TRANSPORT COSTS IN THE IRISH FOOD INDUSTRY: BACKLOADING ISSUES

*Maeve Henchion**

Introduction

Foley and Wayne (1993) define backloading as situations in which a the transporter obtains a load for the return journey home where "home" can be interpreted as back to or close to base. This paper examines the potential of the Irish food industry to obtain backloads and assesses the efficiency of Irish hauliers to obtain such backloads.

The structure of the paper is as follows: the first section outlines the importance of the Irish food industry and is followed by a brief discussion of transport in the food industry. A review of the Irish haulage industry is the subject of the third section while the fourth section deals with the potential and efficiency of obtaining backloads among the Irish food industry. The paper concludes with some comments on future developments with respect to transport requirements and costs.

The Importance of the Irish Food Industry

Food production is Ireland's biggest indigenous industry. The food and drink industry produces an output of IR£10 billion annually, equivalent to 6.5 per cent of national output. It accounts for some 20 per cent of total industrial employment (Central Statistics Office,

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1997). There are some 45,500 employed directly with 301,000 employed indirectly. Ninety per cent of enterprises are Irish-owned and 70 per cent employ less than 50 people (CSO, 1997).

Irish food products are based almost entirely on indigenous raw materials and therefore capture the greatest value to the economy of any industrial sector. The total contribution of the food industry to gross industrial value added in 1996 was 11.2 per cent and when the drinks and tobacco sectors are included, the figure rises to almost 24 per cent (Department of Agriculture and Food, 1999). The food industry is highly export-oriented, with 55 per cent of enterprises engaged in export activity (CSO, 1997). In 1997, the Republic of Ireland exported in excess of 3 million tonnes of food and beverages, worth more than IR£4 billion (€5.08 billion) to countries around the world. The main market is the UK.

The core products are meat, dairy, drinks, ingredients and prepared consumer foods. Ireland is the largest exporter of beef in the Northern Hemisphere. Some relevant statistics are presented in Appendices 1 to 3.

Transport in the Food Industry

The food industry is critically dependent on physical distribution, as products have to move from where they are produced to where they are needed and where they are to be consumed. Transportation is the key link in the food chain, connecting geographically specialised farmers and food producers and an urbanised consumer population spread across many countries.

The food industry presents a number of special transportation needs. A flexible transportation network is needed to compensate for the inflexibility of geographically specialised production. The variability of agricultural production also complicates the food transportation picture. Food transport needs vary widely — annually and by seasons — and are as unpredictable as farm supplies and consumer demand. The biological and bulky nature of farm products makes special demands on the transportation system. The need for strict quality systems such as Hazard Analysis Critical Control Point (HACCP) throughout the food production chain introduces exact requirements, constraints and costs for inventory and transport activities. Other distinguishing characteristics include perishability of the products (shelf-life constraints), lack of consistency and uniformity of product quality, unpredictability of supply lead times due to seasonal influences and variable production yield (Van der Vorst, 1996). Few other industries have such diverse transport needs.

Transportation influences other activities and decisions in the food chain. These include:

- The speed and flexibility of the transportation system can affect inventory and storage costs throughout the food chain;
- Transportation costs affect the location of food processing plants and food distribution warehouses; and
- Transportation costs also contribute to the overall product cost, thus influencing farm and consumer prices.

Transport influences marketplace performance through three dimensions: cost, quality and delivery (Crowley and Keary, 1998).

Firstly, the cost of transport adds to production cost and so directly affects the selling price of goods. The amount and significance of the transport cost mark-up depends on:

- Distance;
- Transport mode and efficiency;
- Value of goods; and
- Physical characteristics of the goods.

Because food products are generally bulky and of low value, transport cost has a significant impact on selling price. This may limit market penetration and means that considerable importance is attached to logistical efficiency.

Secondly, transport has a bearing on the quality of the goods insofar as their en route handling and storage may expose them to some deterioration, such as:

- Handling damage;
- Perishing, in the case of fresh goods;
- Obsolescence, where delivery is required before an expired time;
- Movement damage.

In the case of food products, the question of perishability is of such importance that specific measures (e.g. refrigerated containers) to prevent product deterioration are taken which add to transport cost.

Thirdly, the chain of transport activity culminates in delivery, the standard of which affects market impact and potential selling price. The modern emphasis on Just-in-Time delivery and efficient consumer response (ECR) strategies places particular demands on transport services in this regard. Poor delivery affects the market impact and potential selling price of goods in various ways:

- Inventory costs are incurred where delivery is uncertain or unreliable;
- Delays in the delivery of goods may interrupt production at destination;
- Delays in goods may lead to lost retail sales.

To an extent, the cost–quality–delivery dimensions are inter-related and involve trade-offs. Abnormally cheap transport services may be associated with poor care of goods and unreliable delivery. Premium service is usually more costly. The exporter's task is to find the optimal positioning within the cost–quality–delivery dimensions for a given product and a given set of market conditions.

Thus it can be seen that transport has a significant impact on the competitiveness of the food industry. Indeed, industry and policymakers have long established the importance of a competitive and effective transport system for food exports, and indeed exports in general, as a priority.

The Irish Haulage Industry

A quality road haulage sector is an important factor in the Irish economy, given that 89 per cent of goods are exported by truck and 99 per cent of internal freight in Ireland is carried by truck (Government Publications, 1995a). The Operational Programme for Transport, 1994 to 1999, identified the importance of the transport services sector in the following terms (Government Publications, 1995a, p. 16):

> Much export trade from Ireland is time-sensitive and much of the raw material for Irish exports requires to be imported in the first instance. Consequently, there is double exposure of the export trade to the portal system, first on the raw materials imported and second when these raw materials are converted into finished goods and exported. It is of crucial importance that an efficient, fast, punctual and flexible port service, facilitated by adequate infrastructure exists to cater for this trade.

Market for Haulage Services

In 1996, the sales turnover of the indigenous road haulage sector was valued at approximately £1.2 billion. The home market represented roughly 60 per cent of sales while earnings from activities in exports and trade outside Ireland represented the remaining 40 per cent of sales. These figures are approximate, as in many cases internal transport can be part of an outward journey. Many companies use own transport for internal distribution or movement of goods in Ireland. For export traffic, there is a very strong tendency for manufacturers to use third party transport providers. For example, in the food industry many manufacturers use vans for internal deliveries but do not own the larger trucks used for commercial exportation.

Table 1 below highlights the growth on the three corridors of roll-on roll-off (ro-ro) traffic between 1990 and 1996. This table is used to measure the potential market size for transport services for international haulage licence holders and the growth in the market. This table highlights how the ro-ro freight market for imports and exports has grown at a rate of 10 per cent per annum in recent years. If this rate of growth continues, then the volume of import/export road freight could double in a period of just seven years.

TABLE 1: RO-RO FREIGHT UNITS (IMPORT AND EXPORT) AT IRISH PORTS

	1990	1991	1992	1993	1994	1995	1996
Northern Corridor							
Belfast	79,226	89,564	138,217	131,160	149,657	167,037	282,604
Larne	332,566	319,521	312,333	364,076	376,678	375,077	280,099
Warrenpoint	42,423	40,849	47,486	68,422	80,290	59,573	22,757
N. Corridor % of total traffic	*71.0%*	*68.6%*	*69.7%*	*71.8%*	*70.7%*	*64.9%*	*57.5%*
Central Corridor							
Dublin	101,943	122,986	115,921	122,355	133,746	205,311	340,983
Dun Laoghaire	23,813	25,283	34,278	33,391	40,418	40,713	14,695
Southern Corridor							
Rosslare	61,541	56,096	64,658	61,726	72,094	73,589	70,147
Cork	3,246	1,575	1,971	3,587	5,020	6,412	6,104
Total Traffic	*644,758*	*655,874*	*714,864*	*784,717*	*857,903*	*927,712*	*1,017,389*

Source: Mangan, 1997

Industry Structure

The Irish haulage industry is very fragmented and lacking in scale, with 75 per cent of licensed operators having only one or two vehicles. In 1997, there were 4,595 licensed hauliers (vehicles over 7.5 tonnes) operating a total of 11,007 trucks (Irish Road Hauliers Association, personal communication). Not all of these operate internationally and not all are involved in the food sector. It is not uncommon for small hauliers to be tied exclusively to individual large hauliers or freight forwarders. In addition, some of the groupage operators outsource all the transport activity to small hauliers and focus their activities on consolidating loads for transport.

Within the chilled distribution sector, there are about 12 significant third party operators from both north and south of the border, supported by other smaller operators (Forbairt, 1995). Some of these transport operators service mainland Europe exclusively, whilst others distribute to both Britain and mainland Europe. Northern Ireland hauliers have a substantial market share in the Irish road haulage market. In addition, the entry of many UK retailers into the Republic of Ireland may result in the UK-based hauliers playing a more significant role in the future.

Large hauliers often offer various value-added services to manufacturers. Many of the larger hauliers also extend their product offering through strategies such as painting their vehicles in the customer's colours and placing staff in the manufacturer's premises.

Competitiveness of Haulage Sector

The main cost elements that impact on the competitiveness of Irish hauliers are as follows:

1. Road tax
2. Insurance
3. Labour
4. Corporate tax
5. Ferry prices
6. Truck prices
7. Tyres
8. Diesel
9. Maintenance.

While investigating the perception that transport costs in the Republic of Ireland are higher than in Northern Ireland and the UK, Foley (1996) found the main differences in cost structure between the two jurisdictions to be labour costs and taxation. While insurance costs in the Republic were more expensive than in Northern Ireland, the combined insurance and vehicle taxation cost was cheaper. There is little difference in the cost of new trucks, but second-hand trucks are cheaper in Northern Ireland. Also, while ferry prices were cheaper in the North, the difference is closing with prices from Dublin Port falling, particularly after the introduction of the Merchant Ferries Dublin–Heysham sailing. Tyres, diesel and maintenance were found to be of lower cost in the Republic than in the North of Ireland.

Backloading

In addition to the operating costs listed above, the cost of transport is heavily influenced by the backloading potential of the delivery. Backloading is particularly important for the driver-accompanied roll-on roll-off mode, due to the high costs involved. Given that the alternative is to return empty with no revenue to contribute to the return transport cost, backloading rates are likely to be very competitive. It is not, however, always possible for manufacturers to operate in the backloading market, as the service may not be reliable or timely. Furthermore, there are strict health and safety constraints on the usage of equipment that carries food. In addition, they may have very specific transport requirements, necessitating specialised transport equipment that is not readily available.

Irish hauliers are generally very efficient at obtaining backloads. A survey of 46 hauliers[1] during the spring/summer of 1998 for this study revealed that hauliers get backloads for an average of 99 per cent of outward journeys (range 90–100 per cent). Several hauliers stated that their lorries would not begin their return journey until a backload had been obtained. This efficiency is reflected in the fact that all hauliers in the survey have established some regular backloading business. Fourteen of the 42 hauliers who gave information on this stated that all their backloading business is made up of regular business. On average, however, 85 per cent of backloads are made up of regular business. Only seven hauliers sourced backloads on a once-off basis and then only for between 5 to 10 per cent of their business.

It should be noted that the issue of backloading also affects other elements of the chain. Ships also make return journeys. Their aim is to maximise capacity utilisation in both voyages to remain viable. Thus, the revenues generated from carrying import loads are necessary also for ship operators to maintain overall viability and the export transport price. To conclude, overall backloading is an important determinant of the prices charged for export transport, so that import levels influence the export transport price.

Trade and Transport

This section examines the potential for backloading among the food industry by examining the overall trade balance for food, the trade balance on a regional and country basis and the trade balance in terms of temperature requirement categories for products. Finally, the section examines the change in trade over the period 1992 to 1997 to determine if there has been any change in the industry's requirement for transport equipment and facilities.

The analysis is based on an examination of CSO trade statistics for food for the period 1992 to 1997. The products included in the definition of food loosely correspond to the CSO SITC (Standard Industrial Trade Classification) sections 0 and 1 and include beverages. However, live animals and animal feeds are excluded and some products from section 4 (animal and vegetable oils, fats and waxes) are included.

Overall Trade Balance

In 1997, the Republic of Ireland exported in excess of 3 million tonnes of food[2] worth more than £4 billion to countries around the world. In the same year, 1.9 million tonnes of food, valued at £1.6 billion, were imported into the Republic of Ireland. Thus, significantly more food is exported than imported. This means that it is not possible for hauliers to acquire food backloads for all their outward journeys. Between 1992 and 1997, imports accounted for between 57 and 69 per cent of exports in volume terms (see Table 2). Thus the maximum proportion of food backloads that hauliers can possibly obtain is in the region of 60 per cent (the figure for 1996 is high due to a reclassification of product — see footnote to Table 2).

It may, however, be possible to acquire non-food backloads. Electrical and "white" goods are, for instance, a popular source of backload traffic for ro-ro hauliers. The survey of hauliers for this survey found that most hauliers obtain non-food backloads. Thirty-four hauliers surveyed obtained some non-food backloads. Overall, on average, 61 per cent of backloads were made up of food products. This is in keeping with the overall balance of imports and exports discussed above. Further analysis showed that 16 per cent of backloads were food in the ambient temperature category, 27 per cent in the chilled and 18 per cent in the frozen category. The figure for the ambient category is low when we consider that the greatest potential to obtain backloads is in the ambient temperature category (see below). The reason for the low figure may be that those hauliers with temperature-controlled vehicles obtain temperature-controlled food backloads, while those with ambient temperature vehicles get non-food backloads. Furthermore, hauliers exporting non-food products may readily get backloads of ambient food products, as no specialised equipment is required.

TABLE 2: IMPORTS AND EXPORTS OF FOOD BY VOLUME IN THE REPUBLIC OF IRELAND, 1992-1997 ('000 TONNES)

	1992	1993	1994	1995	1996	1997*	Change 1992–97 *(%)*
Exports	2,959	2,621	2,615	2,933	2,759	3,196	237 *(8)*
Imports	1,683	1,547	1,717	1,814	1,897	1,903	220 *(13)*
Imports as % of exports	*57*	*59*	*66*	*62*	*69*	*60*	

* A reclassification by the CSO of one product from food to chemical products in July 1996 means that exports over the period 1992 to 1997 are not strictly comparable. The reclassification means a reduction in the value of food exports of £900 million according to the CSO. The author estimates this to be equivalent to about 80,000 tonnes.

While it is desirable from a national viewpoint for exports to exceed imports, the small volume of imports relative to exports may lead to high transport costs for exports. This may arise due to a lack of opportunities for backloads, depending on how specific transport requirements are. Anecdotal evidence suggests that imports subsidise exports by making a greater contribution to Irish hauliers' revenue, i.e. higher transport rates are applicable to food coming into Ireland than outbound product.

The volume of exports increased by 8 per cent over the period 1992 to 1997, while the volume imported increased by 13 per cent. Therefore, there is an increased requirement of 457,000 tonnes in overall transport capacity for food in terms of lorries and containers. If the reclassified product is included in the 1997 figure, the overall increased requirement is an estimated 537,000 tonnes.

Exports to Northern Ireland increased by 47,753 tonnes over the period 1992 to 1997, which implies an overall increase in exports of food products through the various ports of 189,428 tonnes. In addition, imports from Northern Ireland decreased over the period by 21,425 tonnes, indicating overall additional handling and ferry requirements of 430,471 tonnes (189,428 + 219,618 + 21,425 tonnes). If allowances are made for the reclassified product, this increases to an estimated 510,000 tonnes. Such an increase should be facilitated by greater utilisation of existing handling equipment and ferry facilities rather than a requirement for additional equipment. (The Irish ports (excluding Northern Irish ports) handled 33.9 million tonnes of goods in 1996 (CSO, personal communication) so this increase is equivalent to about 1.5 per cent of volume.)

Regional and Country Trade Balance

In terms of regions,[3] the greatest proportion of food exports is destined for EU countries. EU countries also account for the greatest proportion of food imports into Ireland. However, this trade balance is asymmetric, with EU exports accounting for a greater volume of product than imports. This imbalance is true of all regions, with the exception of Central and South America and Australasia, for which imports account for a greater volume of product than exports. Thus, the potential to achieve food backloads varies by region. Australasia offers the greatest potential, followed by Central and South America, whilst West Africa offers the least potential. Table 3 shows imports as a percentage of exports by region.

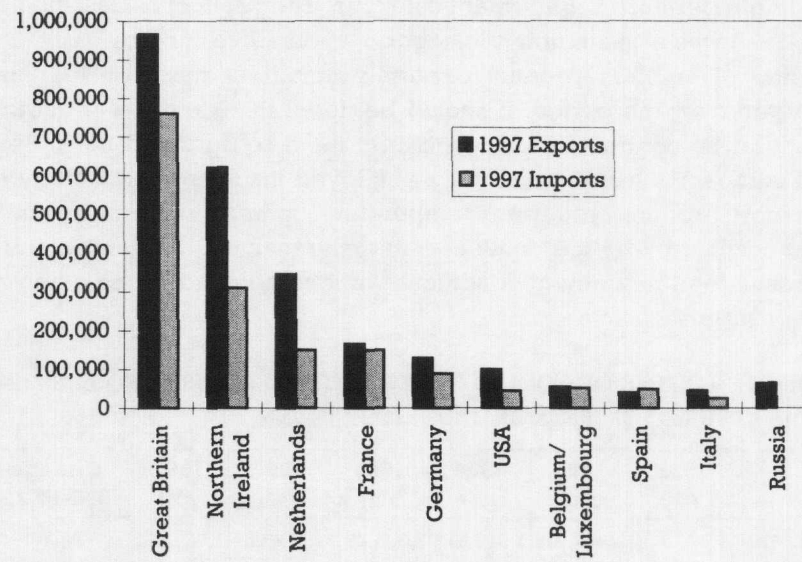
TABLE 3: VOLUME OF FOOD IMPORTS AND EXPORTS BY REGION IN THE REPUBLIC OF IRELAND, 1997

Region	Imports (tonnes)	Exports (tonnes)	Imports as % Exports
Total	1,902,534	3,196,393	59.5
EU-15	1,654,018	2,453,317	67.4
Central & South America	77,224	63,741	121.2
North America	79,815	121,722	65.6
Central, East & South Africa	26,436	51,497	51.3
Other European	17,208	137,577	12.5
Other Asian	15,051	159,158	9.5
Near & Middle East	11,780	66,387	17.7
Australasia	11,062	5,832	189.9
North Africa	8,662	82,737	10.5
West Africa	834	51,206	1.6

It should be noted that it might be possible to achieve backloads for part of the return journey. For example, lorries returning from the "Other European" (i.e. non-EU) region may collect loads within the EU on their way back to Ireland. Some hauliers may even acquire two or more backloads en route back to Ireland, e.g. one from Continental EU to the UK and one from the UK to Ireland.

Figure 1 shows the balance of imports and exports for our top 10 trading partners for food in 1997. It shows that exports are greater than imports for all ten countries except for Spain for which imports are slightly larger.

FIGURE 1: IMPORTS AND EXPORTS OF THE REPUBLIC OF IRELAND'S TOP 10 TRADING PARTNERS, 1997



In 1997, exports were greater than imports in 153 out of the 203 countries for which trade in food was recorded. Indeed, for 59 countries for which trade was recorded, no imports were recorded. For 50 of the countries, imports were greater than exports and for 14 countries no exports were recorded. Thus, for a minority of countries, it is not possible to acquire food backloads. These 14 countries only accounted for 7,953 tonnes of imports in 1997 and therefore are not of significant importance.

Trade Balance in Terms of Temperature Requirement Categories

Approximately half of total exports are in the ambient[4] temperature requirement category (bulk commodity type dairy products — e.g. whole and skim milk powder — and cereals account for a significant proportion of this category); about one-quarter to one-third are in the chilled category; and between 10 and 20 per cent are in the frozen category (this does not sum to 100 per cent, as there are two additional categories, i.e. ambient/chilled and ambient/chilled/frozen). Thus there is a requirement for temperature control for about half of the volume of exports. The need for temperature control appears to be increasing over time with an increased volume of frozen food exports. Table 4 shows the breakdown of the volume of exports according to temperature requirement category. The product reclassified in July 1996 was in the ambient category, so on a like-for-like basis, the volume of ambient product exported remained more or less unchanged over the period. It should be noted that products requiring temperature control do not necessarily need refrigerated units. Several companies have successfully employed insulating technology to transport products requiring temperature control, while other have used insulated "dry ice" bulk containers to maintain the temperature of frozen food in ambient conditions without the need for an external power supply.

TABLE 4: VOLUME OF FOOD EXPORTS BY TEMPERATURE REQUIREMENT IN THE REPUBLIC OF IRELAND, 1992–1997 (TONNES)

	1992 *(%)*	**1993** *(%)*	**1994** *(%)*	**1995** *(%)*	**1996** *(%)*	**1997** *(%)*	**Change 1992–97** *(%)*
Ambient	1,717,778 *(58)*	1,340,021 *(51)*	1,219,912 *(46)*	1,386,273 *(47)*	1,374,664 *(50)*	1,621,282 *(51)*	–96,496 *(5.6)*
Chilled	791,338 *(27)*	801,529 *(31)*	858,028 *(33)*	918,213 *(32)*	679,706 *(25)*	716,206 *(22)*	–75,132 *(9.5)*
Frozen	268,804 *(9)*	304,757 *(12)*	330,849 *(13)*	374,674 *(13)*	502,535 *(18)*	704,351 *(22)*	435,547 *(162.0)*
Ambient/ chilled	48,972 *(1)*	33,241 *(1)*	33,268 *(1)*	53,351 *(1)*	38,551 *(1)*	27,631 *(1)*	–21,341 *(43.6)*
Ambient/ chilled/ frozen	132,320 *(5)*	141,724 *(6)*	172,861 *(7)*	200,093 *(7)*	163,942 *(6)*	126,923 *(4)*	–5,397 *(4.0)*
Total	*2,959,212 (100)*	*2,621,272 (100)*	*2,614,918 (100)*	*2,932,604 (100)*	*2,759,399 (100)*	*3,196,393 (100)*	*237,181 (8.0)*

About two-thirds of imports are in the ambient category while about ten per cent are in the chilled category and six per cent in the frozen category. Thus the need for temperature control is much less for imports than exports. However, the need for temperature control is increasing among imports due to an increase in chilled food imports. Table 5 shows the volume of food and beverage imports according to temperature requirement for the period 1992 to 1997.

TABLE 5: VOLUME OF FOOD IMPORTS BY TEMPERATURE REQUIREMENT IN THE REPUBLIC OF IRELAND, 1992–1997 (TONNES)

	1992 (%)	1993 (%)	1994 (%)	1995 (%)	1996 (%)	1997 (%)	Change 1992–97 (%)
Ambient	1,136,405 (68)	1,040,514 (68)	1,148,662 (67)	1,181,762 (65)	1,238,019 (65)	1,207,999 (63)	71,594 (6.3)
Chilled	133,570 (8)	129,737 (8)	144,407 (8)	237,957 (13)	229,875 (12)	258,850 (14)	125,280 (93.8)
Frozen	88,022 (5)	85,634 (6)	99,863 (6)	107,610 (6)	124,715 (7)	127,800 (7)	39,778 (45.2)
Ambient/ chilled	247,211 (15)	214,050 (14)	245,418 (14)	198,662 (11)	150,806 (12)	221,596 (11)	–25,615 (10.4)
Ambient/ chilled/ frozen	69,323 (4)	70,921 (5)	70,419 (4)	78,638 (4)	79,669 (4)	86,288 (5)	16,965 (24.5)
Total	*1,674,531 (100)*	*1,540,856 (100)*	*1,708,769 (100)*	*1,804,629 (100)*	*1,897,416 (100)*	*1,902,534 (100)*	*228,003 (13.6)*

It was shown above that it is not possible for hauliers to obtain backloads for food products for all their loads due to an imbalance between imports and exports and a lack of compatibility between destinations of exports and origin of imports. The potential to achieve backloads is also influenced by temperature requirement category. It appears that there is a greater possibility of getting a backload for ambient food products than for chilled or frozen products. This may result in a weighting of costs on the outward temperature-controlled load. Backloading potential may be further limited due to a lack of compatibility in timing of imports and exports and other varying space and transport requirements. Table 6 shows the volume of imports as a proportion of exports overall and for the individual temperature requirement categories for the period 1992 to 1997.

TABLE 6: VOLUME OF FOOD IMPORTS AS A PERCENTAGE OF EXPORTS IN THE REPUBLIC OF IRELAND, 1992–1997

	1992	1993	1994	1995	1996	1997
Ambient	66	78	95	86	90	75
Chilled	16	16	17	25	34	36
Frozen	33	28	30	29	25	18
Ambient/chilled	980	951	1241	1101	391	802
Ambient/chilled/frozen	49	47	40	37	49	68
Total	*57*	*59*	*65*	*61*	*69*	*60*

Future Developments

The future output and exports of the food industry will have important implications for transport in Ireland. The current development strategy for the food industry is set out in the Operational Sub-Programme for the Development of the Food Industry (Government Publications, 1995b), launched in February 1995. It aims for a 33 per cent increase in output and a 63 per cent increase in exports. Much of the growth in output will be as a result of increased export activity due to the small size of the home market. This means that any developments in transport and logistics will have a significant effect on the output from the industry. Table 7 shows the targets set out in the programme.

TABLE 7: OPERATIONAL TARGETS (£BN) FOR THE FOOD INDUSTRY IN THE REPUBLIC OF IRELAND

	1994	1999
Output	8.96	12.0
Exports	4.30	7.0
Irish Economy Expenditure	6.30	8.4

Source: Department of Agriculture, Food and Forestry, 1998

A review conducted in 1996 showed that the objectives of the plan are on course despite the major difficulties in the beef sector. A Food Industry Development Group, established in 1998, made the following recommendations with respect to output from the food industry:

- A £1.3 billion increase in prepared food output, and a £1.2 billion increase in prepared food exports by 2006;

- A £250 million increase in dairy-based food ingredients output, and a £240 million increase in dairy-based ingredients exports by 2006;
- A £276 million increase in drink output and exports by 2006;
- A £100 million increase in baby food output and exports by 2006; and
- A switching of 100,000 tonnes of beef exports to EU markets.

Thus, the increased demand for transportation equipment and port handling and ferry facilities shown in a previous section with respect to ro-ro traffic can be expected to continue. Developments in the retail sector in Ireland will also impact on transport in Ireland. The entry of the UK retailers into Ireland, for example, is expected to result in an increase in the volume of chilled food products coming into Ireland. This could result in more competitive prices for food manufacturers exporting chilled food products to the UK. This is because the UK retailers tend to use UK-based hauliers who will seek backloads out of Ireland. However, the fact that chilled exports are generally time-sensitive due to their limited shelf-life may mean that the competitive prices may offer greater opportunities for frozen and ambient food producers, particularly if they use storage and consolidation facilities in the UK market to achieve greater flexibility. However, there are trade-offs involved so that any savings in transport costs need to be considered in light of potentially higher inventory costs and lower levels of customer service.

The trend in the UK retail and food service sectors towards centralisation and consolidation of supply will also continue to impact on transport cost and complexity. It has the potential to allow Irish food manufacturers to supply a very large market area with just one drop to a regional distribution centre. This trend is seen increasingly on the home market with some indigenous multiple retailers (for example, Musgraves/Super Value), also establishing central distribution facilities.

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Appendix 1: Contribution of the Agri-Food Drinks and Tobacco Sectors to the Economy, 1994–1998

	1994 £m	1995 £m	1996 £m	1997 £m	1998 £m
GDP of which:	31,271	34,939	38,402	42,793	48,285
Gross Agricultural Product	2,463	2,616	2,681	2,582	2,513
Food (GVA)	1,612	1,635	1,604	1,617	1,713
Drinks and tobacco (GVA)	1,472	1,571	1,727	1,798	1,892
Total (Ag+FDT)	*5,547*	*5,822*	*6,012*	*5,997*	*6,118*

Source: CSO, cited in DAF, 1999

Appendix 2: Employment in Agriculture and the Food Industry (000's) 1994–1998

	1994	1995	1996	1997	1998
Agriculture*	138.5	140.6	132.5	136.9	129.8
Food, drinks and tobacco sector	43.1	44.5	45.6	47.1	46.7
Total (agriculture, food, drinks and tobacco)	181.6	185.1	178.1	184.0	176.5
Total employment	1,221	1,282	1,329	1,380	1,495
Agriculture as % of total employment	11.3	11.0	10.0	9.9	8.7
Ag., food, drinks and tobacco as % of total employment	14.9	14.4	13.4	13.3	11.8

Source: CSO, cited in DAF, 1999

* Agriculture, fishing and forestry

Appendix 3: Gross Value Added of the Food Industry as Percentage of All Industries, 1996

Description	£000 (%)
Gross value added — all industries	14,332.7
Manufacture of food products	1,603.9 (11.2)
Production, processing & preserving of meat and meat products	173.1 (1.2)
Processing and preserving of fish and fish products	65.6 (0.5)
Processing and preserving of fruit and vegetables	49.3 (0.3)
Manufacture of dairy products	368.6 (2.6)
Manufacture of prepared animal feeds	87.8 (0.6)
Bread, etc.	131.5 (0.9)
Sugar, cocoa etc.	169.0 (1.2)
Manufacture of other food products	556.2 (3.9)
Beverages	1,130.9 (7.9)
Tobacco	596.4 (4.2)
Food, drinks & tobacco	3,331.3 (23.2)

Source: Census of Industrial Production, 1996; cited in DAF, 1999.

Endnotes

[1] These hauliers were identified in consultation with Irish food manufacturers as being significant players in this sector. They represented hauliers involved in transporting both ambient and temperature-controlled product to the UK and continental EU markets. They operate from both the Republic of Ireland and Northern Ireland.

[2] "Food" in this text refers to food and beverages.

[3] Regions are as defined by the CSO in their trade statistics publications.

[4] Food was classified into five categories following consultation with food industry experts as follows: (1) ambient; (2) chilled; (3) frozen; (4) ambient or chilled; and (5) ambient, chilled or frozen. The last two categories were used for products for which it was not possible to assign a definite temperature requirement category. An example of product in the ambient or chilled category is some of the fresh fruits which may be transported in ambient or chilled conditions. Products in the ambient, chilled or frozen category include products which are defined as such according to the data, e.g. "goatmeat, fresh, chilled or frozen" and products which are not defined specifically enough to enable classification, e.g. "other fish, whole or in pieces, prepared or preserved". In volume terms, it was possible to classify more than 95 per cent of product into one of the three categories of ambient, chilled and frozen. About 84 per cent of imports in volume terms were classified into the definite categories of ambient, chilled or frozen.