ECONOMIC COST OF FOOT AND MOUTH DISEASE IN THE UK

A JOINT WORKING PAPER

BY

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THE COSTS OF FOOT AND MOUTH DISEASE IN THE UK

SUMMARY AND CONCLUSIONS

1. This paper has been produced jointly by economists from DEFRA and DCMS. It aims to provide some estimate of the main economic effects of foot and mouth disease on the economy during 2001, assess the different impacts in each of the countries of the UK and give an indication of how the outbreak affected both rural and urban areas. These assessments are limited by the nature of the available information. The difficulty of obtaining reliable and detailed data became obvious during the outbreak and was commented on by the Rural Task Force. The nature of tourism in rural areas – diverse and fragmented – makes it very difficult to be precise at any time, and statistics which track change are only available some four months in arrears. Given the very local nature of some of the damage and some of the recovery, the conclusion of this report has to be treated with great care, as "best available estimates" rather than as hard fact.

2. The 2001 Pre Budget Report[1] explained that the effect on GDP in 2001 is estimated to have been modest relative to normal fluctuations – less than 0.2 per cent of GDP - but the impact on severely affected areas has been much more pronounced. This paper examines the economic impact of foot and mouth on the agriculture and food sectors and on those sectors of the economy affected by tourism. It also contains some estimates of the effects on rural and urban areas. And in the case of the agriculture and food industries it provides estimates of the costs in the four countries of the UK.

3. There are many uncertainties surrounding the estimates, but we believe that our calculations give some indication of the orders of magnitude. The results reflect our best estimate of the difference between the position with and without Foot and Mouth rather than a comparison of the situation before and after the disease.

4. Table 1 summarises the main results. The losses to agriculture and the food chain, including the costs compensated by the Exchequer, amount to about £ 3.1 billion. Businesses directly affected by tourist expenditure are estimated to lose a similar amount (between £2.7 and £3.2 billion). It should be noted that these latter impacts have been variable, with both winners and losers. Businesses only a few miles apart may have been affected in very different ways; some may have hardly been affected or may even have increased business, while others may have been forced to close. Some businesses suffered serious losses in the spring but gained a recovery in the summer and a boom in the autumn and early winter – while others saw little improvement or were seasonal in nature. It is of course difficult to ascertain the extent to which changes have been as a result of foot and mouth disease as this cannot be measured directly. This paper aims to measure the aggregate impact on all the businesses covered and implicitly assumes that any recovery in

1 See HM Treasury 'Pre-Budget Report 2001' (Cm 5318), Box A.3: 'Measuring the macroeconomic impact of Foot and Mouth Disease'.

tourist activity in the summer and autumn over the previous year is not as a result of foot and mouth disease.

5. The majority of the costs to agriculture have been met by the government through compensation for slaughter and disposal as well as the clean up costs. Nonetheless agricultural producers will have suffered a substantial loss, estimated at £355 million, which represents about 20% of the estimated Total Income From Farming in 2001. The food industry will also have suffered losses estimated at £170 million. The vast majority of the losses from tourism are accounted for by domestic tourism rather than visitors from overseas.

6. The industries which supply agriculture, the food industries and tourist related businesses will also have suffered. The aggregate effect on these upstream sectors are estimated at £1.9 to £2.3 billion. The overall impact upon suppliers to the agriculture and food industries has been relatively modest because FMD has led to increases in the demand for some types of input (e.g. feed) as well as reductions in demand for other inputs. While most of the effects will occur in 2001 some of the agricultural effects will be felt for a number of years after.

7. The estimates of the direct effects for agriculture and tourism can also be disaggregated to derive estimates of the differential effect on rural and urban areas. It has not been possible to derive rural and urban estimates for the indirect effects. It is estimated that the direct loss in rural areas will be in the range £2.2 to £2.5 billion, while the loss in urban areas is estimated to be in the range £0.8 to £1 billion.

8. Regional estimates have only been possible for the costs to agriculture and the food industry. These show that approximately two thirds of the costs occur in England, with around one sixth each in Scotland and Wales. Northern Ireland incurs less than one per cent of the cost.

9. A major reason why the costs to the economy as a whole are less than suggested by the estimates presented here is that expenditure on trips to the countryside (by UK visitors) which have been foregone because of FMD appear to have largely been replaced by spending elsewhere in the economy, either in alternative tourist locations or on goods and services unrelated to tourism (see Technical note). However, the estimates in this paper show that even though the overall impact upon the level of GDP in 2001 has been relatively modest, there is considerable cost to particular sectors or *within* particular sectors. Furthermore it should be borne in mind that these estimates do not cover costs which are not captured through the market. For example the stress suffered by livestock producers whose stock was slaughtered, or by the public foregoing the opportunity for country walks or the environmental impact of carcass disposal. All of these factors will need to be borne in mind when appraising policy options.

TABLE 1

SECTORAL ECONOMIC EFFECT OF FMD (£M), 2001 - 2005

	National	Rural	Urban
Agriculture / Food Chain	**- 3120**		
of which:			
Compensated by government	2580		
direct effect	- 525	- 525	
indirect effect	-85		
Tourism (range)	**-4495 to –5340**		
of which:			
direct effect (range)	-2700 to -3205	-1700 to -2015	-825 to -1040
indirect effect (range)	-1835 to -2180		

"Indirect effects" represent the knock-on impacts on input supply industries; the indirect impacts are not allocated between rural and urban areas.
Impacts compensated by the Exchequer excluded. These are reported in Table 2.

Technical Note

MEASUREMENT OF THE ECONOMIC EFFECTS OF FMD

i. The paper does not attempt to measure the total economic impact on the UK.

ii. There will be a range of economic and non-economic consequences from the foot and mouth outbreak, not all of which are entirely captured by the conventional measure of GDP:

a) There will be distributional impacts from the outbreak as farm prices change producing losses to farmers and also to consumers. These relative price effects are not detected by an output lost measure of GDP.

b) Some of the costs of FMD to the producer will arise from restrictions reducing the quality of the product with a corresponding lower price received, rather than the quantity of output.

c) Following practice regarding national income accounts, the loss in value from slaughtered animals is treated as a catastrophic loss rather than a temporary reduction in output and the effects of movement restrictions are off-set by higher work-in-progress within agriculture's gross value added. The loss of output accrues over time from the foregone growth in stock and the effects of a smaller breeding herd. The computation of losses to GDP in future years is extremely problematic and is not reported in this paper.

d) The capital accounts of the agricultural sector have been affected by the outbreak. Livestock destroyed represent the loss of a capital asset but there are offsetting changes in so far as Exchequer compensation is used to either reduce liabilities or accumulate assets in one form or another. These balance sheet impacts will be published separately by DEFRA.

e) Some impacts are not taken into account as they are particularly difficult to measure because markets for them do not exist. These include such things as the stress and emotional difficulties caused to farmers and other users of the countryside, adverse impacts on animal welfare and possible environmental impacts of disease control measures. Although these are legitimate components of an economic assessment of the effect of the disease on economic welfare, they do not feature in this analysis.

INTRODUCTION

10. This note describes the assumptions and calculations underlying our best estimates of the costs of the foot and mouth outbreak to those sectors of the UK economy directly affected and their input suppliers. The effects of the outbreak on the public sector and consumers are also estimated. Although the eventual macroeconomic impact of the FMD outbreak still cannot be determined with certainty the broad magnitudes are becoming clearer. It seems that the effect on UK GDP in 2001 has been modest relative to the normal fluctuations and was estimated in Pre Budget Report 2001 to be less than 0.2 per cent of GDP. However the impact on severely affected regions is likely to be more pronounced. This paper focuses on the costs to the agriculture and food industries and to those firms that depend on tourist expenditure. The analysis was carried out in the autumn of 2001 and where possible some of the assumptions have been updated.

11. The estimates of the economic impact of FMD on agriculture and downstream sectors are based on the numbers of animals slaughtered, as well as the length of restrictions for both livestock movements and the export ban. There are still areas of uncertainty surrounding some of these issues and the estimates in this paper are based on the most plausible assumptions. Where appropriate some alternative assumptions are tested in order to examine the sensitivity of the results.

12. Cases of foot and mouth disease (FMD) continued to the end of September, but there have been no subsequent cases and the UK was declared disease free on 14 January. There was a progressive relaxation of restrictions on countryside access throughout the course of the disease. However it is difficult to predict whether, or how quickly, visits to the countryside for tourism, recreation and leisure pursuits will recover to the levels in the absence of the disease. There is anecdotal evidence of tourist income in some areas being much higher than usual in the autumn – perhaps fuelled not just by recovery but by some people choosing to forego visits abroad after September 11th – but it is difficult to know whether any of this is as a result of foot and mouth disease and no account has been taken in this paper of any such resurgence.

13. Even having eradicated the disease there will be a period during which restrictions on the movement of livestock will remain and we have also assumed that the export of livestock and livestock products will not recover for some months beyond the eradication of the disease. A partial relaxation of the ban on exports of pigmeat was announced in the autumn and on 22 January 2002 the UK regained its status as a foot and mouth disease free country, which clears the way for the reopening of exports. The full benefits of these relaxations remain to be felt as it will take some time for exports to recover.

14. The structure of the paper is as follows.

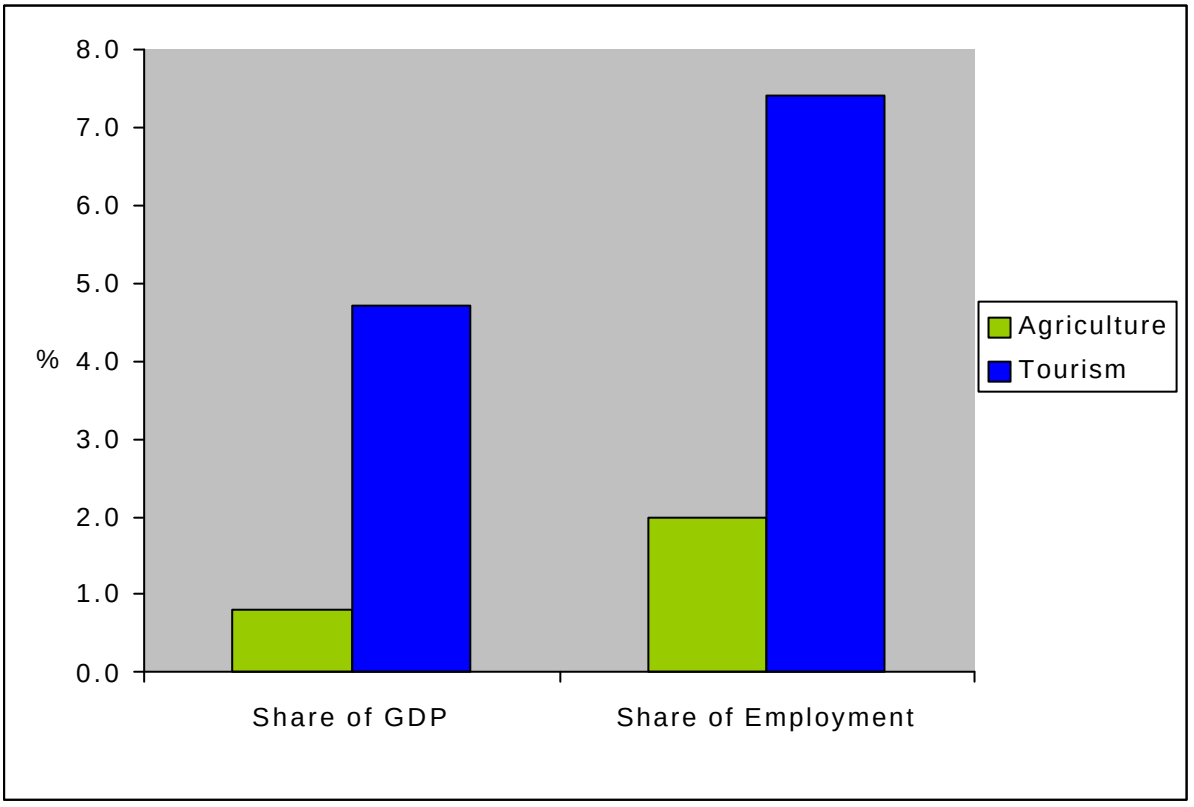
- Overview of agriculture and tourism in the rural economy
- Direct effects on agriculture and the food supply chain;
- Direct effect on UK rural tourism;
- Direct effect on tourism from overseas;

AGRICULTURE AND TOURISM IN THE RURAL ECONOMY

15. In order to put the economic effects into perspective this section gives some statistics to illustrate the size of agriculture and other affected industries.

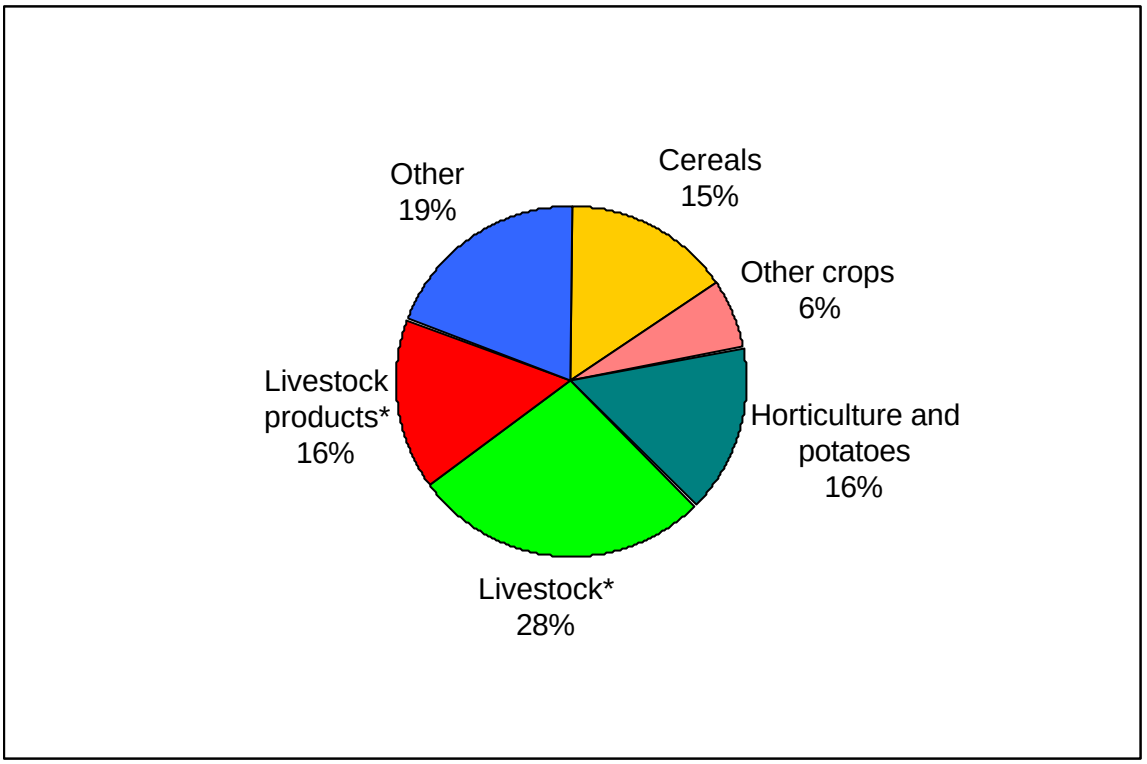
16. Agriculture employs about 2% of the total UK workforce and accounts for less than 1% of GDP, although other agriculture related businesses have also been affected by the outbreak. By contrast tourism employs over 7% and its contribution to GDP is substantially greater at 4.7%.

Figure 1: Agriculture and Tourism in the UK Economy



17. Livestock and livestock products are a very important part of UK agriculture. The value of output from the species susceptible to FMD accounts for about 40% of the total output of the UK agricultural industry. It is clear therefore that anything that affects this sector will have a significant impact on the industry as a whole.

Figure 2: Composition of UK Agricultural Output



* Excludes Poultry

18. Equally as agricultural land accounts for over three quarters of the total area of the UK, anything that reduces access to that land will have a serious impact on the industries that depend on it.

19. Foot and Mouth has directly affected a wide area of the country. For the first few months of the outbreak, many footpaths throughout the UK were closed in order to prevent the spread of infection, so the effects on tourism initially spread to much of the countryside.

Link to Figure 3: Map of Greatest Extent of Infected Areas

20. The total number of animals slaughtered under disease control measures has been 4 million, of which the vast majority have been sheep. A large number have also been slaughtered in order to prevent welfare problems for farmers who have been prevented by movement restrictions from moving their stock from farms. In the analysis we assumed that about 2.9 million animals would be slaughtered under these schemes, however as it turned out the final figures were lower than this assumption. The latest figures are shown in the table.

Table 2: Number of Animals Slaughtered and Total Animals at June 2000

Animal	Numbers slaughtered for disease control	Numbers slaughtered for welfare reasons	Total numbers as at June 2000
Cattle	594,000	169,000	11,135,000
Sheep	3,334,000	1,586,000 (a)	42,264,000
Pigs	145,000	287,000	6,482,000
Other	4,000	5,000	

(a) in addition 526,000 lambs were slaughtered under the Light Lambs Scheme

DIRECT EFFECTS ON AGRICULTURE AND THE FOOD SUPPLY CHAIN

Assumptions

21. The analysis is based on slaughterings for disease control of 4 million animals. Our best estimate in Autumn 2001 was that some 2.9 million livestock would enter the welfare disposal scheme. Currently some 2.6 million animals have been slaughtered under the Livestock Welfare and Light Lamb Disposal Schemes and our assumption reflected the likelihood that that some of the light lambs produced may not find a market in the UK and would need to be moved off farms for welfare reasons. It now appears that these animals were not entered into the scheme so the actual costs will be lower than originally thought. We have revised our estimates of the exchequer costs associated with this reduction, but we have not been able to revise our estimates of the supplies of meat available to the domestic market and the impact on prices might therefore be slightly overstated.

22. In relation to livestock movement restrictions in infected areas, we assumed that controls progressively wind down and by the end of January 2002 all counties attain Disease Free Classification allowing movement restrictions to be completely removed. As noted above all counties were declared disease free on 14 January.

23. Some trade in pigmeat was allowed to resume at the end of October. Our best guess was that full trade in animal products can be resumed by Spring 2002. Even though the UK has disease free status the extent to which full trade will resume is still difficult to determine. To test for the sensitivity of the results due to a delay in the complete resumption of exports, especially for sheepmeat, a couple of alternatives are examined:

a) that trade fully resumes in October 2002;
b) full trade resumes in Autumn 2003.

The two most pertinent sets of assumptions are tabulated in Annex Table C.

Summary of effects on Agriculture and the food chain

24. The results summarised in Table 3 show that the economic effect of FMD on agriculture and the food chain is likely to be a loss of around £3.1 billion, aggregated over the full duration of the controls associated with the outbreak. The vast majority of this impact will be felt in 2001.

Table 3: Economic Effects of FMD on Agriculture, Food Chain and the Public Sector - £ million

Agricultural producers		**- 355**
of which:	Market prices	- 50
	Export loss	- 130
	Withholding costs	- 175
	Consequential loss	- 35
	SAP	- 120
	Agrimoney aid	+ 155
Food Industry		**- 170**
of which:	Auction Markets	- 95
	Abattoirs	- 40
	Processors / hauliers	- 35
Public Sector		**- 2580**
of which:	Compensation	- 1120
	Welfare Scheme payments	- 210
	Disposal costs	-710
	Miscellaneous costs	- 450
	Agrimoney aid	- 155
	SAP/OTMS	+185
	Business support measures	- 125
UK Consumers		**- 15**
Total		**- 3120**

(1) "Market prices" represents a loss of revenue associated with price changes consequent upon the changed pattern of marketings (2) "Export loss" is an additional effect associated with lower quality domestic uses (eg pet food) for supplies diverted from export (3) "Withholding costs" are the extra costs and deterioration in quality associated with holding animals on farm beyond optimum marketing dates (4) SAP/OTMS/Agrimoney are associated subsidy changes, some of which are co-funded by the EU budget (5) Compensation for slaughter is assumed to exactly offset producer losses from the destruction of stock. (6) Public sector spend on disease control does not include funding from EU budget: slaughter compensation and some other costs are expected to be effectively 17% EU funded. (7) Disposal costs are costs of destruction and clean up. (8) Business support measures largely comprises assistance to rural businesses other than farming. (9) Overall public sector costs above are comparable to those reported in the HM Treasury Pre-Budget Report excluding an adjustment for estimated budgetary savings on Sheep Annual Premium and OTMS and also allowing for differences in the assumed number of animals destroyed under the welfare scheme.

25. The principal costs arise from the slaughter and disposal of livestock, the associated cleaning and disinfecting of premises and administration costs. However, there were some exchequer savings arising from the closure of the "Over Thirty Month Scheme" and the reductions in the level of Sheep Annual Premium as a result of higher EU prices. At the start of the outbreak the Government decided to pay agrimonetary aid. In total the value of these payments from the UK exchequer is estimated to be broadly £2.6 billion. The actual cost to the UK Taxpayer will however be affected by the extent to which these costs can be reclaimed from the EU budget. If we assume that the eligible costs (control measures, compensation and disposal and cleaning) are part funded by the EU budget the cost to the UK taxpayer would be reduced by some £325 million. There will also be some residual costs (£355 million) to agricultural producers (after slaughter and welfare compensation and agri-money payments) and there will be some costs (£170million) to other parts of the food chain. Consumers will receive some windfall benefit from the lower prices in 2001 resulting from supplies overhanging the market whilst the export ban remains in place. However this gain proves transitory and over the period to 2005 there is a small loss to consumers.

Income effects on Agricultural producers

26. The results showing the impact upon agricultural producers (Table 3) reveal that there are likely to be a range of costs to producers that lie beyond the loss of livestock which have been slaughtered and for which compensation has been provided. These costs arise from a number of factors:

- effect of price changes resulting from changes in supply to the UK market,
- reductions in price arising from disposal of product on UK Market
- costs of withholding animals on farms
- losses due to delay in returning to production
- Changes in subsidy payments
- Agri-monetary aid

27. Several factors have affected the supply of agricultural products onto the UK market. The slaughter and disposal of livestock has reduced production, the movement restrictions have prevented normal supplies reaching markets and the restrictions on exports have meant that products that would normally have been disposed of overseas will increase the supplies on the domestic market. To some extent these variations in supply will be accommodated by changes in the level of imports, but inevitably there will be some adjustment to the domestic supply / demand balance.

28. The effect on prices of agricultural commodities has been estimated by determining the supply position due to the reductions in domestic production and the closure of export markets. It is assumed that imported supplies are available from the rest of the EU, but no account has been taken of any impact of Foot and Mouth on the demand for product in the UK or the rest of the EU. In fact disruption to supplies on the domestic market was relatively short-lived and the observed price changes have been relatively modest. The loss to producers associated with price changes are therefore estimated to be about £50 million.

29. A further effect of the export ban will mean that some products from UK agriculture which are generally sold into the EU will have to be disposed of on the domestic market. In certain cases, for example light lambs and sow meat, these products have no ready market in the UK and could only be sold at substantial discount. The disposal of these products is a substantial cost and it is estimated that the loss of value on these products to livestock producers is £130 million.

30. Because of restrictions on the movement of animals from farms, it has been necessary to hold animals for longer than would have been the case under normal conditions. This imposes costs of extra feed (as well as other variable costs) and if stock is kept beyond its optimum marketing date, there will also be a loss of value. These costs are estimated at £175 million.

31. The losses associated with the loss of production whilst farms are prevented from restocking are mainly off-set by the arrangements that allow producers to claim headage subsidies for animals that were slaughtered. It is only in the dairy and sheep sectors where additional losses may be incurred by not being able to get back into milk production immediately or for loss of premium payments. These losses are estimated at £35 million. It is worth noting that milk producers who have not been directly affected by the disease have boosted production to largely offset the effect of the foot and mouth cull in the dairy herd.

32. The Sheep Annual Premium is calculated on the basis of the difference between an average EU market price and the Basic Price. It is estimated that the market price in the UK will fall as a result of the increased supplies which cannot be exported, but the ban on exports will have the effect of raising the EU price. On average the EU price will rise and the value of SAP is estimated to fall by some £120 million.

33. When foot and mouth disease struck in February the Government quickly took the decision to take up the option of paying agri-monetary aid. This reduced the costs faced by producers by £155 million.

34. The analysis shows that the greatest part of these costs fall on the sheep sector where the risks of a market overhang are greatest and where there is a substantial reduction in subsidy payment. The pig sector has also suffered from the export ban. The costs in the dairy and beef sectors – mainly resulting from the withholding of produce due to movement controls and consequential losses before re-stocking can take place – are likely to be offset by increased prices and the benefits of the additional agri-money aid.

Sensitivity analysis

35. Under our central assumption uncompensated losses to producers total £355 million. If export markets for sheep and beef do not recover for a further 7 months (i.e. to October 2002) these losses are estimated to rise to £450 million. A further delay of 6 months would increase the costs by a further £170 million. The additional losses arise almost entirely from a delay in recovering sheepmeat exports. This has two principal effects: first producers continue to suffer a quality related price discount as output is sold into low

value domestic usage (e.g. pet food); second, delay in recovering export markets adds to the general deflationary pressures in the domestic market. These two distinct sources of price pressure each contribute about one half to the increased losses.

Income effects in the food supply chain

36. We have credited to agricultural producers the full revenue effect of price changes, some of which in practice may stick at other points in the supply chain. In addition there will be some specific effects on the supply chain before and beyond the farm gate. These effects beyond the farm gate will be most marked for auction markets, slaughterhouses and food processors, whose activities were disrupted by the combined effects of the movement ban and export ban. We estimate that the total loss of value added for these sectors is likely to be of the order of £170 million. We have not attempted to identify the impact on individual supply industries, however these are included as part of the indirect effects which are estimated in paragraph 40 and Annex A.

Other sectors

37. FMD is likely to have diverted substantial resources from other employment activities to destroy diseased livestock, bury, burn or otherwise dispose of the carcasses and disinfect and clean up infected premises. Most of this expenditure will fall to the public sector. Additional spending to tackle the disease and its implications is estimated at some £2.8 billion. However there will be some offsetting savings to the Exchequer as a result of lower payments for Sheep Annual Premium and Over-Thirty Months Scheme. The cost, net of these savings, is estimated to be about £ 2.6 billion. This figure will be reduced further when account is taken of receipts from the EU budget and the UK share of financing this. This additional spending represents a loss to the economy in the sense that these resources could have been productively employed elsewhere had FMD not occurred. In practice, some of this activity may involve resources laid idle in the food supply chain as a result of FMD and already identified as a welfare loss in the analysis.

Country breakdown of UK results

38. Economic losses to agricultural producers not compensated by the Exchequer and the downstream food chain sectors have been disaggregated by country – this has been a "top down" allocation of UK estimates. The full results, for our best guess assumptions, are reported in Annex table D. These show that losses of about £230 million have fallen on agricultural producers in England, about 60% of the UK total. Both Scotland and Wales have incurred losses in the £60-65 million range. By comparison the impact on Northern Ireland producers has been negligible, in part due to the lifting of the export ban in early summer 2001.

39. In the food chain sectors downstream from the farm-gate almost two thirds of the UK losses, about £115 million, have fallen in England. Scotland and Wales have both incurred losses of about £25 million, 15% for each of the UK loss. Northern Ireland has

incurred a modest loss: auction markets re-opened during the late summer and slaughterhouses and meat processors were only slightly affected by the outbreak.

Indirect impacts

40. The industries supplying inputs to agriculture and food chain will also be adversely affected by FMD. These impacts are discussed in Annex A. In total the losses are about £85 million.

TOURISM

41. Overall the UK tourist sector, both rural and urban, is estimated to have lost between £2.7 and £3.2 billion of value added in 2001 as a result of the FMD outbreak under our "central" assumptions for postponement and cancellation of trips. **The methodology used to estimate the overall impact on domestic tourism is necessarily subject to serious data limitations in terms of "hard" data on actual behaviour.** Consequently it draws heavily on attitudinal survey data and a series of assumptions. It should be borne in mind that the effects measured in this paper relate to all businesses which are affected by a fall in tourist expenditure. The range of businesses affected will go wider than those which might readily be associated with the provision of tourist activities.

DIRECT EFFECTS ON UK RURAL TOURISM

42. In March – August 2000 UK residents spent approximately £33.54 billion on tourism day visits and trips within the UK of one night or more. These are the months in 2001 when access to the countryside was subject to restrictions and are taken as a conservative proxy for spending in the absence of FMD. Some restrictions also continued into September and October. However, given the events of September 11th, it is not possible to measure the effect of FMD thereafter. By this stage it is possible that the overall impact could have turned positive, through the take-up of displaced trips and holidays, and achieved significant growth in some cases as some people stayed within the UK rather than going abroad. Therefore no attempt has been made to isolate FMD effects after the end of August.

43. The United Kingdom Tourism Survey (UKTS) collects data at monthly intervals on the domestic tourism industry and during March to May 2001 incorporated specific questions relating to the FMD outbreak (see Annex B). The survey results indicate that 30% of visitors changed their plans as a direct result of FMD and of these visitors 70% were planning trips to the countryside and 30% to urban areas.

44. These results have been used as the basis of estimates of the loss to domestic tourism due to FMD. In the absence of data beyond May, we have looked at two scenarios. In the first, it is assumed that the survey results from March to May will remain constant in the following 3 months June to August. This is taken as an upper estimate as this period is considered to be the peak of the disease. However, results from the English Tourism Council (ETC) attitudinal survey carried out in August indicate that consumer's perception towards the domestic industry changed very little from the earlier months and this provides support for the assumption that behaviour will not have changed much either.

45. In the second scenario, we look at a decline in the impact in subsequent months has been made. This is the lower estimate and is based upon the assumption that for each month after May the number of visitors changing their plans as a result of FMD fell by the following percentage:

June	10%	less than March to May
July	30%	less than March to May
August	50%	less than March to May

46. Both the lower and upper estimates rely on the UKTS March to May data which indicate that of the 30% of visitors claiming to have changed their plans:

- *30% have postponed their trip*
- *13% have changed their plans in some other way*
- *43% have cancelled their trip altogether*
- *13% have switched destinations within the UK*
- *2% have substituted an overseas trip.*

47. We have assumed that 25% of postponed visits are equivalent to cancellations, but this may overstate the likely impact on tourism of the foot and mouth outbreak as they will be recouped in the following period. Thus, sensitivity analysis has been applied to the 25% assumption. The loss of tourism revenues from this broad interpretation of cancellations is estimated to be between £3.9 and £4.7 billion, split between a loss of £2.4 to £2.9 billion in revenues to the rural economy and a loss of £1.5 to £1.8 billion in urban areas. However the impacts on rural and urban revenues are respectively under-stated and overstated; tourists who have changed their plans or switched destinations within the UK add net revenues of between £245 and £295 million to urban tourism and reduce rural tourism receipts by a corresponding amount.

48. Between March and May UKTS indicates that 2% of those who changed plans opted to go overseas instead. This represents a direct loss to the economy as a whole and the loss of receipts to the UK tourist sector is estimated to be between £155 and £185 million, split between £95 to £115 million in rural areas and £60 to £70 million in urban areas.

49. The total receipts of tourist businesses from UK tourists are estimated to fall by between £2.8 and £3.4 billion in rural areas as a result of foot and mouth and urban tourism receipts from UK residents to contract by between £1.3 and £1.6 billion. These are estimates of the impact on receipts and of course some of the costs associated with the provision of tourism goods and services will also have been reduced. The impact on the economy is represented by the loss in value added and this will be smaller.

50. Gross value added is estimated to represent 60% of tourism spending. This estimate was derived from the weighted average of gross value added/gross output for each of the tourism sectors shown below. The only sector where value added is less than 54% is rail, which is small - about 13% of travel value added.

Table 4

Sector	Gross value added/Gross output (%)
Accommodation	62.8
Retail	61
Catering	62.8
Attractions	53.8
Travel - of which:	
Road	54
Rail	29

51. With value added equal to 60% of output, income derived from tourism in rural areas (excluding related industries also affected) contracted by between £1.8 and £2.3 billion (60% of the lost receipts) as a result of the reduced spending on domestic tourism by UK residents. The corresponding effect on value added derived from urban tourism is a reduction of about £0.8 and £0.9billion.

DIRECT EFFECT ON TOURISM FROM OVERSEAS

52. Expenditure by overseas visitors in the UK in 2000 was £12.78 billion of which 56% was spent in the March to August period. Spending in the countryside by overseas residents is only 6% of the total spend; in consequence any reduction in overseas visitors mainly results in losses of urban tourism receipts.

53. Information from the International Passenger Survey ("IPS") for March – August 2001 shows a decline in both visitor numbers and expenditure compared to 2000. There are a number of reasons for the decline, of which FMD is only one. The slowing of the global economy, in particular the US economy (as North America accounts for 28% of overseas visits to the UK) as well as the weakness of the Euro, will be contributory factors to the decline.

54. The central assumptions are that these "other" factors will account for 50% of the decline in in-bound tourism expenditure reported by IPS over the period March-August. Therefore FMD will account for the other 50% of decline reported by IPS from March to August. These assumptions have been applied to the actual decline reported in IPS from 2000 to 2001 for each month from March to August. Therefore the loss of tourism receipts due to FMD are estimated at £425 million (equivalent to value added of £255 million) of which £400 million is cost to urban areas.

Overall impact of tourism: direct effects of FMD

55. Table 5 below summarises the impacts from FMD on receipts and value added derived from tourism.

Table 5 FMD's expected impact on UK tourism receipts and value added

Decline in spending £million	Rural		Urban		Total	
	Low	High	Low	High	Low	High
Domestic Tourism						
- cancellations	-2440	-2945	+1475	+1780	-3915	-4725
- substitution within the UK tourism sector	-245	-295	+245	+295		
Switch from domestic to overseas destinations	-95	-115	-60	-70	-155	-185
Loss from reduced overseas visitors	-25		-400		-425	
Total loss of receipts	-2805	-3385	-1690	-1955	-4495	-5340
Loss of value added derived from tourism	-1685	-2030	-1015	-1175	-2700	-3205

Note: based on central scenario for: a) postponement of trips & b) proportion of decline in spending by overseas visitors attributable to FMD
Figures may not add up exactly as they are rounded to nearest £5 million

Sensitivity analysis

56. For the 30% of tourist trips by UK residents that are postponed because of Foot and mouth disease a range of assumptions have been examined to reflect possible behavioural patterns. The results for the central assumptions, 25% of postponed visits falling outside the March to August period, suggest losses in value added of between £2.7 and £3.2 billion (as shown in Table 5). Under more "optimistic" assumptions all postponed visits are re-scheduled within the 6 month period and value added losses in tourism are reduced to £2.3 and £2.8 billion. Under "pessimistic" assumptions one half of postponed visits fall outside the 6 month period and tourism value added losses total between £3.2 and £3.8 billion.

57. As a check on the broad magnitude of our estimates we have compared these with information collected from surveys of selected areas carried out by Prism Research Ltd, who undertook a study of the impact of FMD on rural businesses. Almost 2,500 businesses, located in six largely rural local authority districts, were surveyed by telephone. The businesses selected cover the entire range of activities outside core agriculture: agriculture related, manufacturing, construction and services. The six districts chosen for the survey reflect a mix of areas badly hit by outbreaks in Cumbria and Devon and areas unaffected by cases of FMD in East Anglia. Though Prism were careful to note that their

results should not be generalised to the wider economy, they nonetheless enable some broad estimates to be made of the magnitude of the impact of FMD on tourism in the rural economy.

58. Prism does not provide any precise quantitative data from their survey on the monetary impact of FMD on economic activity. However it is possible to deduce a measure of lost output value from the results reported. The survey suggests that during the March to August 2001 period businesses as a group lost turnover to the value of 17.5% in the Eden district of Cumbria and 10.5% in Carlisle (the latter of course contains the urban area of Carlisle); in West Devon the loss of turnover was 12.5% and in East Devon 5.7%. In contrast businesses lost 4.2% of turnover in North Norfolk and 2.9% in Mid Suffolk. This distribution of results is in line with expectations that losses from FMD would be correlated with the frequency of FMD outbreaks by district.

59. The mixture of districts selected by Prism is clearly not a complete range, but it provides a reasonable cross-section of rural Britain for the purpose of assessing the impact of the FMD outbreak on businesses affected by tourism expenditure. The loss of business turnover for all six districts combined, covering a rather wider set of industries than those likely to have been affected directly by loss of tourism spending, is 7.6%. This reduction has been applied to baseline expenditure by tourists in UK of £34 billion during March/August 2000. The loss of receipts by rural businesses, based on the Prism survey, is estimated by DEFRA to be about £2.6 billion. This is at the lower end of the range estimated by the DCMS: £2.8 – 3.4 billion. The evidence from the Prism results corroborates, in broad terms, the estimates of the DCMS though subject to the caution that there is no strict relationship between reduced visitor spending and loss of turnover by local businesses.

Indirect impacts

60. Industries supplying UK tourism will also be hit by the FMD outbreak. Under the central assumptions these indirect impacts are estimated to be valued between £1.8 and £2.2 billion (see Annex A for details underpinning the calculations).

DEFRA / DCMS
February 2002

ANNEX A

INDIRECT IMPACTS: MULTIPLIERS FOR AGRICULTURE, TOURISM AND RETAIL

1. In addition to the direct effects on agriculture, the food chain industries downstream from the farm-gate and tourism, there are indirect effects on the industries supplying goods and services to the directly affected sectors. Quantifying the total impact on upstream industries supplying agriculture is especially problematic. The lower level of livestock production reduced demand for certain inputs but increased work in progress, as livestock movement restrictions kept animals on farm longer, had the opposite effect. In addition certain service suppliers, notably vets, would have been redeployed to tackle the FMD outbreak. The study has not attempted to quantify the impacts on each upstream business, but we have calculated these in total using multipliers derived from the ONS's "input-output tables".

2. The values of the multipliers are given below. A multiplier of 0.68 for tourism means that a shock which increases tourism value-added by £1 million also increases the value-added in other sectors by £680,000. There are no estimates of how these multipliers split between rural and urban areas. In agriculture and the slaughtering/meat processing sectors a significant proportion of output from the sector is an input within the sector itself. To avoid double counting the multipliers have been adjusted to ensure that only suppliers outside the sector are captured.

Impact on input suppliers of a unit change in the final demand for:	**Adjusted Multiplier**
Agriculture	0.807
Abattoirs/Meat Processors	0.812
Tourism	0.68

3. These adjusted multipliers have been applied to output related losses in the industries directly affected. In agriculture/food chain sectors the application of multipliers has been restricted to output related impacts. In agriculture some important adverse impacts from foot & mouth have taken the form of lower prices received by producers and no multipliers have been applied to these. This is because these are revenue losses which are unlikely to have significantly affected input requirements.

4. The direct impacts of FMD have been allocated between rural and urban areas. However no attempt has been made to allocate the indirect impacts on the same spatial basis. The estimated economic value of these indirect impacts are reported in the Table below.

Sector	£ million
Agriculture/Food Chain	85
Tourism (range)	1835 to 2180

ANNEX B

UKTS 2001 FMD related questions

Q9 Has the current outbreak of Foot and Mouth disease affected any plans you may have had to take trips within the UK in April? For example, you may have cancelled or postponed a trip that you had planned to take in April or gone to a different place or for a shorter time because of the outbreak.

If yes ask Q11

Q11 Which of the following describe how you have changed your plans for taking trips within the UK in April? Have you....

-cancelled one or more planned trips because of the outbreak
-postponed one or more planned trips until later in the year because of the outbreak
-gone to a different place within the UK from the one you originally intended to go to, because of the outbreak
-gone abroad instead of taking a trip within the UK because of the outbreak
-reduced the length of a trip because of the outbreak
-changed your plans in some other way

ETC Attitudinal Survey Key Findings

Wave 11 (August 24-August 26th)

- 24% of consumers agree that 'most places in the countryside are closed at the moment' compared to 27% in June
- 54% of people agree that 'people should stay out of the countryside to avoid spreading foot and mouth' compared to 55% in June
- 72% of consumers agree that you hear different messages about the countryside, some say its open and others say it's closed to tourists' -exactly the same percentage as June
- 32% agreed that 'I wouldn't visit the countryside because of the health risks associated with burning carcasses. This is up 3% since June.
- 35% agree that 'you can't go to the countryside because most footpaths are closed'

For full results see ETC website: www.englishtourism.org.uk

ANNEX C
: Agriculture / Food Welfare Impacts: Assumptions

Livestock Slaughtered for disease control purposes ('000 head)

Feb	March	April	May	June	July	Aug	Sept	Oct-Dec	Total
13	954	1,973	353	245	171	114	92	85	4,000

Livestock Destroyed through the Livestock Welfare Disposal Scheme ('000 head)

Feb	March	April	May	June	July	Aug	Sept	Oct-Dec	Total
	8	600	430	153	142	191	177	1,221	2,922

Assumptions

	Last case	Numbers of Livestock Destroyed for disease control (million head)	All counties attain "Free" classification	Numbers of Livestock entered into Welfare Disposal (million head)	Export Ban Lifted	
Central estimate	End Oct 2001	4.0	end Jan 2002	2.9	beef Sheepmeat Pigmeat	End Mar 2002 end Mar 2002 end Oct 2001 for provisional counties; end Mar. 02 for rest of GB
Pessimistic	End Oct 2001	4.0	end Jan 2002	2.9	beef Sheepmeat Pigmeat	end Oct 2002 end Oct 2002 As central estimate

Note: Sheepmeat also includes live sheep.

ANNEX D

Economic Effects of FMD on Agriculture & Food Chain Industries, £ million

Country	England	Wales	Scotland	Northern Ireland	Total UK
Agricultural Producers	230	65	60	0	355
Downstream Industries	115	25	25	5	170
Total	345	90	85	5	525

Uncompensated producer effects only