           |                     |                     |      | Oct.  | 262           | 5557                | 463.08              |
|      | May   | 776           |                     |                     |      | Nov.  | 201           | 5717                | 476.42              |
|      | June  | 776           |                     |                     |      | Dec.  | 538           | 5840                | 486.67              |
| 1964 | July  | 809           | 7509                | 625.75              | 1967 | Jan.  | 772           | 5972                | 497.67              |
|      | Aug.  | 766           | 7760                | 646.67              |      | Feb.  | 762           | 5848                | 487.33              |
|      | Sept. | 682           | 7948                | 662.33              |      | March | 627           | 5850                | 485.00              |
|      | Oct.  | 553           | 7999                | 666.58              |      | April | 516           | 6044                | 503.67              |
|      | Nov.  | 719           | 8081                | 673.42              |      | May   | 514           | 6300                | 525.00              |
|      | Dec.  | 773           | 8299                | 691.58              |      | June  | 474           | 6674                | 556.17              |
|      | Jan.  | 750           | 8443                | 703.58              |      | July  | 394           | 6915                | 576.25              |
|      | Feb.  | 454           | 8357                | 696.42              |      | Aug.  | 320           | 6964                | 580.33              |
|      | March | 444           | 8161                | 680.08              |      | Sept. | 601           | 6892                | 574.33              |
|      | April | 357           | 7969                | 664.08              |      | Oct.  | 388           | 6786                | 565.50              |
|      | May   | 462           | 7702                | 641.83              |      | Nov.  | 586           | 6964                | 580.33              |
|      | June  | 359           | 7355                | 612.92              |      | Dec.  | 901           | 7038                | 506.50              |
| 1965 | July  | 403           | 6961                | 580.08              | 1968 | Jan.  | 892           |                     |                     |
|      | Aug.  | 424           | 6587                | 548.92              |      | Feb.  | 740           |                     |                     |
|      | Sept. | 365           | 6258                | 521.50              |      | March | 504           |                     |                     |
|      | Oct.  | 458           | 6051                | 504.25              |      | April | 428           |                     |                     |
|      | Nov.  | 428           | 5858                | 488.17              |      | May   | 857           |                     |                     |
|      | Dec.  | 487           | 5571                | 464.25              |      | June  | 380           |                     |                     |
|      | Jan.  | 750           | 5304                | 442.00              |      |       |               |                     |                     |
|      | Feb.  | 454           | 5173                | 431.08              |      |       |               |                     |                     |
|      | March | 444           | 5171                | 430.92              |      |       |               |                     |                     |
|      | April | 357           | 5151                | 429.25              |      |       |               |                     |                     |
|      | May   | 462           | 5097                | 424.75              |      |       |               |                     |                     |
|      | June  | 359           | 5040                | 420.00              |      |       |               |                     |                     |

TABLE 3

Data showing the number of camel butchered in Benghazi Municipal Slaughtering House between July 1963 and June 1968. Estimated trend values are also shown.

| Year | Month | No. of camel | 12 month moving sum | Trend (Col. 4 ÷ 12) | Year | Month | camel | 12 month moving sum | Trend (Col. 4 ÷ 12) |
|------|-------|--------------|---------------------|---------------------|------|-------|-------|---------------------|---------------------|
| 1963 | July  | 680          |                     |                     | 1966 | Jan.  | 653   | 9992                | 832.67              |
|      | Aug.  | 943          |                     |                     |      | Feb.  | 237   | 10517               | 866.42              |
|      | Sept. | 1087         |                     |                     |      | March | 146   | 10022               | 835.17              |
|      | Oct.  | 1080         |                     |                     |      | April | 188   | 9676                | 806.33              |
|      | Nov.  | 838          |                     |                     |      | May   | 836   | 9403                | 783.58              |
| 1964 | Dec.  | 914          |                     |                     |      | June  | 1672  | 9315                | 776.25              |
|      | Jan.  | 1151         | 9671                | 805.92              |      | July  | 1655  | 9199                | 766.58              |
|      | Feb.  | 872          | 9967                | 830.58              |      | Aug.  | 1279  | 9126                | 760.50              |
|      | March | 352          | 9951                | 829.25              |      | Sept. | 822   | 9177                | 764.75              |
|      | April | 104          | 9702                | 808.50              |      | Oct.  | 560   | 9166                | 763.83              |
|      | May   | 568          | 9524                | 793.67              |      | Nov.  | 559   | 9085                | 757.08              |
|      | June  | 856          | 9425                | 785.42              |      | Dec.  | 708   | 8837                | 736.42              |
|      | July  | 1132         | 9377                | 781.42              | 1967 | Jan.  | 420   | 8499                | 708.25              |
|      | Aug.  | 1082         | 9238                | 769.83              |      | Feb.  | 326   | 8332                | 694.33              |
|      | Sept. | 916          | 9165                | 763.75              |      | March | 158   | 8208                | 684.00              |
| 1965 | Oct.  | 754          | 9398                | 783.17              |      | April | 154   | 8190                | 682.50              |
|      | Nov.  | 809          | 9494                | 791.17              |      | May   | 707   | 8096                | 674.67              |
|      | Dec.  | 744          | 9595                | 799.58              |      | June  | 1205  | 7972                | 664.33              |
|      | Jan.  | 1224         | 9853                | 821.08              |      | July  | 1546  | 7905                | 658.75              |
|      | Feb.  | 521          | 10048               | 837.33              |      | Aug.  | 1055  | 7948                | 662.33              |
|      | March | 557          | 10234               | 852.83              |      | Sept. | 799   | 8049                | 670.75              |
|      | April | 365          | 10437               | 869.75              |      | Oct.  | 546   | 8129                | 677.42              |
|      | May   | 500          | 10537               | 878.08              | 1968 | Nov.  | 385   | 8090                | 674.17              |
|      | June  | 1126         | 10431               | 869.25              |      | Dec.  | 633   | 7711                | 642.58              |
|      | July  | 1377         | 10129               | 844.08              |      | Jan.  | 362   |                     |                     |
|      | Aug.  | 1227         | 9702                | 808.50              |      | Feb.  | 470   |                     |                     |
|      | Sept. | 1144         | 9354                | 779.50              |      | March | 216   |                     |                     |
|      | Oct.  | 931          | 9060                | 755.00              |      | April | 256   |                     |                     |
|      | Nov.  | 733          | 9139                | 761.58              |      | May   | 526   |                     |                     |
|      | Dec.  | 709          | 9580                | 798.33              |      | June  | 623   |                     |                     |



TABLE 4

Seasonals showing the ratio of lambs actually slaughtered to the estimated trend, expressed in percentages.

| Year | Month | Seasonals | Year | Month | Seasonals |
|------|-------|-----------|------|-------|-----------|
| 1964 | Jan.  | 83.7*     | 1966 | Jan.  | 120.1     |
|      | Feb.  | 97.6      |      | Feb.  | 93.4      |
|      | March | 160.4     |      | March | 142.2     |
|      | April | 155.9     |      | April | 115.5     |
|      | May   | 142.7     |      | May   | 107.6     |
|      | June  | 115.7     |      | June  | 63.9      |
|      | July  | 87.5      |      | July  | 66.2      |
|      | Aug.  | 75.4      |      | Aug.  | 90.2      |
|      | Sept. | 79.6      |      | Sept. | 101.3     |
|      | Oct.  | 88.0      |      | Oct.  | 118.9     |
|      | Nov.  | 90.0      |      | Nov.  | 133.8     |
|      | Dec.  | 84.9      |      | Dec.  | 134.1     |
| 1965 | Jan.  | 59.0      | 1967 | Jan.  | 108.5     |
|      | Feb.  | 88.5      |      | Feb.  | 59.9      |
|      | March | 154.1     |      | March | 91.1      |
|      | April | 121.8     |      | April | 95.1      |
|      | May   | 134.6     |      | May   | 97.3      |
|      | June  | 99.4      |      | June  | 74.3      |
|      | July  | 82.0      |      | July  | 88.9      |
|      | Aug.  | 76.1      |      | Aug.  | 106.9     |
|      | Sept. | 74.3      |      | Sept. | 110.9     |
|      | Oct.  | 82.7      |      | Oct.  | 125.9     |
|      | Nov.  | 93.0      |      | Nov.  | 111.0     |
|      | Dec.  | 105.5     |      | Dec.  | 124.8     |

(\*) Calculated as follows

$$(10485 \div 12523.75) 100 = 83.7 \text{ etc.}$$

TABLE 5

Seasonals showing the ratio of calves actually butchered to the estimated trend, expressed in percentages.

| Year | Month | Seasonals | Year | Month | Seasonals |
|------|-------|-----------|------|-------|-----------|
| 1964 | Jan.  | 111.2*    | 1966 | Jan.  | 122.4     |
|      | Feb.  | 105.2     |      | Feb.  | 105.1     |
|      | March | 92.1      |      | March | 106.5     |
|      | April | 86.4      |      | April | 75.0      |
|      | May   | 115.2     |      | May   | 101.0     |
|      | June  | 112.2     |      | June  | 88.0      |
|      | July  | 115.0     |      | July  | 65.2      |
|      | Aug.  | 110.0     |      | Aug.  | 164.1     |
|      | Sept. | 100.2     |      | Sept. | 62.1      |
|      | Oct.  | 83.3      |      | Oct.  | 56.6      |
|      | Nov.  | 112.0     |      | Nov.  | 42.2      |
|      | Dec.  | 126.1     |      | Dec.  | 110.5     |
| 1965 | Jan.  | 129.3     | 1967 | Jan.  | 155.1     |
|      | Feb.  | 82.7      |      | Feb.  | 156.4     |
|      | March | 85.1      |      | March | 129.3     |
|      | April | 70.8      |      | April | 102.4     |
|      | May   | 94.6      |      | May   | 97.9      |
|      | June  | 85.1      |      | June  | 85.2      |
|      | July  | 91.2      |      | July  | 68.4      |
|      | Aug.  | 98.4      |      | Aug.  | 55.1      |
|      | Sept. | 84.7      |      | Sept. | 104.6     |
|      | Oct.  | 106.7     |      | Oct.  | 68.6      |
|      | Nov.  | 100.8     |      | Nov.  | 100.9     |
|      | Dec.  | 116.0     |      | Dec.  | 153.8     |

(\*) Calculated as follows

$$(696 \div 625.76) 100 = 111.2 \text{ etc.}$$

TABLE 6

Seasonals showing the ratio of camel actually butchered to the estimated trend, expressed in percentages.

| Year | Month | Seasonals | Year | Month | Seasonals |
|------|-------|-----------|------|-------|-----------|
| 1964 | Jan.  | 142.8*    | 1966 | Jan.  | 78.4      |
|      | Feb.  | 105.0     |      | Feb.  | 28.0      |
|      | March | 42.4      |      | March | 17.5      |
|      | April | 12.7      |      | April | 23.3      |
|      | May   | 71.6      |      | May   | 106.7     |
|      | June  | 108.9     |      | June  | 218.2     |
|      | July  | 144.9     |      | July  | 215.9     |
|      | Aug.  | 140.6     |      | Aug.  | 168.2     |
|      | Sept. | 119.9     |      | Sept. | 107.5     |
|      | Oct.  | 96.3      |      | Oct.  | 73.3      |
|      | Nov.  | 102.3     |      | Nov.  | 73.8      |
|      | Dec.  | 93.0      |      | Dec.  | 96.1      |
| 1965 | Jan.  | 149.1     | 1967 | Jan.  | 59.3      |
|      | Feb.  | 62.2      |      | Feb.  | 46.9      |
|      | March | 65.3      |      | March | 23.1      |
|      | April | 41.9      |      | April | 22.6      |
|      | May   | 56.9      |      | May   | 104.8     |
|      | June  | 129.5     |      | June  | 181.4     |
|      | July  | 163.1     |      | July  | 234.7     |
|      | Aug.  | 151.8     |      | Aug.  | 159.3     |
|      | Sept. | 146.8     |      | Sept. | 119.1     |
|      | Oct.  | 123.3     |      | Oct.  | 80.6      |
|      | Nov.  | 96.2      |      | Nov.  | 57.1      |
|      | Dec.  | 88.8      |      | Dec.  | 98.5      |

(\*) Calculated as follows

$$(1151 \div 805.92) 100 = 142.8 \text{ etc.}$$

TABLE 7

## Average seasonals

| Month | Average seasonal for |       |       |
|-------|----------------------|-------|-------|
|       | Lamb                 | Beef  | Camel |
| Jan.  | 92.8*                | 129.5 | 107.4 |
| Feb.  | 84.8                 | 112.4 | 60.5  |
| March | 137.0                | 103.2 | 37.1  |
| April | 122.1                | 83.7  | 25.1  |
| May   | 120.6                | 102.2 | 85.0  |
| June  | 88.3                 | 92.6  | 159.5 |
| July  | 81.2                 | 84.9  | 189.7 |
| Aug.  | 87.2                 | 106.9 | 155.0 |
| Sept. | 91.5                 | 87.9  | 123.3 |
| Oct.  | 103.9                | 78.8  | 93.4  |
| Nov.  | 106.9                | 88.9  | 82.4  |
| Dec.  | 112.3                | 126.6 | 94.1  |

(\*) Calculated as follows

$$(83.7 + 59.0 + 120.1 + 108.5) / 4 = 92.8 \text{ etc.}$$

TABLE 8

## The seasonal component

| Month | Seasonal for |      |       |
|-------|--------------|------|-------|
|       | Lamb         | Beef | Camel |
| Jan.  | 91*          | 130  | 106   |
| Feb.  | 83           | 113  | 60    |
| March | 135          | 103  | 37    |
| April | 119          | 84   | 25    |
| May   | 118          | 102  | 84    |
| June  | 86           | 93   | 158   |
| July  | 79           | 85   | 188   |
| Aug.  | 85           | 107  | 153   |
| Sept. | 89           | 88   | 122   |
| Oct.  | 101          | 79   | 92    |
| Nov.  | 104          | 89   | 82    |
| Dec.  | 110          | 127  | 93    |

(\*) Obtained as follows

$$[ 92.8 / (84.8 + \dots + 106.9 + 112.3) ] 1200 = 90.6 \text{ etc.}$$