Chapter 5

Efficiency

Costs and resource allocation

ToR 4.

Identify the level and trend of costs and staffing resources associated with the TB Eradication programme and thus comment on the efficiency with which it has achieved its objectives.

5.1 Introduction

The previous chapter examined efficiency from the perspective of Programme throughput and the timeliness or completeness of its delivery. Drawing on the definitions presented in the introduction to the previous chapter, this chapter will move on to address the remaining aspects of efficiency. These relate to: the cost of inputs (economy) and their quality; the absolute and unit cost of outputs and their quality; and the manner in which resources are allocated in the Programme. Sections 5.2 to 5.12 will examine various aspects of programme costs, while staff costs will be examined in Section 5.13. All price data used in this chapter, unless otherwise stated, are presented in constant (2006) prices in order to correct for the effects of inflation.

5.2 Aggregate expenditure on TB and brucellosis eradication

Because the Department has historically accounted for the TB and Brucellosis Eradication Programmes conjointly, the natural starting point for the analysis is an examination of the aggregate expenditure on these two programmes. Over the period under review, it can be seen that the generally downward trend in expenditure is interrupted by three periods during which significant increases were recorded: 1997/98 (26%), 1998/99 (27%) and 2001/02 (15%) [Table 5.1]. The increased expenditure reflects the increased costs of compensation and testing brought on by significant upturns in the level of both tuberculosis and brucellosis during these periods. In 1999, approximately 45,000 TB reactors and 31,500 Brucellosis reactors were disclosed. The reasons for these increased disease levels will be explored in Chapter 6 [6.3].

From 1999 onwards, the trend has been for a steady reduction in TB reactor numbers, accompanied by a much more pronounced reduction in Brucellosis reactors. By 2006, just 212 brucellosis reactors were disclosed. The near-eradication of Brucellosis has resulted in a pronounced reduction in the costs associated with that disease, which have fallen from a peak of some €44m in 1999 to just €7m in 2006. The downward trend evident in both diseases since 1999 has had the effect of reducing the cost to the Exchequer of control and eradication measures for the two diseases from €109m that year to approximately €43m in 2006, a decline of some 53%.

The operational synergies between the tuberculosis and brucellosis programmes, previously identified in Chapter 2 [2.4.2], result in lower aggregate costs than if the two programmes were delivered in an uncoordinated manner. For example, if brucellosis testing is carried out in conjunction with the TB test on each animal in a herd of 30 animals, the cost is some €27 less than that applying if the two tests are carried out on separate occasions[1].

5.3 Gross expenditure on TB eradication

For the purpose of this review, expenditure on the BTEP was isolated from that on the Brucellosis Eradication Programme by a process of disaggregation, where it was possible to identify the separate costs of the respective programmes. Where this was not possible, a process of cost apportionment was applied, following the methodology described in Appendices A and D.

When expenditure relating exclusively to the BTEP is extracted from the aggregate figure for TB and Brucellosis [Table 5.1], it can be seen to have been on a generally downward trajectory since reaching a peak, in 1999, of €65.2m. In 2006, it stood at just over €36m, marginally above the level recorded in 2004, which was the lowest annual expenditure over the period under examination.

5.4 Net expenditure on TB eradication

When receipts from Bovine Disease Levies (BDL) and transfers from the EU Veterinary Fund are taken into account, net expenditure can be seen to have fluctuated in line with changes in receipts from levies and variations in the value of EU transfers [Table 5.2][2]. Over the eleven-year period, cumulative receipts from BDL represented 25% of gross Programme expenditure, while those from the EU represented just 2%. The highest net expenditure was recorded in 1999, when it reached €55.1m, and the lowest in 2004, when the cost of the Programme to the Exchequer stood at just €16.7m. Net expenditure in 2006 increased to €25.8m, as a result of a reduction in the rate of levies payable and the discontinuation, since 2004, of Community funding for

the Programme. For the entire period under review, average (mean) net expenditure on the BTEP was €33.5m *per annum*.

5.4.1 Bovine Disease Levies (BDL)

Levies are collected in respect of each animal slaughtered in a meat factory or abattoir, or exported from the country, and in respect of each gallon of milk delivered to Creameries. The rate payable – as determined by the Minister for Agriculture, Fisheries and Food and implemented by Statutory Instrument – has varied considerably over the period under Review [Appendix C]. Under the terms of an agreement reached in 1995 between farming organisations and the Department [Appendix H], which introduced direct payment for surveillance testing by farmers and dispensed with compulsory pre-movement testing, the understanding was that aggregate receipts from levies would provide 50% of the cost of compensation. On foot of this agreement, BDL rates were reduced with effect from 1st April 1996 from €9.27 per animal and €0.0165 per gallon of milk to €3.17 per animal and €0.006 per gallon of milk. The effect was to reduce the revenue from BDL from ca. €56m in 1995 to an average of €17m per annum in the period 1996-2006 [Table 5.9]. Further analysis of the Exchequer impact of the 1995 agreement is provided below [5.7.1].

The analysis presented in Table 5.3 shows how bovine disease levies attributable to the BTEP have varied over time when expressed as a proportion of compensation paid in respect of TB reactors. In the years following the introduction of the 1995 agreement, the proportion varied from a low of 23% in 1999 to a high of 73% in 2004. Most recently, under the terms of the Social Partnership Agreement *Towards 2016*, a halving of BDL rates was agreed, with effect from 1 January 2007, from the 2006 rate of €2.54 per animal and €0.0011 per litre of milk to €1.27 per animal and €0.0006 per litre of milk. This reduction had the effect of lowering the rate at which the levies contribute to compensation to approximately 32% in 2007. The varying contribution made by BDL to the cost of compensation results from both the changes in the agreed levy rates over this period and the fluctuating demands placed on the compensation scheme as a result of changing disease incidence. Over the entire period under review, levies fell some 8% short of the target of 50% of total TB-related compensation. However, given the difficult market conditions facing the beef industry in the mid- to late-1990s and in the early years of this decade as a result of the BSE crises of 1996

and 2000/01, the farmers' contribution to the cost of compensation over the period was probably as high as was realistically achievable in the circumstances.

The disaggregation of the levies provided in Table 5.3 indicates that approximately 51% of all these are collected on behalf of the Department by creameries and a further 41% by meat plants. Receipts from live animal exports (ca. 5% of total BDL) are taken up directly by Department officials while certifying eligibility for export, while receipts from abattoirs[3] (ca. 2%), are collected in the first instance by the abattoir owner and are subsequently taken up by Department officials who visit these premises individually.

5.4.2 EU funding

The other source of receipts to the Programme is the Veterinary Fund of the European Union. The data provided in Table 5.2 show that EU transfers made a relatively modest contribution to the gross cost of the Programme, just 2% over the period under review. The absence of EU funding in recent years can be attributed to budgetary pressure on the Veterinary Fund arising from the recent accession of new member states. It is also attributable to differences between the Commission and the Department in relation to the re-introduction of pre-movement testing, and the degree to which the Commission perceives the objective of the Irish programme to be control, rather than eradication, of bovine tuberculosis.

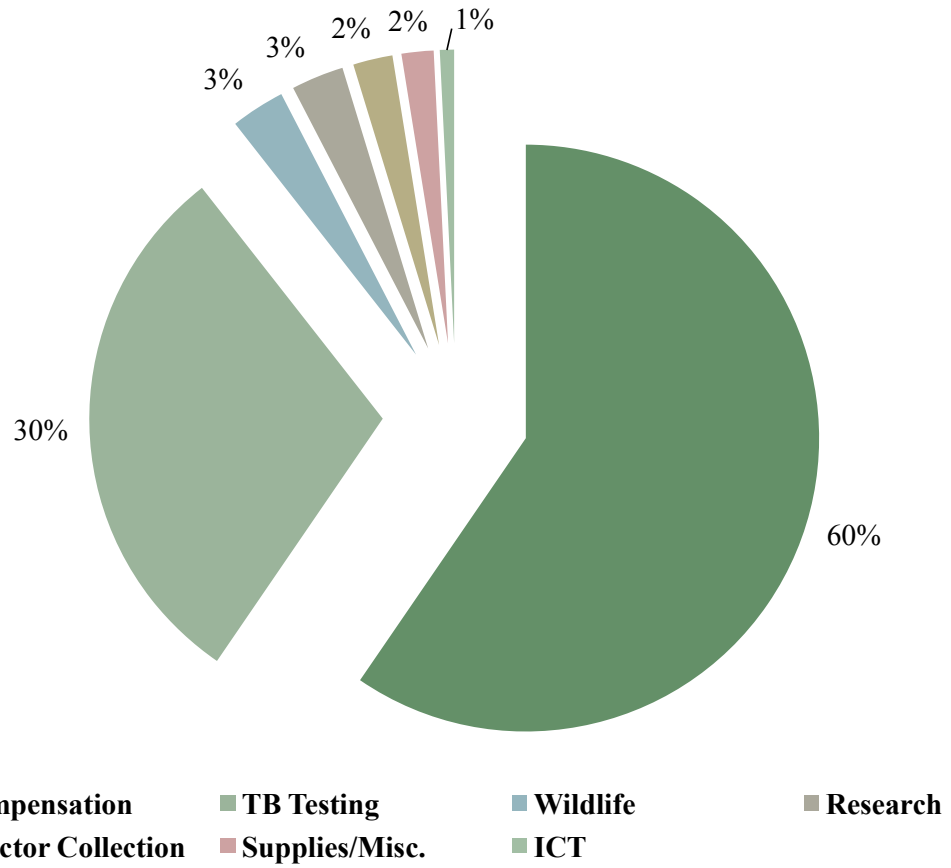
Comparative costs

Of the countries against which benchmarking was carried out, only Spain received funding (some €7m) for its TB eradication programme from the EU Veterinary Fund in 2006.

5.5 Resource allocation

Detailed analysis of the manner in which expenditure is allocated between the various programme measures is provided in Table 5.4 and Figure 5.1.

Figure 5.1 Programme expenditure by category (1996-2006)



Source: DAFF

Over the period under review, compensation for reactors is the single largest expenditure item, accounting for an average of ca. 60% of gross expenditure. Expenditure on tuberculin testing, accounting for ca. 30% of gross expenditure comprises the payments made to Private Veterinary Practitioners (PVPs) in respect of certain of the tuberculin testing carried out on behalf of the Department as well as the cost of providing the protein purified derivative (PPD), the diagnostic reagent used in the tuberculin test. Expenditure by farmers on tuberculin testing is not included as this is an economic, rather than an Exchequer cost. The combined Exchequer cost of compensation and tuberculin testing, including tuberculin, therefore represents some 90% of total programme expenditure. The balance of the expenditure is accounted for

in this review under the following headings, which are presented in decreasing order of magnitude [Appendices A, F]:

- Wildlife Unit
- Research
- Reactor Collection Service
- Supplies / Capital assets
- ICT.

5.6 Compensation

Preceding sections of this report have presented expenditure data in constant price terms by deflating current price data using the Consumer Price Index (CPI). For the analysis of compensation expenditure presented in this section, constant price data have been derived by reference to an index of Total Cattle Output (TCO), rather than the CPI [Appendices A, E]. This approach has been chosen as the TCO better reflects changes in the underlying price of cattle, which the compensation mechanism is attempting to track, than do changes in the CPI. It is of note that, whereas the cumulative increase in the CPI was almost 33%, the TCO index rose by just 13% over the period 1996-2006. Although the TCO provides a better measure than does the CPI of cattle price movements over the period under examination, it should be noted that it is based on market prices for finished cattle, rather than for the broad range of animal types that comprise the cohort of reactor animals, many of which are not marketable.

5.6.1 Direct (reactor) compensation

Least cost per reactor is not an appropriate measure of the efficiency of reactor compensation. Ideally, the compensation mechanism should neither over- nor under-compensate herdowners, but rather provide recompense at a level close to the market valuation of their losses. This is so in the first instance because inappropriate levels of compensation result in an unproductive use of resources; under-compensation results in excessive recourse to the appeal and arbitration process and encourages the concealment of reactors, while over-compensation represents a waste of state resources and incentivises the fraudulent 'production' of reactors. In addition, the

various compensation mechanisms must have regard to legislative constraints extraneous to the Programme, including those deriving from the Constitution and from various EU regulations, such as those governing the payment of state aid.

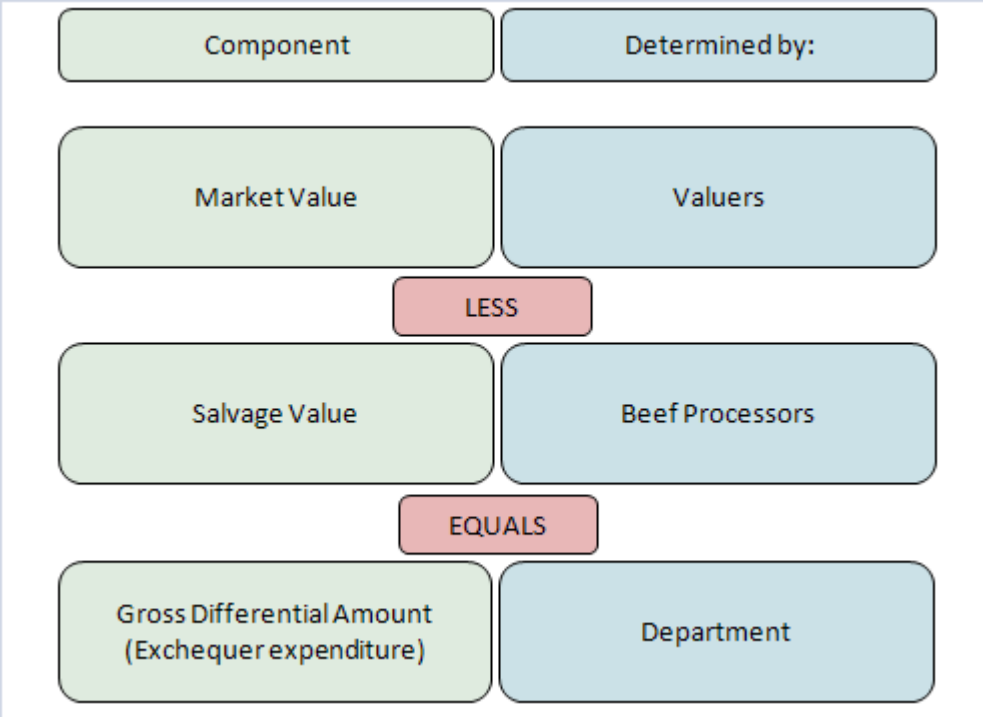
Table 5.5 disaggregates the gross compensation expenditure to show the distribution of spending between the principal compensatory mechanism and the supplementary schemes. It shows that expenditure under the former heading accounted for ca. 81% of total compensation expenditure over the period under review. Two distinct mechanisms for direct (reactor) compensation were in operation over this time. The first, of these, the Reactor Grant Scheme (RGS) was fully operative until February 2001, from which time it was progressively replaced by the On-Farm Market Valuation Scheme (OFMVS). RGS was completely phased out for farmers from 2nd April 2002[4]. Under the RGS, compensation was paid to farmers in respect of reactor animals on the basis of a pre-determined schedule of valuations. In the five years of the period under review in which this scheme was fully operational, annual expenditure ranged between €18m (1996) and €34m (1999). Residual amounts attributable to the RGS continued to be paid out in the years following its discontinuation in respect of compensation delayed as a result of the late submission of documents by herdowners, or following disputes between the Department and herdowners relating to the amount of compensation awarded.

Expenditure on the OFMVS over the period 2002-2006 ranged between €13m (2006) and €22m (2003). These amounts represent the difference between the market valuation placed on the reactor animal and the 'salvage value' [Figure 5.2] of that animal subsequently paid by the meat factory to the farmer in respect of that portion of the carcase unaffected by TB and deemed suitable for processing in the normal manner. This net value is known as the Gross Differential Amount (GDA). While salvage data were not consistently collected over the period under review, accurate figures are available for the final three years of the period. These show that salvage values as a proportion of the total aggregate market value for all reactors rose from 34% in 2004 to 38% in 2006.

The full cost to the state of the OFMVS is greater than the GDA; Department staff costs and valuers' fees must also be included. The former arises from the involvement

of Department staff in the preparation of summary prices and in the supervision of the Valuers' work; these costs are captured in this review under the heading of staff expenditure [5.14]. Expenditure on valuers' fees [Table 5.5] ranged from approximately €0.7m to €0.9m over the five years in which the Scheme has been fully operational. As a percentage of the compensation paid under the OFMVS, valuers' fees have increased somewhat over time, rising from approximately 4% in 2002 to 7% in 2006. It should be noted that, because of the scaled nature of the valuers' fee structure, the valuation of reactors might be expected to become somewhat more expensive to administer as the number of reactors per tuberculosis incident declines.

Figure 5.2 Components of reactor value



Source: DAFF

Efficiency of direct (reactor) compensation

Table 5.6 shows the cost of direct (reactor) compensation, indirect compensation (income supplement, hardship grant and depopulation grant) and the resultant total cost of compensation on a per reactor basis over the period under review. The average (mean) cost of compensation per reactor under the On-Farm Market Valuation Scheme (OFMVS) over the five years (2002-2006) in which it has been fully operational was €641/reactor, compared to a per reactor cost of €626/reactor under the

RGS in the five-year period 1996-2000. The average (mean) cost of the direct compensation mechanisms plus the income supplement and depopulation grant over the full period under review was €782/reactor. Hardship Grant payments are excluded from this calculation because they are paid on a herd, rather than individual reactor basis.

5.6.2 Indirect (supplementary) compensation

The supplementary compensatory schemes – the Income Supplement and Depopulation Grants and the Hardship Grant Scheme – are designed to offset the indirect losses arising as a consequence of the disclosure of reactor animals. Details of the eligibility criteria for these schemes are provided in Appendix I. Table 5.7 shows that payments made under these schemes accounted, on average, for ca.19% of the total of €288m (including valuers' fees) paid out in respect of compensation over the period under review. Expenditure under the Income Supplement Scheme, which amounted to €36m over the period, accounted for about 12% of total compensation, while the Hardship and Depopulation Grants each accounted for about 3% of total compensation.

Depopulation Grant

Expenditure on the Depopulation Grant amounted to €8.4m over the full period and to €0.3m in 2006. The decline in expenditure on this item reflects a move away from depopulation as a means of resolving infection [6.2.2], the general decline in disease levels from 1999 onward and the advent of the IFN-γ diagnostic test [4.5.3] as an additional tool for resolving severe disease outbreaks.

Income Supplement

Expenditure on Income Supplement represents approximately 67% of all indirect compensation; total expenditure on this item was ca. €36m over the period under review and €2.3m in 2006. Annual expenditure has declined year-on-year from a peak of ca. €6m in 1999.

The rate of grant for Income Supplement is uniform throughout the year, and apart from a higher rate for suckler cows, is not differentiated according to the various categories of cattle. While the administrative simplicity of the Income Supplement

scheme undoubtedly enhances the efficiency of its operation, it is apparent from preliminary analysis undertaken as part of this study that it may detract from the effectiveness of the scheme. These issues are taken up again in the following chapter [6.2.2].

Hardship Grant

Expenditure on the Hardship Grant was €0.7m in 2006 and totalled €9.1m over the period 1996-2006, equivalent to ca. 17% of expenditure on indirect compensation. The objective of the scheme is to alleviate the additional feed costs of farmers whose holdings are restricted during the winter period (defined as being from 1st November to 30th April). As is the case with Income Supplement, the efficiency of the Hardship Grant Scheme is enhanced by its administrative simplicity; however, there is some evidence to suggest that its effectiveness could be enhanced by improving the differentiation of grant rates and adjusting the eligibility criteria. This is the subject of further discussion in Chapter 6 [6.2.2].

International comparisons

The comparison of the cost of compensation across jurisdictions, even if presented on a unit cost basis, is complicated by a number of factors. Firstly, the nature of the compensation regimes may vary markedly from country to country. For example, the compensation regime operating in Ireland, which comprises both direct and indirect compensation elements, is more comprehensive than those in the benchmark countries, which compensate exclusively for direct losses. Secondly, the different market conditions applying in the comparator countries mean that the underlying trend in cattle prices – which the respective compensatory mechanisms are attempting to track – may vary quite markedly with respect to one another. Thirdly, the level of disease may affect the efficiency of compensation measured on a per reactor basis. High levels of disease and especially an elevation in the within-herd incidence may, somewhat paradoxically, reduce the administrative costs of compensation per reactor by diluting the fixed cost elements of reactor valuation.

Notwithstanding the limitations described above, a comparison of the cost of reactor compensation was carried out for the purpose of this review. The data indicate that the unit cost of direct (reactor) compensation, excluding valuers' fees, in Ireland was

€517/reactor in 2006 [Table 5.6], compared with unit costs of €482/reactor, €1,039/reactor and €1,454/reactor in Spain, Northern Ireland and Great Britain, respectively[5].

5.6.3 Quality control of compensation

Since its inception in 2002, the OFMVS has incorporated a number of features designed to ensure the proper governance of expenditure of monies disbursed via this compensatory mechanism. These include:

- The values attributed to reactors are routinely monitored by Department staff.

- Approximately 12% of all valuations are monitored by Department staff on-farm.

- The Department issues weekly summary prices to valuers, based on market prices recorded at marts, dispersal sales etc. Valuations are monitored against these prices and explanations are required from valuers where they are exceeded. Valuers are continually updated with any alterations to the valuation scheme.

- A maximum ceiling is applied to the valuations that can be attributed to each individual reactor animal.

- All herdowners are obliged to make available all relevant documentation, including the original pedigree certificates, in order to assist valuers in arriving at the appropriate market valuation.

- Confirmation by veterinary staff (under Department supervision) of the pregnancy status of reactor cows and heifers on post-mortem examination. The result of this examination is considered final.

- The Department holds an annual workshop for valuers, which covers all aspects of the operation of the OFMVS, including linear scoring, performance

records, factors affecting the overall merit of commercial and pedigree cattle, market trends and prices, and changes in policy.

- The Department is currently in the process of drawing up a Code of Practice for valuers, setting out specific procedural requirements as well as categorising the sanctions to be applied where a valuer fails to adhere to those requirements.

International comparisons

An internal audit carried out by the Department of the Environment, Food and Rural Affairs (Defra) in Britain in the summer of 2003 found that the reactor compensation system (then based on on-farm valuation) appeared to be making awards that were 'significantly higher than market prices' (Defra, 2004). Similarly, in a report prepared for the National Assembly of Wales in 2003, the Auditor General found that, in 2002, compensation was at least 50% higher than underlying market prices for both commercial and pedigree animals. Indeed, some of the indicators of the underlying market price suggested that the difference was over 100%. It was found that average compensation payments in Wales were 56% higher than those in Northern Ireland for commercial animals, and 34% higher for pedigree animals. The Auditor General estimated that, in 2002, the Assembly had paid some £2.6m in compensation payments more than it would have done had valuations been consistent with market values. The conclusion was that the Assembly was doing too little to control the risks inherent in the arrangements for valuing animals then in force. In effect, a separate market had emerged for tuberculosis reactors, related to the market for healthy animals but operating independently of it. Amongst its recommendations, the National Audit Office advocated that the following quality control measures be introduced:

- The establishment of a panel of accredited valuers based on qualification and performance criteria and external scrutiny by an independent monitor valuer. It was recommended that the quality control arrangements should include sanctions, escalating to the removal of panel membership when circumstances warranted;

- The introduction of a threshold above which valuers are routinely required to provide a more detailed justification of the animal's market value;

- Compulsion of farmers to disclose invoices of sale when the animal concerned is brought onto the farm within twelve months of the valuation, subject to antifraud arrangements;

- Stricter control of pedigree valuations by collecting more information (such as animals' pedigree certificates), liaising further with the major pedigree societies and using specialist valuers from breeding societies where appropriate;

- Consideration of the costs and benefits of requiring *a priori* disclosure by farmers of the maximum market value of their animals in tuberculosis hotspots if the maximum exceeds a certain threshold (NAO, Wales).

It is of note that many of the measures advocated by the Welsh National Audit Office have formed part of the protocol governing the operation of the OFMVS in Ireland since its inception.

5.7 Tuberculin testing

A new policy governing the payment for tuberculin testing was agreed in 1995 and adopted the following year. Under these revised arrangements, the majority of surveillance testing, formerly funded directly by the state, came to be paid for by herdowners. Up until 1996, the Department had borne the cost of all testing, excluding private tests, carried out under the Programme. Under the present system, the farmer generally pays for a single herd test in any given year. If additional testing is required for disease or other reasons, the cost is borne by the state.

The impact of this change in policy is shown in Table 5.8, which illustrates how the burden of testing-related costs has shifted from the state to the private sector. The data take account of lump sum ‘top-up’ payments made in the period 2004-2006 on foot of

an agreement between the Department and Veterinary Ireland to compensate those PVPs who had made the investment necessary to engage electronically with the newly introduced AHCS system. The adjusted figures for these three years attribute the cost of the 'top-up' to the years in which the payments were due, rather than to the year in which they were actually made. While in 1995, the Department paid for 100% of the approximately 9 million animal tests performed that year (excluding private tests), the proportion of tests paid for by Dept in the period 1997-2006 ranged between 27% (2004) and 36% (2000) *per annum*. In monetary terms, Department expenditure on testing, which was €19m in 1995, stood at €8.9m in 2006 in respect of the approximately 9 million animal tests carried out that year, a unit cost of €1.02/test. The full economic cost, which includes those fees paid directly by farmers to PVPs, is obviously much higher. Using the adjusted figures as the basis for calculation, the unit cost of Department paid tests in 2006 was €3.64, equal to the average unit cost over the eleven years. Over the full period under review the unit cost ranged from €3.27 (1997, 2001) to €4.19 (1999). The saving to the Exchequer arising from the transfer of the bulk of the cost of tuberculin testing from the Department to farmers can be estimated to have been of the order of €23m in 2006. This amount, which is calculated using the unit cost of Department-paid testing, is likely to somewhat overstate the actual cost to farmers, who will generally be in a position to negotiate somewhat lower rates for testing with their PVPs than those paid by the Department.

International comparisons

Comparison of the Exchequer cost of tuberculin testing across the benchmark jurisdictions reflects the absence of similar arrangements in these countries. The cost to the State of tuberculin testing per animal test was €3.80/test in Spain, €5.58/test in Northern Ireland and €9.70/test in Great Britain. If analysis of the cost of testing under the BTEP is confined to just those tests paid for by the Department, the unit cost in 2006 was €3.64, which is lower than in any of the comparator countries.

5.7.1 The 1995 agreement

In assessing the financial implications of the new policy regarding payment for tuberculin testing, introduced in 1996, it is necessary to look at the impact on Exchequer resources not only from the point of view of TB testing fees, but also from the perspective of changes to Bovine Disease Levies, which were implemented at that

time as part of the overall negotiated settlement [Table 5.9]. In the years immediately preceding the Agreement, the levies were intended to cover 66% of the operational (programme) costs of the TB/BR eradication programmes, although they had been reduced (and even fixed at zero) in previous years in times of market difficulties for farmers. In view of the extremely difficult market conditions facing the beef industry, arising from the BSE crises of 1996 and 2000/1, it is difficult to say how the levies would have evolved in the absence of the 1995 agreement. In any event, it is noteworthy that the levies were not increased during this period, as provided for in the Agreement, to cover 50% of the cost of compensation during this difficult period. Given the scale of the difficulties which beset the beef sector post-1996, it is reasonable to assume that, in the absence of the Agreement, the Department would have reduced the levies from the relatively high level which obtained in 1995 and, in any case, it is inconceivable that the levies would have been increased to a level equivalent to 66% of the programme costs. Had the levies been increased to this level, they would have contributed an estimated €839m to the cost of running the programme over the 11 years. In the event, the revenue from the levies amounted to €185m over the period and the transfer of the majority of the cost of testing from the Department saved the Exchequer some €409m. It should be noted that the reduction in the State's expenditure on TB and brucellosis testing does not equate to the increase in the farmers' cost in respect of these tests, because farmers will generally be in a position to negotiate somewhat lower rates for testing with their PVPs than those paid by the Department.

5.7.2 Quality control of tuberculin testing

Field and office-based inspections

The performance of the intradermal tuberculin test raises issues of 'moral hazard' and 'adverse selection', previously referred to in Chapter 3 [3.3.2]. In this instance, information asymmetries in relation to the standard of performance of the test arise both between the Department as 'principal' and the PVP as its 'agent', and between the herdowner and the PVP, whose relationship may also be described as being of the 'principal-agent' type. Informational asymmetries of this type may be expected to arise in relation to any diagnostic test, but they are likely to be of a higher order in the case of the SICTT than in the case of a hypothetical blood test of equivalent accuracy.

In recognition of these difficulties and of the need to maintain the confidence of stakeholders in the integrity of the test, the Department has long undertaken quality control of the SICTT. The Department's procedures for the quality control of tuberculin testing encompass not just the correct application of the field test itself but also the efficiency and effectiveness of PVP administrative and reporting procedures. They recognise both the obligation of the PVP to provide a service that attains the highest standards of clarity and transparency and the obligation of the Department to operate clear and fair procedures when delivery does not meet these standards. These procedures have recently been enhanced and set out as a formal protocol, the principal components of which are described below.

PVPs carrying out tuberculin testing make an annual undertaking to do so in accordance with a detailed set of instructions prepared by the Department. Prior to receiving approval to undertake tuberculin testing in the state, PVPs are required to undertake an official training course. These courses are also obligatory for any previously approved practitioner who is deemed to require retraining. Once approved, the quality of the veterinarian's testing is subject to scrutiny on an ongoing basis. Veterinary Inspectors from the PVP's local DVO have regular contact with veterinary practices to discuss the testing programme and the level of service expected of the practice, and they also carry out at least one unannounced field inspection of each PVP per annum. These inspections are supplemented at DVO level by a series of risk-based administrative checks. Finally, headquarter and regional staff operate a system of central quality control and monitoring in order to ensure that high standards of tuberculin testing are achieved across the country and that PVPs receive fair and equitable treatment. Breaches of the tuberculin testing procedure by PVPs, where identified, trigger a range of remedial actions and/or sanctions, depending on the seriousness of the infraction detected. These include the requirement to attend further training, the withholding of fees, the suspension or withdrawal of approval to carry out tuberculin testing, and (in the case of the most serious infractions) the initiation of proceedings in respect of fraudulent behaviour or professional misconduct.

Use of wTVIs

The Department employs 20 wholetime Temporary Veterinary Inspectors (wTVIs), who carry out TB and Brucellosis testing on its behalf [5.14.6]. Comparison of the TB

test results of these veterinarians with those obtained by PVPs testing herds with similar disease characteristics provides the Department with additional performance information which can be used to enhance the risk-based quality control procedures described above.

'Atypical' reactor herd protocol

Very occasionally, certain herds give rise to concerns as to the true nature of the problem underlying the disclosure of TB reactors. These herds generally produce a large number of reactors that are found not to have visible lesions of tuberculosis on slaughter; they also tend to experience a number of repeat episodes of reactor disclosure. While such episodes may result from herd infection with *M. bovis*, they may also arise as a result of non-specific infection [see Appendix B], or due to deliberate interference with the test. As a result of experience gained in the management of such herds, the Department has drawn up a management protocol for all herds deemed to fall into this category, which allows for 'atypical' reactor episodes to be identified and resolved much more rapidly and effectively than in the past.

5.7.3 Tuberculin

Ireland sources the protein purified derivative (PPD) required for the performance of the TB test through a process of competitive tendering. The current supplier is the Institute for Animal Science and Health, ID-Lelystad, in the Netherlands. Over the entire period under review, expenditure on this item amounted to €27.3m, equivalent to just over 5.4% of the gross programme cost. In 2006, expenditure on tuberculin was €4.2m, 11.5% of the gross programme cost in that year. The absolute cost of this resource, and an examination of the efficiency with which it has been used over time is provided in Table 5.10. A relative increase in the proportion of the budget attributable to the purchase of tuberculin is to be expected as reactor numbers decrease. This is due to the fact that other programme costs (particularly compensation) will fall faster than will that of tuberculin, which continues to be required to carry out the surveillance testing that forms the bulk of the programme.

The Department has undertaken measures to improve the efficiency with which tuberculin is used in the BTEP. In 2000, it changed the specifications of its contract with ID-Lelystad so that avian and mammalian PPD, which had previously been

supplied in separate vials, would in the future be supplied in paired vials in order to reduce wastage. Following this alteration, the efficiency of tuberculin use improved from €0.20/animal test in 1999 to €0.14/animal test in 2000 and remained about this level for the next two years.

The substantial increase in expenditure on tuberculin apparent from 2003 onwards is attributable to an increase in the price stipulated in the Department's contract with ID-Lelystad from €0.90 per vial to €2.75 per vial, applicable to tuberculin supplied from June 2003 onwards. The current price, following the application of a number of annual revisions[6], stands at €2.89 per vial. This large increase more than offset the gains resulting from the wastage-reduction measures introduced in 2000; Table 5.10 shows that efficiency deteriorated from €0.14/animal test in 2002 to €0.46/animal test in 2006.

The range of actions available to address the issues of economy and efficiency in the use of tuberculin may prove to be limited. Although the Department awards contracts for the supply of tuberculin on the basis of a competitive tendering process, only a limited number of reliable suppliers exist world-wide. Of these, ID-Lelystad has consistently proved to be that which most closely meets the Department's specifications at least cost. Recent production difficulties at the Weybridge site in England have further limited the Department's future options for sourcing tuberculin[7]. Falling demand for tuberculin in Europe – demand outside Ireland and the United Kingdom is light – makes it less likely that industry will invest in establishing and maintaining manufacturing facilities to the exacting standards required by regulatory authorities. Furthermore, certain manufacturers, even if prepared to quote for the business, may not be in a position to guarantee the continuity of supply required for the effective functioning of the Irish programme. In any case, any price advantage that might be gained by switching suppliers needs to be weighed against the benefits deriving from the ability to interpret test results uniformly over time, benefits that are lost when tuberculin is sourced from multiple manufacturers. Finally, the option of commencing production here in Ireland, which has been considered by the Department in the past, has been found to be uneconomic given the significant investment that would have been required to establish manufacturing facilities and obtain the necessary authorisations.

International comparisons

In 2006, the cost of tuberculin per animal test in Ireland was €0.46/test [Table 5.10] compared with €0.15/test in Spain, €0.41/test in Great Britain and €0.81/test in Northern Ireland. The substantially lower cost in the Spanish programme is partially attributable to the fact that the vast majority (ca. 85%) of the intradermal tests carried out in that jurisdiction are of the SITT type, which requires injection of a single dose of tuberculin per animal test. In Ireland, Northern Ireland and Great Britain, by contrast, all intradermal tests are of the SICTT type, requiring the injection of two doses of tuberculin (avian and mammalian) per test. In addition, the fact that the tuberculin used in the Spanish programme is sourced from a domestic supplier may contribute to lower transportation and distribution costs than are achievable in the case of countries such as the Republic of Ireland, which must import its requirements.

5.7.4 Quality control of tuberculin PPD

The most reliable measure of the potency of a tuberculin is by assay in the species in which it will be routinely used. Potency of a tuberculin is estimated by comparing the size of the reactions, elicited by an intradermal inoculation, to the size of the reactions of a 'standard' tuberculin of known potency. Potency assay of a selection of batches of routine issue Lelystad bovine PPD are carried out each year by the Central Veterinary Research Laboratory, Backweston. All batches of Lelystad tuberculin assayed to date have had a potency well in excess of the minimum requirements. The cost of this procedure is approximately €8,000 per annum, mainly attributable to the cost of housing and feeding the cattle required for the procedure.

5.7.5 Blood-based tests

The characteristics of the IFN-γ assay are discussed in the Literature Review [Appendix B] accompanying this report and will be addressed again in Chapter 6 [6.3.5] in the context of programme effectiveness. Here, it is sufficient to highlight that, although the assay has been demonstrated to increase the effectiveness of reactor removal when used in conjunction with the SICTT in known infected herds, its relatively lower specificity compared to the intradermal test renders it unsuitable for use as a routine screening test.

The cost of the IFN-γ assay, which is of the order of €25/test, compares unfavourably with that of the SICTT. Data presented above [5.7 and 5.7.3] has shown that the cost to the Exchequer of Department-paid SICTTs was €4.10/test in 2006, comprising veterinary fees of €3.64/animal test and tuberculin costs of €0.46/animal test. On the other hand, the greater per unit cost of the IFN-γ assay will be offset somewhat to the extent that it facilitates the resolution of certain TB breakdowns more rapidly than would be the case using the SICTT alone. The deployment of IFN-γ has, for example, contributed to the decreasing use of costly herd depopulations as a means of resolving severe breakdowns.

It may well be the case that, in the future, the cost of the assay (or of similar tests currently in the developmental stage) will fall as the increasing use of such techniques stimulates competition and enables manufacturers to overcome diseconomies associated with low production volumes. Further cost reductions might accrue by virtue of the fact that a blood-based test of equivalent accuracy to the intradermal test could be carried out by lay personnel instead of veterinarians, as is the case currently. The practicability and cost-effectiveness of employing non-veterinarians in the performance of the SICTT is discussed more fully in Chapter 8 [8.3].

5.8 The Wildlife Unit

Total expenditure on wildlife control measures over the period was just under €15m [Table 5.4], with significant increases in expenditure following on from the *Programme for Prosperity and Fairness* agreement of 2000, despite the interruption to wildlife control activity resulting from the outbreak of Foot and Mouth disease in 2001. Nominally, expenditure on wildlife control in 2006 (€2.6m) was over five times that in 1996 (€0.5m), although this probably overstates the magnitude of the actual increase as wildlife-related expenditure in the earlier part of the period under review was frequently subsumed under other budgetary headings.

The Wildlife Unit makes extensive use of outsourcing to deliver the Department's wildlife programme. Currently, some 60 Farm Relief Service (FRS) operatives, under the supervision of department staff, are engaged in surveying and capture activities

related to the wildlife programme. As discussed in Chapter 3 [3.3.1], the use of outsourced staff creates efficiencies in the delivery of the wildlife programme.

Measuring the efficiency with which the Wildlife Unit operates is not straightforward given the difficulty in establishing a meaningful measure of output [see 4.4]. One possibility is to relate the Unit's expenditure to the area of land subject to control at a given point in time. Currently, while data for the land area under treatment are collated, they are available only as a cumulative figure for land area treated since January 2003 and hence cannot be meaningfully related to annual expenditure on this programme measure. If the data were to be presented in a different form, showing the area of land under treatment in a given annual period, they could form the basis for assessing the Unit's efficiency on an ongoing basis. This issue is further discussed in Chapter 7 [7.5.1].

The transfer of information and technology from other areas of the Department to the Wildlife Unit and *vice versa* can result in efficiency gains in both directions. Thus, for example, the *Herdfinder* programme [4.7.3], which was developed for the identification and management of herds contiguous to TB breakdowns, has proven to be useful in assisting field staff involved in badger capture to map the location of badger setts. Similarly, badger population and sett location data gathered by the Wildlife Unit staff will provide an invaluable resource for the trialing and eventual full-scale implementation of a programme of field vaccination of badgers.

Quality control of Wildlife Unit

The activities carried out by the staff of the Wildlife Unit are governed by a Standard Operating Procedure (SOP), which establishes the sequence of events that must follow the identification by a Department Veterinary Inspector of reactor herds in which wildlife has been confirmed as a possible source of the outbreak. The procedures and protocols governing each of these events are set out, as are the responsibilities of the various staff involved and the timeframes for the completion of each step of the process. The SOP also specifies the ratio of Department staff to FRS staff for surveying and capturing work, respectively, so as to ensure an appropriate level of Department oversight of the wildlife programme. The ratio of supervisory Department staff to FRS staff involved in badger capture work, which was 1:1 at the

time of the Unit's inception, now stands at 1:2. The use of standardised forms by operatives and the regular auditing of various aspects of delivery provide further assurances as to the quality of the work carried out by the Unit. Finally, in addition to the internal norms and procedures as outlined above, the Wildlife Unit has in place a system of active skill transfer, whereby retired Department staff with considerable experience in wildlife control visit DVOs to disseminate best practice in relation to field craft and office procedures.

Comparative costs

As no equivalent programme measure exists in the benchmark countries, no international cost comparison of the Wildlife Unit is possible.

5.9 Research

While much of the research output is TB-related, significant research also takes place into other areas of animal health. Because all of this research is funded from the BTEP budget, and because no attempt has been made in this review to segregate TB-related research from other research, there is thus an element of over-charging of the BTEP with respect to other animal health programmes. Based on information provided in the CVERA 2006/07 Biennial Report, it would appear that, of the projects undertaken by CVERA in that period, approximately 63% were related to TB, the remainder relating to other animal health issues[8]. On this basis, Department expenditure on research directly related to TB amounted to an estimated €1.5m in 2006, and that ca. €0.25m of the total research expenditure in 2006 was not directly related to TB. Over the eleven-year period, total research expenditure amounted to €14.5m.

Analysis of the efficiency of expenditure on research is fraught, not least because a quantitative approach to the exercise will fail to take account of the quality of research and the strength of its interlinkage with policy-making, both of which are difficult to measure. Nonetheless, it is possible to assert that a significant output is achieved for this expenditure, as is evidenced by the detailed account of recent research provided in Appendix J. This large output from a relatively modest budget is possible, in part,

because of efficiencies arising from the comparatively small size of the research community in this country and because the research programme is able to actively draw on the staff and certain other resources of the Department.

International comparisons

Expenditure by Defra in Great Britain on its research programme in 2006/07 amounted to ca. €11m and the equivalent figure for Northern Ireland was approximately €770,000. Figures provided by Spain indicate that expenditure on research in 2006 was of the order of €700,000. TB-related research represented just over 4% of gross programme expenditure in Ireland in 2006 and 9%, 3% and 2% of gross programme expenditure for the equivalent period in Great Britain, Northern Ireland and Spain, respectively.

5.10 Reactor Collection Service

Table 5.11 shows that the cost of collection of tuberculosis reactors was €11m over the period under review. The rates payable to hauliers in respect of the collection of reactor animals were adjusted twice in this time. Under the terms of an agreement reached between the Department and hauliers in 2001, the number of categories of vehicles was increased from 2 to 6 and the fixed call-out charge and rate of mileage payable were revised upwards by between 16% and 45%, depending on the vehicle type. In August 2006 a further increase of 30% across all vehicle types was approved. At the same time, a decision was taken that the Department would put in place a formal tendering process for the haulage of TB, Brucellosis, BSE and Scrapie infected animals in order to comply with public procurement requirements. Since 16th April 2007, when the tendering system became operational, hauliers are paid the per kilometre rate specified in successful tender applications.

An additional cost of the reactor collection service, which is not captured by the data presented in Table 5.11, relates to the input of Department technical staff, who co-ordinate reactor collection with herdowners and hauliers and who accompany the latter to oversee the collection of reactors in the field. These costs are monetised in this review to the extent that the estimates of staff costs reflect the time involvement

attributable to the reactor collection service. The travel and subsistence payments associated with these activities are subsumed into the global figures for this category of expenditure [5.14.5]. The benchmarking exercise carried out for this review revealed that hauliers providing a similar service in Northern Ireland co-ordinate the collection of reactors directly with the herdowner and are accompanied by Department staff to the point of collection only in exceptional circumstances, such as when farmers are unwilling or unable to co-operate with the collection of reactor animals. These issues are taken up again in Chapter 8 [8.4]. A tendering system is also in operation in respect of premises slaughtering reactor cattle. Tender quotations are received weekly from each of the four plants currently slaughtering reactors. These quotations are examined by Department staff for their competitiveness with respect to comparable non-reactor cattle. The final selection of slaughter premises is based on price competitiveness, the suitability of the reactor cattle and the proximity of the meat plant to the reactor herd.

Efficiencies are likely to arise as a result of the operation by the Department of a centralised reactor collection and delivery service results. These were recognised in a previous review of the Programme, which concluded that the assembly of reactors into bulk lots resulted in a reduced national loss (when compared with direct collection) arising from the more efficient organisation by factory management of the slaughter and sale of reactor animals (Sheehy and Christiansen). The aggregate salvage value of reactor animals, expressed as a proportion of the aggregate market value of those animals, provides a measure of these efficiencies. They appear to have been sustained, despite recent significant reductions in the number of meat factories quoting for this class of animal. In 2002, seven factories accounted for 90% of the reactor slaughterings, and the highest percentage attributable to any individual processor was 33%; in 2006, by contrast, just three factories accounted for 90% of the slaughterings, and one factory alone accounted for 72% of reactors slaughtered. Notwithstanding the reduced competition for reactors, however, average salvage values for reactor animals have remained stable, or increased slightly, in recent years [Table 5.5], indicating that any downward pressure on prices attributable to increasing buyer concentration [2.2.1] has been offset by other factors. The analysis presented in Table 5.11 shows that, while the absolute cost of the service has varied very little over the period under review (ca. €1m/annum), the unit cost of reactor haulage has

increased over time, rising from €22.25/reactor in 2000 to €42.84 in 2006. Over the entire period under review, the average (mean) cost of the reactor service per reactor was €31.12/reactor.

A number of other factors are responsible for the increase in costs. Firstly, they are the result of the new rates for reactor haulage arising from the Department and hauliers in 2001; those agreed in August 2006 occurred too late in the period under review to be fully reflected in the data. Secondly, it is to be expected that unit costs will rise as disease levels fall. This is because the scaled nature of haulier fees, which reflect the existence of economies of scale in the transport of reactors, means that the highest per unit cost of haulage attaches to the first reactor removed from a farm premises. Thirdly, the increasing concentration of processors has the effect of increasing the average distance between reactor herds and suitable meat factories, thereby driving up transport costs.

International comparisons

The cost of TB reactor haulage in Northern Ireland in the period 2006/07 was €237,965, or €25.37 per reactor. This lower unit cost may partially reflect the somewhat lower average distances from farms to suitable slaughter premises in Northern Ireland as compared with this jurisdiction. Expenditure on reactor haulage is not separately accounted for in Great Britain, while in Spain farmers are responsible for transporting reactors to slaughter.

5.11 Supplies / Capital Assets

The items comprising the 'Supplies/Capital assets' category used in this report are itemised in Appendix F and the basis on which the costs are apportioned between the TB and brucellosis eradication schemes is provided in Appendix D. Table 5.12 provides a detailed expenditure analysis and shows that the largest expenditure item in this category was 'Miscellaneous expenditure', amounting to €3.48m over the period. Generally, items were apportioned on the basis of the relative number of animal tests carried out under the respective programmes. However, 90% of expenditure on 'laboratory equipment/consumables', was attributed to the brucellosis eradication

programme, on the basis that these expenses are principally incurred by the Brucellosis Laboratory in Cork. Total expenditure on 'Supplies/Capital Assets' over the period under review was €7.1m, annual expenditure ranging between €1.1m (2000) and €0.3m (2005).

5.12 Information and Communication Technology (ICT)

5.12.1 AHCS

The most significant advance in computer technology in the period under review was the development and introduction of the Animal Health Computer Service (AHCS), which has already been described in the previous chapter [4.7.1].

Benefits to the Department

The new system is a modern, fully networked facility, which allows staff in all of the relevant Department offices to access information in respect of all herds and animals throughout the country. This was not possible with the previous, standalone Nixdorf system. The establishment of electronic links between all of the Department's offices, the Brucellosis Laboratory and private veterinary practitioners provides greater efficiencies in the gathering and usage of data. The electronic submission of test data expedites the processing of the tuberculin test; currently, 85% of all PVPs and 78% of wTVIs submit test reports electronically using data loggers in the field and interfacing with the Department via AHCS. The proportion of animal tests submitted online presently exceeds 95%. By facilitating administration, AHCS has allowed for the rationalisation of staff dealing with the Programme, resulting in a significant reduction in the administrative staff complement.

The introduction of AHCS has enabled the automation of many labour-intensive tasks, particularly the manual entry of data and the preparation of many of the forms used in the TB and Brucellosis eradication schemes. This, combined with the fact that data are now transmitted electronically between the Department and veterinary practitioners, has significantly reduced the administrative effort in local offices. Together with the fall in disease levels, AHCS has enabled the Department to

reorganise its 28 local veterinary offices, resulting in significant staff savings and the discontinuation of overtime working in DVOs.

Seamless integration with other corporate systems, and the presentation of electronic test results has improved workflow for Department staff. Integration with the cattle traceability system (CMMS / AIM) provides independent verification of the data held on that system, thereby optimising its accuracy and providing further assurance regarding the safety and quality of Irish produce. Separately, integration with the Department's financial system (SAP) allows for the generation of payments to farmers, veterinary practitioners and other clients in a more timely and secure manner and improves the availability and quality of financial management information.

Benefits to Private Veterinary Practitioners

PVPs can now record data at source using electronic handheld devices, allowing data to be transferred electronically to the Department without the need for transcription of data from manual records, as was previously the case. Up-to-date herd profiles are supplied for all tests, significantly reducing the effort involved in recording test results and ensuring greater accuracy in the data. Veterinary practitioners are able to use the Internet to access details of tests that are scheduled, allowing them to more easily plan their work. All of these developments reduce the administrative burden on veterinary practices and allow for the speedier exchange of information with the Department.

Benefits to Farmers

The cross-validation of data with the traceability systems assists farmers by expediting the identification and rectification of anomalies in their herd profile, thereby minimising problems at the point of sale and in relation to the Single Farm Payment. The greater speed of data transfer eliminates certain of the delays associated with the processing of payments in respect of reactor cattle. Continuity of service for clients is also improved as AHCS, which is a networked system, allows the needs of clients to be serviced from any DVO, rather than just from the farmer’s local DVO, as had been the case with the Nixdorf system.

Benefits to Consumers

By providing a fuller picture of testing and movement history for all bovine animals, AHCS (together with CMMS/AIM) gives greater levels of assurance regarding the safety of Irish beef than had previously been possible (Dept. of Agriculture, 2006a).

Expenditure

Capital expenditure on the AHCS system was provided from the budget allocation of the Department's National Beef Assurance Scheme and is not, therefore, accounted for in this review. Expenditure under the heading of computerisation relevant to this review includes:

- €1.72m in the period 2004-2006 in respect of capital grants paid to PVPs to facilitate their procurement of equipment to enable online data transfer.

- €578,000 in respect of the field testing and staff training relating to the roll-out of AHCS in the period 2003-2006.

- €143,000 in respect of the purchase of data-loggers for use by Department veterinary staff.

5.12.2 CMMS / AIM

CMMS and AIM have already been described in the preceding chapter [4.7.2]. These systems allow the Department to ensure that all bovine animals born in and imported into the State are identified in the manner provided for in Council Regulation (EC) 1760/2000 and that their subsequent movements and disposal details are recorded onto a central database. The management of both animal registration and farm-to-farm movement data are provided under contract by a private sector organisation. The Bovine Animal Identification and Traceability System (BAITS), of which CMMS is an integral component has been the subject of a separate Value for Money Review, due for publication this year.

5.12.3 Other ICT developments

The *HerdFinder* system, previously described in Chapter 4 [4.7.3], improves the efficiency with which the testing programme operates by refining and targeting the

programme of contiguous herd tests to avoid the excessive and inappropriate testing of herds following disclosure of disease. The functions of RHMS and TOTS are currently being migrated to AHCS to develop a unique user interface for the management of reactor herds. This is expected to enhance the efficiencies already introduced by AHCS.

5.13 *Post-mortem* surveillance

Ireland is obliged to implement both ante- and post-mortem inspection in compliance with the European Directives governing trade in bovine animals and their products, respectively. The Department is required to maintain a comprehensive Veterinary Public Health Inspection System (VPHIS) and the Veterinary Laboratory Service (VLS) both as a guarantor of food safety and in order to comply with legislation governing trade in fresh meat [2.2.3]. However, in contrast to the field inspection component, Ireland would continue to incur the majority of the costs associated with these services, irrespective of whether or not bovine TB is eradicated. Even with the levels of bovine tuberculosis currently prevailing, many of the suspect tuberculous lesions currently processed by VPHIS and VLS are not, in fact, caused by *M. bovis*. In 2006, for example, out of a total of 4,674 suspect lesions from non-reactor cattle, 1,001 were attributed to causes other than TB. For these reasons, the costs of VPHIS and VLS as they relate to the detection and confirmation of bovine tuberculosis in cattle have been treated as 'sunk costs' and consequently ignored from the perspective of this review.

5.14 Staff Costs

5.14.1 Permanent staff

A staff survey, issued in 2007, was used to estimate the staff complement and the associated cost of all relevant headquarters staff, of the veterinary staff based in DVOs and of one of the DVO-based technical staff grades. Information from this survey was supplemented with that from two other sources: a standardised report (ER41) used in the management of two of the technical grades (TAO and SAO) based in DVOs; and a separate survey, carried out by ERAD Division in 2008, in relation to

administrative staff based in DVOs. Overall, the results of the analysis indicate that the number of full-time equivalent staff members engaged in the administration of the Programme in 2006 was 375, comprising 180 administrative, 118 technical, and 78 veterinary full-time equivalents. The cost of this resource, which was derived following the methodology outlined in Appendix A, was estimated at €29.3m. The great majority of this expenditure (ca. 90%) is incurred by staff based in DVOs.

Over the course of the period under review, the range of activities undertaken by Department staff in the area of animal health broadened considerably in response to shifting TB and other animal disease dynamics, changes in national animal health policy and emerging EU legislation. While staffing levels were increased to service certain of these new requirements and general duties relating directly to tuberculosis and brucellosis control contracted somewhat from 1999 onwards, the overall effect was to increase the workload of both headquarters and DVO staff engaged in the area of animal health. Some of the principal policy changes driving this increased workload were as follows:

- The creation and implementation of control programmes for BSE in cattle and Scrapie in sheep, in response to developments in the United Kingdom, Ireland and Continental Europe from the mid-1990s onwards.

- Government commitments entered into under the *Programme for Prosperity and Fairness* Agreement of 2000 relating to the Department's interim wildlife strategy.

- The adoption of a system on On-Farm Market Valuation as the principal method of direct compensation for TB reactors.

- The increasing emphasis in both EU and domestic policy on the identification and registration of bovine animals[9], and the regulation of animal welfare and animal remedies.

The diversity and inter-related nature of the work currently undertaken by DVO-based staff complicates the calculation of the staff cost associated with any individual

programme. This is particularly so when individual activities cross the boundaries of a number of programmes. For example, the activities carried out by a Department officer at a mart on the day of a sale will probably be related to a number of the Department's programmes and measures, including animal welfare, animal identification and registration, and the enforcement of compliance with statutory disease eradication programmes, such as those for TB and brucellosis. Apportioning an officer's time between these areas for the purpose of a review such as this inevitably involves a degree of subjectivity. Nevertheless, every effort was made to ensure that responses were as accurate as possible and, where feasible, that the results were verified against sources external to this review.

5.14.2 Administrative staff

The combined results of the 2007 and 2008 surveys indicate that the number of administrative staff with some involvement in TB-related work in 2006 was 487 (of which 466 were located in DVOs), and that the notional staff complement required to service the BTEP was 180 (170 of whom are based in DVOs). The cost of the administrative staff input attributable exclusively to the BTEP was estimated at €10.8m (€9.9m incurred by DVO staff), representing 37% of the estimated aggregate staff expenditure. Comparison of the combined results of the two surveys carried out for this review, on the one hand, with a separate staff survey carried out in 1995 shows that the overall administrative staff complement rose somewhat over the period – from 445 (428 in DVOs) in 1995 to approximately 487 (466 in DVOs) currently. However, administrative staff numbers employed in the DVOs have been falling in recent years – by as much as 70 between 2005 and 2008 – as a result of efficiencies arising from the introduction of AHCS.

5.14.3 Veterinary staff

The results of the 2007 survey indicated that the number of veterinary staff with some involvement in TB-related work in 2006 was 174 (of which 164 were located in DVOs), and that the staff complement required to service the BTEP was 78 (72 in DVOs). The cost of the veterinary staff input attributable exclusively to the BTEP was estimated at €10.8m (of which €9.9m was incurred in DVOs), representing 37% of the estimated aggregate staff expenditure.

Comparison with the 1995 survey shows that the absolute number of staff in veterinary grades remains largely unchanged. The overall complement of veterinary staff located in DVOs at that time was 172 with a further 5 veterinary staff located in central divisions dealing with TB eradication. This corresponds closely with the 2006 survey returns which showed 164 veterinary staff in DVOs and a further 10 in central divisions. With regard to the utilisation of resources, the 1995 study estimated that 60% of veterinary resources, 80% of Agricultural Officer resources and 90% of administrative staff resources were then deployed in the implementation of the TB and Brucellosis eradication programmes through DVOs. Separately, an 'Event Recording' trial, carried out in 2000, indicated that TB and Brucellosis work accounted for 55% of the VI grade's overall time, and that approximately 78% of this related specifically to the operation of the TB eradication programme (Dept. of Agriculture and Food, 2000). Thus, in 2000, the average VI time input into the Programme was of the order of 43% nationally. This compares well with the results of the 2007 survey, carried out for this review, which indicated an average time commitment to the BTEP for this grade of staff of 45%.

5.14.4 Technical staff

The combined results of the 2007 survey and central staff records (ER 41) indicate that, in 2006, the number of staff in the technical stream with some involvement in TB-related work was 235 (of which 214 were located in DVOs), and that the staff complement required to service the BTEP was 118 (101 in DVOs). The 1995 survey also recorded technical staff strength and showed the total number in service in DVOs in that year was 195. Central records show that the agreed national staff complement of agricultural officers has been 287 since October 2000, but that when allowance is made for retirements, transfers and vacant posts, the actual number available for duty is considerably lower, standing at 177 in October 2000 and 235 in December 2006. The technical staff complement underwent a further reduction – to 218 – in 2007. The cost attributable exclusively to the BTEP of this staff resource was estimated on the basis of the 2007 survey and ER41 returns to be €7.7m (of which €6.4m was incurred in DVOs), representing 27% of the estimated aggregate staff expenditure.

5.14.5 Travel and Subsistence

The cost of reimbursing staff in respect of travel and subsistence expenses is provided in Table 5.14. Because the Department's accounting system does not distinguish between expenses arising as a result of activities relating to tuberculosis and brucellosis eradication, respectively, the amounts shown in the table are notional values attributed on the basis of the relative numbers of tuberculosis and brucellosis reactors, respectively [Appendices A, D]. Similar difficulties arise in relation to the allocation of Travel and Subsistence costs to the BTEP as have been described above [5.14.1] in relation to the apportionment of staff costs. In particular, expenses incurred in performing duties relating properly to trade facilitation or animal identification may, in certain circumstances, be attributed to the Travel and Subsistence budget of the TB and Brucellosis Eradication Programmes.

The estimated total amount of travel and subsistence payments attributable to TB eradication over the eleven-year period is €24.8m, of which ca. €2.6m was incurred in 2006. Responsibility for the administration of the Travel and Subsistence budget is devolved to managers in the four DVO regions[10] and headquarters. In 2006, the overall budget of €2.8m was allocated between these cost centres as follows: Northwest, 21%; Northeast, 14%; Southwest, 24%; Southeast, 16%; and Headquarters, 24%.

Analysis by grade and staff stream of the Travel and Subsistence payments disbursed in 2006 in respect of the tuberculosis and brucellosis eradication programmes indicates that administrative, veterinary and technical staff grades account for ca. 1%, 23% and 74%, respectively of the total expenditure. The remaining 2% of expenditure is accounted for by grades that have only a peripheral involvement with the BTEP and which were not included in the staff survey carried out for this review.

5.14.6 Wholetime Temporary Veterinary Inspectors

In addition to its permanent staff complement, the Department also employs 20 wholetime Temporary Veterinary Inspectors (wTVIs), who carry out TB and Brucellosis testing on its behalf. The engagement of wTVIs has enabled the Department to respond in a flexible manner in cases where available private veterinary resources are insufficient to deal expeditiously with the demand for

control-based testing. The costs attributable to the TB Programme in respect of these Inspectors are provided in Table 5.13. As in the previous section, these are notional amounts that have been derived by apportioning the overall budget [Appendices A, D]. Total expenditure on wTVI fees over the eleven years was €21m and the cost incurred in 2006 €1.9m. The substantial increase in expenditure in 2002, relative to 2001, was due in part to a Labour Court award in favour of the wTVIs, which resulted in the payment of a lump sum amount of €534,020 in 2002 and 2003, and an ongoing additional cost of approximately €170,000/annum thereafter. The disruption to the tuberculin testing programme in 2001 as a result of the outbreak of Foot and Mouth Disease, had the effect of artificially depressing expenditure in 2001, consequently exaggerating the magnitude of the expenditure increase in the period 2001/02.

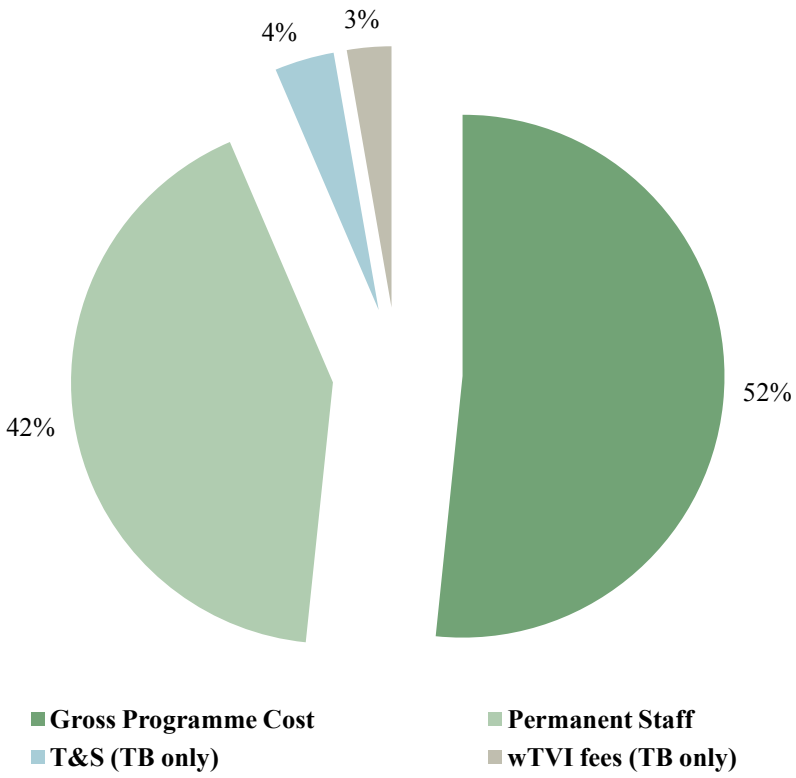
5.14.7 Total Staff Cost

On the basis of the analysis in the preceding sections, total expenditure on permanent and temporary staff and on Travel and Subsistence payments in 2006 can be estimated as being of the order of €33.8m, comprising €29.3m in respect of permanent staff, €1.9m for wTVIs and €2.6m in travel and subsistence payments. When programme costs of €36.1m [5.3] are taken into account, the total cost of the BTEP in 2006 is thus of the order of €70m, of which 48% corresponds to expenditure on staff and the remaining 52% to expenditure on the various programme measures [Figure 5.3].

It is to be expected that the staff cost of the BTEP would be proportionately higher than that for many other government programmes, both within and outside the Department of Agriculture. This is so because of the complexity and scale of the TB eradication programme; the high requirement for a field operations component, which is expensive relative to an office-based programme of equivalent scale; the requirement to deliver the Programme through an extensive nationwide network of local offices; and the requirement to employ a significant number of technical and veterinary staff, whose average salaries are high relative to average administrative staff salaries. It is also the case that the ratio of programme to staff costs has been somewhat skewed as a result of the 1995 agreement which shifted the cost of the majority of the surveillance testing programme back to farmers. Had the cost of this testing continued to be borne by the Department, the programme cost would have been some €23m higher in 2006 and the ratio of staff to programme costs would have

been of the order of 36:64, as compared with the 48:52 ratio identified above. It is legitimate to make this comparison because it is the case that, while the Department no longer pays for a significant volume of testing, the level of staff activity, described in greater detail above [5.7.2] and in the preceding chapter [4.3], is driven by the *overall* volume of tuberculin testing, irrespective of whether this is paid for by the Department or by the farmer.

Figure 5.3 Gross programme and staff expenditure (2006)



Source: DAFF

Notwithstanding the foregoing, it is clear that the staff cost of the BTEP is substantial and that this component of expenditure must be kept under active review. It is the case, as indicated above, that the number of administrative and technical staff engaged in the DVOs has fallen significantly in recent years, while the veterinary staff complement declined slightly over the full period under review. While further staff

efficiencies may be achievable, it is clearly beyond the scope of a programme-based review such as this to attempt to address these issues comprehensively. The implementation of changes to existing work practices, recommended in Chapter 8, will go some way to rationalising staff costs within the BTEP; however, a comprehensive approach can only be provided by a horizontal, staff-centred review, tasked with identifying the potential for efficiencies across the range of staff functions and programme boundaries.

International comparisons

No direct comparison was undertaken between the BTEP and comparable programmes in benchmark countries in relation to the numbers of staff involved in these programmes and the associated costs because of the difficulty in isolating such data in respect of a specific programme. In the case of the BTEP, for example, the estimation of staff costs provided above was established specifically for the purpose of this review; the Department does not ordinarily account for staff costs on a programme-by-programme basis. International comparisons are rendered more difficult as a result of variations in the respective politico-administrative systems, the degree of agencification or outsourcing and the scope and scale of programme measures. To illustrate: it is difficult to compare costs between a highly centralised administrative system, such as the Irish, and a quasi-federal one such as the Spanish, where many of the costs are accounted for at a sub-national level. Similarly, jurisdictions, such as Ireland, operating a relatively labour intensive system of direct compensation based on on-farm valuation, would be expected to have higher costs than a system based on 'table' valuation, such as that operated in Spain, and recently adopted in Great Britain. Finally, the Departments and Ministries against which benchmarking was carried out, in contrast to the BTEP, do not incorporate a comprehensive wildlife control programme.

5.15 Key Findings

- Combined expenditure on tuberculosis and brucellosis eradication in 2006 was at its lowest level for over twenty years.

- Over the period under review, peak expenditure on tuberculosis and brucellosis eradication occurred in 1999. Consistent reductions in expenditure from that year onward, attributable to significant progress in the eradication of brucellosis and (to a lesser extent) tuberculosis, have reduced the combined expenditure to 40% of the 1999 level.

- Estimated expenditure on TB eradication (excluding staff costs) over the period under review was ca. €503m. Annual expenditure declined significantly from a peak of €65m in 1999 to approximately €36m in 2006.

- Bovine Disease Levies play a significant role in reducing the Exchequer cost of the Programme, equating to some 42% of the cost of TB compensation over the period under review.

- Transfers from the EU, which were equivalent to just 2% of the gross cost of the Programme, made a relatively modest contribution to reducing Exchequer costs.

- Programme expenditure is distributed as follows: Compensation, 60%; Tuberculin testing, 30%; Wildlife Unit, 3%; Research, 3%; Reactor Collection, 2%; Supplies and Capital assets, 2%; and Information and Communication Technology, 1%.

- Expenditure on direct (reactor) compensation accounts for ca. 81% of total compensation expenditure. The average cost of cost of direct compensation under the Reactor Grant Scheme (RGS) for the five years 1996-2000 was €626/reactor, while the average cost under the On-Farm Market Valuation Scheme (OFMVS) over the five years 2002-2006 was €641/reactor. The unit cost of compensation in Ireland in 2006 was somewhat higher than that in Spain but significantly lower than the cost of compensation in Northern Ireland and Great Britain, respectively.

- Income Supplement is the most significant of the indirect compensation mechanisms, accounting for 67% of expenditure under this heading. The rate of grant for this scheme is uniform throughout the year.

- The Hardship Grant, which accounted for 17% of indirect compensation expenditure, is intended to alleviate the impact of additional feed costs incurred by farmers whose herds are restricted during the winter period. Like Income Supplement, the Hardship Grant has a relatively undifferentiated structure.

- The compensation mechanisms contain a wide range of quality control measures that are in line with or exceed those in the jurisdictions against which the BTEP was benchmarked.

- The introduction, in 1996, of a system whereby farmers, rather than the Department, ordinarily pay for the annual surveillance test has reduced the cost to the Exchequer of this measure by an estimated €409m over the period. However, the concurrent and related reduction in the rates of Bovine Disease Levies reduced receipts to the Exchequer by an estimated €654m.

- The unit cost of the tuberculin test in 2006 was lower than those in the three countries against which the BTEP was benchmarked.

- The Department has instigated measures that have reduced the wastage of tuberculin protein purified derivative. However, scope for further improvements in efficiency is severely curtailed given the almost monopolistic supply situation and the imperative of maintaining the presently high specifications of this input.

- The cost of tuberculin per animal test in 2006 was higher than that in Spain but lower than the costs in Great Britain and Northern Ireland, respectively.

- The Programme contains a range of mechanisms aimed at controlling the standard of tuberculin testing carried out in the Programme and the quality of the tuberculin used.

- The unit cost of the blood-based IFN-γ assay is considerably higher than that of the intradermal tuberculin test.

- Expenditure on the Department's interim wildlife strategy has been increased significantly as a result of the *Programme for Prosperity and Fairness* Agreement of 2000.

- Measuring the efficiency with which the Wildlife Unit operates requires establishing meaningful measures of the Unit's output.

- A significant research output relating to bovine tuberculosis is achieved from a research budget that is approximately twice the size of the equivalent budgets in Spain and Northern Ireland, and less than one-eighth that of Great Britain.

- The Reactor Collection Service (RCS) provides benefits to farmers, slaughter plants and the Department. The degree of involvement of Department staff in the delivery of the service varies from county to county and is generally significantly higher than is the case in the analogous service in Northern Ireland, which is delivered at a lower unit cost than it is in this jurisdiction.

- Investment in Information and Communication Technology has resulted in significant improvements in Programme efficiency. The introduction of AHCS has enabled the Department to reduce staffing levels and has provided substantial benefits to the Department, the farming community, the veterinary profession and consumers.

- The cost to the Exchequer of permanent employees has been estimated at approximately €29m in 2006. Travel and Subsistence payments in respect of these employees amounted to an additional €2.6m in the same year. Further administrative costs of €1.9m were incurred in respect of wholetime Temporary Veterinary Inspectors.

- Overall, staff costs represent approximately 48% of the total Exchequer cost of the Programme. This figure falls to 36% when the value of tuberculin testing paid for by farmers is added to the Exchequer cost.

5.16 Conclusions

- The sharing of the costs of the Programme with its principal beneficiaries, together with a steady reduction in disease levels from 1999 onwards, significantly mitigated public expenditure on bovine TB eradication over the period under review.

- The allocation of resources within the Programme is generally appropriate and well aligned with its interim and long-term objectives.

- The unit costs of the various programme measures are generally in line with or below those pertaining in the benchmark jurisdictions.

- Bovine Disease Levies are an appropriate mechanism for sharing the costs of the Programme between the State and the farming sector, which is the main beneficiary of the programme. However, significant variation in the level of contribution to the cost of compensation is detrimental to the proper operation of this cost sharing system and should be minimised.

- The existence of a range of quality control measures provides assurance as to the probity of the various compensation mechanisms and the tuberculin testing programme.

- The retention of the Reactor Collection Service is justifiable, but its efficiency could be improved by reducing the need for direct involvement by Department staff in its routine operation.

- Notwithstanding recent reductions in the overall staff complement, it is clear that the BTEP incurs a substantial staff cost. While these relatively high costs may be largely attributable to the scale and inherent complexity of the Programme, it is likely to be the case that continuing advances in technology, changes in the dynamics of the disease, or the adoption of novel methods of Programme delivery may provide scope for achieving further efficiencies in the use of the staff resource.

5.17 Recommendations

Recommendation 4

The rates of Bovine Disease Levies payable should be set on an annual basis, using a multi-annual average, so as to provide for a minimum of 50% of the estimated ongoing cost of reactor compensation.

Recommendation 5

The existing quality control measures in the Programme should be retained and, where appropriate, strengthened. In particular, a Code of Practice for Valuers should be implemented following the completion of consultation.

Recommendation 6

Given the dynamic nature of animal diseases and the ongoing development of technological resources, the staff complement and its deployment should be kept under active review to ensure that the Programme is delivered in the most efficient manner possible.

TABLES

Unless otherwise stated, data in these tables are expressed in constant (2006) prices [Appendices A, E] and are sourced from the Department of Agriculture, Fisheries and Food

Table 5.1 Gross expenditure on the TB and BR programmes (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Aggregate TB & BR Expenditure	**72.5**	**68.0**	**85.5**	**108.7**	**91.3**	**72.6**	**83.6**	**67.9**	**53.7**	**49.6**	**43.1**	**796.5**
% Annual change	*n/a*	*-6.3%*	*25.7%*	*27.2%*	*-16.0%*	*-20.5%*	*15.3%*	*-18.8%*	*-20.9%*	*-7.6%*	*-13.2%*	
Gross TB Expenditure	**53.2**	**41.8**	**48.2**	**65.2**	**54.8**	**40.4**	**45.9**	**42.8**	**35.7**	**39.2**	**36.1**	**503.2**
% Annual change	*n/a*	*-21.3%*	*15.4%*	*35.1%*	*-16.0%*	*-26.2%*	*13.7%*	*-6.8%*	*-16.6%*	*9.8%*	*-7.7%*	
As % total expenditure	*73.3%*	*61.5%*	*56.5%*	*60.0%*	*60.0%*	*55.7%*	*54.9%*	*63.0%*	*66.4%*	*78.9%*	*83.8%*	*63.2%*
Gross BR Expenditure	**19.4**	**26.2**	**37.2**	**43.5**	**36.6**	**32.2**	**37.7**	**25.1**	**18.0**	**10.5**	**7.0**	**293.3**
% Annual change	*n/a*	*34.9%*	*42.3%*	*16.9%*	*-16.0%*	*-12.0%*	*17.2%*	*-33.3%*	*-28.2%*	*-42.0%*	*-33.4%*	

Table 5.2 Net expenditure on the TB Programme (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Gross TB Expenditure	**53.2**	**41.8**	**48.2**	**65.2**	**54.8**	**40.4**	**45.9**	**42.8**	**35.7**	**39.2**	**36.1**	**503.2**
% Annual change	*n/a*	*-21%*	*15%*	*35%*	*-16%*	*-26%*	*14%*	*-7%*	*-17%*	*10%*	*-8%*	
Bovine Disease Levies	**-20.7**	**-11.8**	**-9.8**	**-10.1**	**-8.6**	**-7.2**	**-7.3**	**-14.1**	**-14.2**	**-10.9**	**-10.3**	**-125.2**
% Annual change	*n/a*	*-43%*	*-17%*	*2%*	*-15%*	*-16%*	*1%*	*94%*	*0%*	*-23%*	*-5%*	
As % total expenditure	*-39%*	*-28%*	*-20%*	*-15%*	*-16%*	*-18%*	*-16%*	*-33%*	*-40%*	*-28%*	*-29%*	*-25%*
EU Transfers	**0.0**	**0.0**	**0.0**	**0.0**	**-1.0**	**-0.9**	**-0.7**	**-2.5**	**-4.8**	**0.0**	**0.0**	**-9.9**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*-11%*	*-16%*	*234%*	*95%*	*-100%*	*n/a*	
As % total expenditure	*0%*	*0%*	*0%*	*0%*	*-2%*	*-2%*	*-2%*	*-6%*	*-13%*	*0%*	*0%*	*-2%*
Net TB Expenditure	**32.5**	**30.0**	**38.4**	**55.1**	**45.2**	**32.3**	**37.9**	**26.2**	**16.7**	**28.3**	**25.8**	**368.2**
% annual change	*n/a*	*-8%*	*28%*	*43%*	*-18%*	*-29%*	*17%*	*-31%*	*-36%*	*70%*	*-9%*	
% change from 1996	*n/a*	*-8%*	*18%*	*70%*	*39%*	*-1%*	*17%*	*-19%*	*-49%*	*-13%*	*-21%*	
As % of Gross TB	*61%*	*72%*	*80%*	*85%*	*82%*	*80%*	*82%*	*61%*	*47%*	*72%*	*71%*	*73%*

Table 5.3 Bovine Disease Levies (TB only) by source (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Creameries	**-10.2**	**-6.4**	**-5.5**	**-4.5**	**-4.1**	**-3.9**	**-3.9**	**-7.8**	**-7.4**	**-5.4**	**-5.3**	**-64.4**
as % total BDL	*49%*	*54%*	*56%*	*44%*	*48%*	*54%*	*53%*	*55%*	*52%*	*50%*	*51%*	*51%*
Meat Plants	**-8.88**	**-4.97**	**-3.79**	**-4.39**	**-3.36**	**-2.86**	**-3.01**	**-5.31**	**-6.02**	**-4.81**	**-4.22**	**-51.6**
as % total BDL	*43%*	*42%*	*38%*	*44%*	*39%*	*39%*	*41%*	*38%*	*42%*	*44%*	*41%*	*41%*
Abbattoirs	**-0.41**	**-0.21**	**-0.20**	**-0.28**	**-0.25**	**-0.20**	**-0.19**	**-0.31**	**-0.34**	**-0.25**	**-0.19**	**-2.8**
as % total BDL	*2%*	*2%*	*2%*	*3%*	*3%*	*3%*	*3%*	*2%*	*2%*	*2%*	*2%*	*2%*
Exports	**-1.21**	**-0.23**	**-0.39**	**-0.95**	**-0.86**	**-0.28**	**-0.24**	**-0.72**	**-0.44**	**-0.41**	**-0.60**	**-6.3**
as % total BDL	*6%*	*2%*	*4%*	*9%*	*10%*	*4%*	*3%*	*5%*	*3%*	*4%*	*6%*	*5%*
Total BDL	**-20.7**	**-11.8**	**-9.8**	**-10.1**	**-8.6**	**-7.2**	**-7.3**	**-14.1**	**-14.2**	**-10.9**	**-10.3**	**-125.2**
BDL as % total TB compensation	-73%	-42%	-32%	-23%	-25%	-29%	*-26%*	*-57%*	*-73%*	*-56%*	*-59%*	*-42%*

Note: Receipts from the EU are not generally received in the period in which the corresponding expenditure was incurred

Table 5.4 Programme expenditure by category (1996-2006)

(€ Million, 2006 prices	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Compensation	**28.2**	**27.9**	**31.1**	**43.4**	**34.9**	**25.0**	**27.8**	**25.0**	**19.5**	**19.5**	**17.5**	**299.7**
% Annual change	*n/a*	*-1.3%*	*11.4%*	*39.8%*	*-19.8%*	*-28.3%*	*11.2%*	*-10.2%*	*-21.8%*	*-0.1%*	*-10.4%*	
as % total expenditure	*53.1%*	*66.7%*	*64.4%*	*66.6%*	*63.6%*	*61.9%*	*60.5%*	*58.3%*	*54.7%*	*49.8%*	*48.4%*	*59.6%*
TB Testing	**21.4**	**10.6**	**13.3**	**17.5**	**14.5**	**11.3**	**12.0**	**12.4**	**10.9**	**13.6**	**12.7**	**150.3**
% Annual change	*n/a*	*-50.4%*	*24.7%*	*32.0%*	*-17.3%*	*-21.6%*	*5.9%*	*3.4%*	*-11.8%*	*24.4%*	*-6.4%*	
as % total expenditure	*40.3%*	*25.4%*	*27.5%*	*26.8%*	*26.4%*	*28.1%*	*26.1%*	*29.0%*	*30.7%*	*34.8%*	*35.3%*	*29.9%*
Wildlife	**0.5**	**0.6**	**0.7**	**0.9**	**1.3**	**1.0**	**2.0**	**1.8**	**1.4**	**2.2**	**2.6**	**14.9**
% Annual change	*n/a*	*23.7%*	*4.5%*	*28.3%*	*53.7%*	*-27.0%*	*113.4%*	*-12.8%*	*-23.2%*	*59.7%*	*20.7%*	
as % total expenditure	*1.0%*	*1.5%*	*1.4%*	*1.3%*	*2.4%*	*2.4%*	*4.4%*	*4.2%*	*3.8%*	*5.6%*	*7.3%*	*3.0%*
Research	**0.8**	**0.7**	**0.8**	**1.0**	**1.5**	**1.3**	**1.7**	**1.4**	**1.6**	**2.1**	**1.8**	**14.5**
% Annual change	*n/a*	*-14.3%*	*19.8%*	*29.7%*	*43.6%*	*-9.7%*	*29.1%*	*-18.0%*	*13.3%*	*32.1%*	*-16.2%*	
as % total expenditure	*1.4%*	*1.6%*	*1.6%*	*1.6%*	*2.7%*	*3.3%*	*3.7%*	*3.3%*	*4.4%*	*5.3%*	*4.8%*	*2.9%*
Reactor Collection	**0.8**	**0.8**	**1.0**	**1.0**	**0.9**	**0.9**	**1.3**	**1.1**	**1.0**	**1.1**	**1.0**	**11.0**
% Annual change	*n/a*	*4.3%*	*15.4%*	*5.8%*	*-13.5%*	*7.1%*	*38.8%*	*-17.7%*	*-10.2%*	*9.5%*	*-2.9%*	
as % total expenditure	*1.5%*	*2.0%*	*2.0%*	*1.6%*	*1.6%*	*2.4%*	*2.9%*	*2.5%*	*2.7%*	*2.7%*	*2.9%*	*2.2%*
Supplies/Misc.	**0.9**	**0.7**	**1.3**	**0.9**	**1.3**	**0.6**	**0.8**	**0.8**	**0.7**	**0.5**	**0.4**	**8.9**
% Annual change	*n/a*	*-17.7%*	*85.8%*	*-33.1%*	*45.2%*	*-51.6%*	*26.5%*	*2.7%*	*-8.2%*	*-34.8%*	*-13.1%*	
as % total expenditure	*1.6%*	*1.7%*	*2.7%*	*1.4%*	*2.3%*	*1.5%*	*1.7%*	*1.9%*	*2.1%*	*1.2%*	*1.2%*	*1.8%*
ICT	**0.6**	**0.5**	**0.2**	**0.5**	**0.5**	**0.2**	**0.3**	**0.4**	**0.5**	**0.2**	**0.1**	**3.9**
% Annual change	*n/a*	*-17.7%*	*-58.8%*	*135.4%*	*9.4%*	*-56.3%*	*31.4%*	*22.2%*	*51.3%*	*-60.6%*	*-74.0%*	
as % total expenditure	*1.1%*	*1.1%*	*0.4%*	*0.7%*	*0.9%*	*0.5%*	*0.6%*	*0.8%*	*1.5%*	*0.5%*	*0.2%*	*0.8%*
TOTAL	**53.2**	**41.8**	**48.2**	**65.2**	**54.8**	**40.4**	**45.9**	**42.8**	**35.7**	**39.2**	**36.1**	**503.2**
% Annual change	*n/a*	*-21.3%*	*15.4%*	*35.1%*	*-16.0%*	*-26.2%*	*13.7%*	*-6.8%*	*-16.6%*	*9.8%*	*-7.7%*	

Table 5.5 Compensation by category (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Reactor Grant Scheme	**17.9**	**18.9**	**23.1**	**33.6**	**24.6**	**14.5**	**4.5**	**0.3**	**0.1**	**0.0**	**0.0**	**137.5**
% Annual change	*n/a*	*5.4%*	*22.1%*	*45.7%*	*-26.8%*	*-41.0%*	*-68.9%*	*-93.4%*	*-59.2%*	*n/a*	*n/a*	
as % total compensation expenditure	*83.5%*	*81.9%*	*83.7%*	*80.7%*	*78.2%*	*55.4%*	*15.4%*	*1.1%*	*0.6%*	*0.2%*	*0.1%*	*48.5%*
On-Farm Market Valuation	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6.2**	**19.5**	**21.9**	**15.9**	**16.0**	**13.3**	**92.8**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*214.1%*	*12.2%*	*-27.5%*	*0.6%*	*-17.1%*	
as % total compensation expenditure	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*23.7%*	*66.6%*	*80.0%*	*81.2%*	*82.0%*	*79.9%*	*32.7%*
All Indirect Compensatory Scheme	**3.5**	**4.2**	**4.5**	**8.0**	**6.9**	**5.5**	**5.3**	**5.2**	**3.6**	**3.5**	**3.3**	**53.3**
% Annual change	*n/a*	*17.9%*	*7.6%*	*78.7%*	*-14.6%*	*-20.3%*	*-3.7%*	*-1.4%*	*-31.4%*	*-2.9%*	*-3.6%*	
as % total compensation expenditure	*16.5%*	*18.1%*	*16.3%*	*19.3%*	*21.8%*	*20.8%*	*18.0%*	*18.9%*	*18.2%*	*17.7%*	*20.1%*	*18.8%*
Total Compensation	**21.4**	**23.0**	**27.5**	**41.6**	**31.4**	**26.2**	**29.3**	**27.4**	**19.6**	**19.5**	**16.6**	**283.6**
% Annual change	*n/a*	*7.5%*	*19.5%*	*51.1%*	*-24.4%*	*-16.7%*	*11.8%*	*-6.5%*	*-28.5%*	*-0.4%*	*-14.8%*	
Valuers' fees	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.8**	**0.9**	**0.7**	**0.8**	**0.9**	**4.2**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*510.7%*	*20.7%*	*-25.2%*	*11.7%*	*13.4%*	
as % OFMVS	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*2.0%*	*3.9%*	*4.2%*	*4.4%*	*4.8%*	*6.6%*	*4.5%*
Salvage values									**10.0**	**10.8**	**10.3**	
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*7.6%*	*-4.4%*	
as % total market value	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*33.9%*	*35.6%*	*38.3%*	

NOTE: Expenditure data in this table have been deflated using Total Cattle Output Index [See Appendices A, E]

Table 5.6 Compensation and compensation per reactor (1996-2006)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
REACTOR GRANT SCHEME											
Reactors	**30,400**	**28,647**	**44,498**	**44,903**	**39,847**	**33,702**	**28,930**	**27,978**	**22,967**	**25,884**	**24,173**
% Annual change	*n/a*	*-6%*	*55%*	*1%*	*-11%*	*-15%*	*-14%*	*-3%*	*-18%*	*13%*	*-7%*
RGS Expenditure (€m, current prices)	**15.8**	**15.7**	**18.5**	**25.5**	**21.3**	**11.5**	**3.7**	**0.2**	**0.1**	**0.0**	**0.0**
% Annual change	*n/a*	*-1%*	*18%*	*38%*	*-16%*	*-46%*	*-68%*	*-93%*	*-54%*	*n/a*	*n/a*
RGS Expenditure (€m, 2006 prices)	**17.9**	**18.9**	**23.1**	**33.6**	**24.6**	**14.5**	**4.5**	**0.3**	**0.1**	**0.0**	**0.0**
% Annual change	*n/a*	*5%*	*22%*	*46%*	*-27%*	*-41%*	*-69%*	*-93%*	*-59%*	*n/a*	*n/a*
RGS Expenditure per reactor (current prices)	**521**	**547**	**415**	**568**	**536**	**532**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
Mean (1996-2000)			**517**								
% Annual change	*n/a*	*5%*	*-24%*	*37%*	*-6%*	*-1%*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
RGS Expenditure per reactor (2006 prices)	**589**	**659**	**518**	**748**	**617**	**673**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
Mean (1996-2000)			**626**								
% Annual change	*n/a*	*12%*	*-21%*	*44%*	*-17%*	*9%*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*
ON-FARM MARKET VALUATION SCHEME											
OFMVS No. reactors paid	**0**	**0**	**0**	**0**	**0**	**7,107**	**25,310**	**30,828**	**25,445**	**27,536**	**25,623**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*256%*	*22%*	*-17%*	*n/a*	*n/a*
OFMVS No. reactors valued	**0**	**0**	**0**	**0**	**0**	**12,138**	**28,584**	**30,086**	**24,401**	**27,004**	**25,276**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*135%*	*5%*	*-19%*	*n/a*	*n/a*
OFMVS Expenditure (€m, current prices) *	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**4.9**	**15.8**	**17.6**	**14.3**	**14.8**	**13.3**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*223%*	*11%*	*-19%*	*3%*	*-10%*
OFMVS Expenditure (€m, 2006 prices) *	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**6.2**	**19.5**	**21.9**	**15.9**	**16.0**	**13.3**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*214%*	*12%*	*-27%*	*1%*	*-17%*
OFMVS Expenditure per reactor paid (current pric	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**691**	**626**	**571**	**562**	**536**	**517**
Mean (1996-2000)									**563**		
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*-9%*	*-9%*	*-2%*	*-5%*	*-4%*
OFMVS Expenditure per reactor paid (2006 prices)	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**874**	**771**	**710**	**624**	**581**	**517**
Mean (1996-2000)									**641**		
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*-12%*	*-8%*	*-12%*	*-7%*	*-11%*
DEPOPULATION GRANT AND INCOME SUPPLEMENT											
Total Depop & ISG (€m, current prices)	**3.1**	**3.0**	**3.2**	**5.4**	**5.0**	**3.3**	**3.3**	**3.3**	**2.4**	**2.5**	**2.6**
% Annual change	*n/a*	*-5%*	*9%*	*67%*	*-8%*	*-34%*	*-1%*	*0%*	*-25%*	*2%*	*5%*
Total Depop & ISG (€m, 2006 prices)	**3.5**	**3.6**	**4.0**	**7.1**	**5.7**	**4.2**	**4.0**	**4.0**	**2.7**	**2.7**	**2.6**
% Annual change	*n/a*	*1%*	*13%*	*77%*	*-20%*	*-27%*	*-4%*	*1%*	*-33%*	*-1%*	*-3%*
Total Depop & ISG per reactor (current prices)	**102**	**103**	**73**	**120**	**124**	**98**	**112**	**116**	**107**	**96**	**108**
Mean (1996-2000)						**105**					
% Annual change	*n/a*	*1%*	*-30%*	*66%*	*3%*	*-21%*	*15%*	*3%*	*-8%*	*-10%*	*13%*
Total Depop & ISG per reactor (2006 prices)	**115**	**124**	**91**	**158**	**143**	**124**	**138**	**145**	**118**	**104**	**108**
Mean (1996-2000)						**124**					
% Annual change	*n/a*	*8%*	*-27%*	*75%*	*-10%*	*-14%*	*12%*	*4%*	*-18%*	*-12%*	*4%*
TOTAL											
Total Compensation (€m, current prices)	**21.0**	**21.8**	**26.3**	**39.0**	**29.5**	**22.7**	**23.6**	**21.2**	**16.9**	**17.3**	**15.9**
% Annual change	*n/a*	*4%*	*20%*	*48%*	*-24%*	*-23%*	*4%*	*-10%*	*-20%*	*3%*	*-8%*
Total Compensation (€m, 2006 prices)	**21.4**	**22.4**	**27.1**	**40.7**	**30.3**	**24.9**	**28.0**	**26.2**	**18.7**	**18.7**	**15.9**
% Annual change	*n/a*	*5%*	*21%*	*50%*	*-26%*	*-18%*	*13%*	*-6%*	*-29%*	*0%*	*-15%*
Total Comp. per reactor (current prices)	**691**	**762**	**591**	**868**	**741**	**674**	**816**	**756**	**735**	**668**	**657**
Mean (1996-2000)						**724**					
% Annual change	*n/a*	*10%*	*-22%*	*47%*	*-15%*	*-9%*	*21%*	*-7%*	*-3%*	*-9%*	*-2%*
Total Comp. per reactor (2006 prices)	**704**	**783**	**609**	**906**	**760**	**739**	**969**	**938**	**815**	**724**	**657**
Mean (1996-2000)						**782**					
% Annual change	*n/a*	*11%*	*-22%*	*49%*	*-16%*	*-3%*	*31%*	*-3%*	*-13%*	*-11%*	*-9%*

* Excluding valuers' fees

NOTE: Expenditure data in this table have been deflated using Total Cattle Output Index [See Appendices A, E]

Table 5.7 Indirect compensation expenditure by category (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Income Supplement	**2.5**	**2.5**	**3.1**	**5.7**	**4.5**	**3.6**	**3.4**	**3.4**	**2.4**	**2.3**	**2.3**	**35.8**
% Annual change	*n/a*	*1.5%*	*24.7%*	*81.4%*	*-21.7%*	*-20.0%*	*-3.8%*	*-0.3%*	*-31.0%*	*n/a*	*n/a*	
As % Total Suppl. Schemes	*70.3%*	*60.5%*	*70.1%*	*71.1%*	*65.2%*	*65.7%*	*65.8%*	*66.1%*	*66.6%*	*67.8%*	*69.0%*	*67.2%*
As % Total Compensation	*11.6%*	*11.0%*	*11.4%*	*13.7%*	*14.2%*	*13.6%*	*11.4%*	*12.1%*	*11.7%*	*11.5%*	*13.2%*	*12.4%*
Hardship Grant	**0.0**	**0.6**	**0.5**	**0.9**	**1.1**	**1.3**	**1.2**	**1.1**	**0.8**	**0.8**	**0.7**	**9.1**
% Annual change	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*-3.9%*	*-6.9%*	*-26.5%*	*-9.5%*	*-6.0%*	
As % Total Suppl. Schemes	*1.0%*	*14.7%*	*10.3%*	*11.3%*	*16.7%*	*23.4%*	*23.4%*	*22.0%*	*23.6%*	*22.0%*	*21.4%*	*17.1%*
As % Total Compensation	*0.2%*	*2.7%*	*1.7%*	*2.2%*	*3.6%*	*4.8%*	*4.1%*	*4.0%*	*4.1%*	*3.7%*	*4.1%*	*3.2%*
Depopulation Grant	**1.0**	**1.0**	**0.9**	**1.4**	**1.2**	**0.6**	**0.6**	**0.6**	**0.4**	**0.4**	**0.3**	**8.4**
% Annual change	*n/a*	*1.5%*	*-14.8%*	*59.8%*	*-12.2%*	*-52.3%*	*-4.3%*	*9.1%*	*-43.0%*	*0.6%*	*-9.6%*	
As % Total Suppl. Schemes	*28.8%*	*24.8%*	*19.6%*	*17.5%*	*18.0%*	*10.8%*	*10.8%*	*11.9%*	*9.9%*	*10.2%*	*9.6%*	*15.7%*
As % Total Compensation	*4.7%*	*4.5%*	*3.2%*	*3.4%*	*3.9%*	*2.2%*	*1.9%*	*2.2%*	*1.7%*	*1.7%*	*1.8%*	*2.9%*
Total Suppl. Schemes **	**3.5**	**4.2**	**4.5**	**8.0**	**6.9**	**5.4**	**5.2**	**5.2**	**3.6**	**3.5**	**3.3**	**53.3**
As % Total Compensation	*16.5%*	*18.1%*	*16.3%*	*19.3%*	*21.8%*	*20.7%*	*17.4%*	*18.3%*	*17.5%*	*17.0%*	*19.1%*	*18.5%*
Total Compensation *	**21.4**	**23.0**	**27.5**	**41.6**	**31.4**	**26.3**	**30.1**	**28.3**	**20.3**	**20.3**	**17.5**	**287.8**

* Including valuers' fees
** Ex gratia payments omitted (total value over period = €46,273)
NOTE: Expenditure data in this table have been deflated using Total Cattle Output Index [See Appendices A, E]

Table 5.8 Aggregate and unit cost of tuberculin testing (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Deptartment-paid TB animal tests (million)	**5.0**	**2.7**	**3.3**	**3.7**	**3.6**	**3.0**	**2.9**	**2.6**	**2.3**	**2.5**	**2.4**	**34.0**
% Annual change	*n/a*	*#####*	*23.9%*	*10.4%*	*-0.5%*	*#####*	*-3.4%*	*#####*	*-9.8%*	*5.9%*	*-1.0%*	
as % of all animal TB tests	*50.8%*	*27.5%*	*31.8%*	*35.5%*	*36.4%*	*32.6%*	*31.2%*	*28.7%*	*26.9%*	*27.9%*	*27.9%*	*32.7%*
Testing fees	**18.9**	**8.8**	**11.3**	**15.4**	**13.1**	**9.8**	**10.7**	**9.4**	**7.9**	**9.0**	**8.6**	**122.9**
% Annual change	*n/a*	*#####*	*29.2%*	*35.5%*	*#####*	*#####*	*9.1%*	*#####*	*#####*	*14.3%*	*-5.0%*	
Testing fees adjusted to account for 'top-up'*	**18.9**	**8.8**	**11.3**	**15.4**	**13.1**	**9.8**	**10.7**	**9.4**	**8.2**	**9.2**	**8.9**	**123.7**
% Annual change	*n/a*	*#####*	*29.2%*	*35.5%*	*#####*	*#####*	*9.1%*	*#####*	*#####*	*12.2%*	*-3.3%*	
Farmer-paid animal tests (million)	**4.8**	**7.1**	**7.1**	**6.7**	**6.4**	**6.2**	**6.4**	**6.4**	**6.3**	**6.4**	**6.3**	**70.1**
as % of all animal tests	*n/a*	*72.5%*	*68.2%*	*64.5%*	*63.6%*	*67.4%*	*68.8%*	*71.3%*	*73.1%*	*72.1%*	*72.1%*	*67.3%*
Value of Farmer-paid animal tests **	**18.3**	**23.2**	**24.3**	**28.0**	**22.8**	**20.3**	**23.6**	**23.4**	**22.3**	**23.8**	**22.9**	**234.6**
% Annual change	*n/a*	*26%*	*5%*	*14.9%*	*#####*	*#####*	*16.2%*	*-0.9%*	*-4.7%*	*6.9%*	*-3.7%*	
Unit cost per Department-paid TB animal test	**3.82**	**3.27**	**3.41**	**4.19**	**3.58**	**3.27**	**3.70**	**3.64**	**3.51**	**3.72**	**3.64**	**3.64**
% Annual change	*n/a*	*#####*	*4.3%*	*22.7%*	*#####*	*-8.5%*	*13.0%*	*-1.5%*	*-3.5%*	*5.9%*	*-2.2%*	

* Expenditure data for 2004-2006 adjusted to take account of 'top-up' payments (see Section 5.7)
** Derived by applying per-head cost of Department-paid testing to the total number of farmer-paid tests (individual and herd tes

Table 5.9 Exchequer impact of 1995 agreement

(€ Million, 2006 prices)	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total 97-06
Farmer-paid TB & BR animal tests (million)	**0.0**	**7.2**	**9.8**	**10.8**	**10.2**	**9.8**	**9.3**	**9.8**	**9.8**	**9.7**	**10.0**	**9.9**	**106.3**
Dept.-paid TB & BR animal tests (million)	**12.5**	**5.5**	**3.3**	**4.5**	**4.9**	**4.7**	**4.0**	**3.9**	**3.5**	**3.1**	**2.9**	**2.7**	**42.9**
As % all animal tests	*100%*	*43%*	*25%*	*30%*	*32%*	*33%*	*30%*	*29%*	*26%*	*24%*	*22%*	*21%*	*29%*
Actual Testing fees (TB & BR)*	**37.5**	**22.2**	**11.0**	**16.2**	**22.4**	**17.8**	**13.6**	**14.8**	**13.0**	**11.3**	**12.1**	**11.0**	**165.5**
Estimated fees in absence of 1996 agreement	**37.5**	**51.5**	**43.4**	**54.8**	**69.4**	**54.5**	**45.7**	**51.9**	**50.0**	**47.4**	**54.1**	**51.7**	**574.3**
Estimated Exchequer inflow	**0.0**	**-29.3**	**-32.4**	**-38.6**	**-47.0**	**-36.7**	**-32.1**	**-37.0**	**-36.9**	**-36.1**	**-42.0**	**-40.7**	**-408.8**
Actual programme costs (TB & BR)	**93.2**	**78.6**	**74.2**	**91.3**	**114.4**	**97.3**	**78.8**	**90.5**	**74.0**	**59.8**	**55.6**	**48.1**	**862.4**
Prog costs including Farmer-paid testing	**93.2**	**107.9**	**106.5**	**129.9**	**161.4**	**134.0**	**110.8**	**127.6**	**110.9**	**95.8**	**97.6**	**88.8**	**1271.2**
Actual BDL (TB & BR)	**-55.7**	**-30.1**	**-19.7**	**-16.4**	**-17.1**	**-14.9**	**-12.5**	**-12.5**	**-21.7**	**-18.0**	**-11.9**	**-10.4**	**-185.3**
BDl as % TB & BR Programme costs	*60%*	*38%*	*27%*	*18%*	*15%*	*15%*	*16%*	*14%*	*29%*	*30%*	*21%*	*22%*	*21%*
Estimated BDL at 66% contribution rate	**-61.5**	**-71.2**	**-70.3**	**-85.8**	**-106.5**	**-88.4**	**-73.1**	**-84.2**	**-73.2**	**-63.3**	**-64.4**	**-58.6**	**-839.0**
Estimated Exchequer outflow	**-117.2**	**41.0**	**50.6**	**69.3**	**89.4**	**73.5**	**60.7**	**71.7**	**51.6**	**45.2**	**52.5**	**48.2**	**653.7**
Estimated Net Exchequer position	**117.2**	**11.8**	**18.3**	**30.7**	**42.4**	**36.8**	**28.6**	**34.6**	**14.6**	**9.2**	**10.5**	**7.4**	**244.9**

* Expenditure data for 2004-2006 adjusted to take account of 'top-up' payments (see Section 5.7)

Table 5.10 Aggregate and unit cost of tuberculin (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Cost of tuberculin	**2.5**	**1.8**	**1.9**	**2.1**	**1.4**	**1.5**	**1.3**	**3.0**	**3.0**	**4.6**	**4.2**	**27.3**
% Annual change	*n/a*	*-25.0%*	*3.7%*	*11.6%*	*-34.0%*	*7.0%*	*-15.0%*	*133.3%*	*1.6%*	*50.6%*	*-9.3%*	
Animal tuberculin tests (million)	**10.1**	**9.9**	**10.7**	**10.7**	**10.3**	**9.4**	**9.4**	**9.1**	**8.8**	**9.1**	**9.0**	**106.6**
% Annual change	*n/a*	*-1.5%*	*7.6%*	*0.7%*	*-4.1%*	*-8.8%*	*0.0%*	*-2.8%*	*-3.5%*	*2.7%*	*-0.7%*	
Cost of tuberculin per animal test	**0.24**	**0.19**	**0.18**	**0.20**	**0.14**	**0.16**	**0.14**	**0.33**	**0.34**	**0.51**	**0.46**	**0.26**
% Annual change	*n/a*	*-23.9%*	*-3.7%*	*10.8%*	*-31.2%*	*17.3%*	*-15.0%*	*139.9%*	*5.2%*	*46.7%*	*-8.7%*	

Table 5.11 Aggregate and unit cost of Reactor Collection Service (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Reactor Collection Service	**0.8**	**0.8**	**1.0**	**1.0**	**0.9**	**0.9**	**1.3**	**1.1**	**1.0**	**1.1**	**1.0**	**11.0**
% Annual change	*n/a*	*4.3%*	*15.4%*	*5.8%*	*-13.5%*	*7.1%*	*38.8%*	*-17.7%*	*-10.2%*	*9.5%*	*-2.9%*	
Reactors	**30,400**	**28,647**	**44,498**	**44,903**	**39,847**	**33,702**	**28,930**	**27,978**	**22,967**	**25,884**	**24,173**	**351,929**
% Annual change	*n/a*	*-5.8%*	*55.3%*	*0.9%*	*-11.3%*	*-15.4%*	*-14.2%*	*-3.3%*	*-17.9%*	*12.7%*	*-6.6%*	
Cost of RCS per reactor	**26.48**	**29.31**	**21.78**	**22.83**	**22.25**	**28.18**	**45.56**	**38.75**	**42.40**	**41.21**	**42.84**	**31.12**
	n/a	*10.7%*	*-25.7%*	*4.8%*	*-2.6%*	*26.7%*	*61.7%*	*-14.9%*	*9.4%*	*-2.8%*	*3.9%*	

Table 5.12 Supplies and capital assets (1996-2006)

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Miscellaneous	**0.00**	**0.00**	**0.92**	**0.43**	**0.61**	**0.21**	**0.42**	**0.47**	**0.21**	**0.11**	**0.10**	**3.48**
Publicity/farmer awareness	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.04**	**0.04**
Printing	**0.17**	**0.16**	**0.00**	**0.18**	**0.15**	**0.12**	**0.09**	**0.05**	**0.19**	**0.01**	**0.01**	**1.13**
Lab. Eqpt. & consumables	**0.05**	**0.06**	**0.12**	**0.10**	**0.07**	**0.05**	**0.06**	**0.08**	**0.09**	**0.09**	**0.10**	**0.87**
ERAD tags	**0.36**	**0.18**	**0.00**	**0.03**	**0.00**	**0.01**	**0.00**	**0.01**	**0.01**	**0.01**	**0.02**	**0.63**
Capital assets	**0.00**	**0.00**	**0.00**	**0.00**	**0.30**	**0.21**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.53**
Mobile phones	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.09**	**0.12**	**0.22**
Other	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.05**	**0.02**	**0.10**	**0.00**	**0.00**	**0.17**
Hotel hire	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.03**	**0.05**
Disposal of calves	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.02**	**0.02**
Ex gratia	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**
Total	**0.57**	**0.41**	**1.05**	**0.74**	**1.13**	**0.60**	**0.65**	**0.63**	**0.62**	**0.33**	**0.42**	**7.14**

Table 5.13 Programme and staff costs for selected years

(€ Million, 2006 prices)	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	Total
Gross Programme Cost	53.2	41.8	48.2	65.2	54.8	40.4	45.9	42.8	35.7	39.2	36.1	**503.2**
Estimated Staff Costs:												
Permanent Staff (2006)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**29.3**	n/a
T&S (TB only)	2.5	2.2	2.2	2.2	2.2	1.9	2.1	2.2	2.4	2.5	2.6	**24.8**
% Annual change	*n/a*	*-9.0%*	*-3.4%*	*-0.5%*	*0.2%*	*-13.2%*	*12.6%*	*3.1%*	*10.5%*	*3.0%*	*3.9%*	*864.0%*
wTVI fees (TB only)	2.1	1.9	1.6	1.4	1.6	1.4	2.3	2.0	2.2	2.5	1.9	**20.9**
% Annual change	*n/a*	*-6.5%*	*-19.2%*	*-10.4%*	*16.3%*	*-14.4%*	*65.5%*	*-15.0%*	*10.1%*	*12.9%*	*-21.4%*	*984.1%*
Total Staff Cost (2006)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**33.8**	n/a
Total Cost (2006)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**69.9**	n/a

Note: Permanent staff cost estimated for 2006 only

NOTES

[1] Based on the rates for Department-paid testing agreed between the Department and Veterinary Ireland ('Ready Reckoner' October 2002).

[2] Unless otherwise stated, the data for Bovine Disease Levies referred to in this report are notional amounts, derived by apportioning the gross figure for BDL on the basis of the relative numbers of reactors disclosed in the Tuberculosis and Brucellosis Programmes.

[3] An abattoir, under the terms of the Abattoirs Act of 1988, is defined as 'any premises used for or in connection with the slaughter of animals whose meat is intended for human consumption'. The definition encompasses slaughterhouse, but the two are distinguished on the basis of their throughput, which in the case of abattoirs cannot exceed 20 livestock units per week or 1000 livestock units per year. The licensing provisions are under the control of the Department, while the routine supervision of these premises is under the control of the Local Authorities.

[4] RGS has been retained for use in dealer and transient herds.

[5] The Euro:Sterling exchange rate used in this and in all benchmarking analyses in this chapter is €1 = £1.40328.

[6]The price is subject to review on 1st January each year in line with the inter-annual variation in the official consumer price index as established by the Central Bureau of Statistics of the Netherlands.

[7] As a consequence, Great Britain and Northern Ireland, which have traditionally used Weybridge tuberculin in their eradication programmes, have been obliged to source tuberculin from Lelystad.

[8] This figure is based simply on a cursory examination of the subject of the various research projects; it takes no account of the resource requirements of each, and assumes that all of the Centre's expenditure can be apportioned in this same ratio.

[9] Regulation (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products and repealing Council Regulation (EC) No 820/97.

[10] Northwest (Donegal, Galway, Leitrim, Longford, Mayo, Roscommon, Sligo); Northeast (Cavan, Dublin / Wicklow East, Louth, Meath, Monaghan, Offaly); Southwest (Clare, Cork Central, Cork Northeast, Cork West, Kerry, Limerick, Tipperary North); Southeast (Carlow, Kildare / West Wicklow, Kilkenny, Laois, Tipperary South, Waterford, Wexford)