

The Impact the 2001 FMD Outbreak had on the United Kingdom's Animal Health Policy and Livestock Production

-2001年に英国で発生した口蹄疫がその後の同国の家畜伝染病予防政策と畜産業界に及ぼした影響について-

47-206762 Shoko Nakatake
Supervisor: Professor Aya Suzuki

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1. INTRODUCTION

Ever since humans started animal production, livestock diseases have been a burden to not only to the infected animals but to economic activity, the well-being of the people and the environment. This is due to diseases causing costs both directly, those which are caused by the death and morbidity, and indirectly, those caused by prevention and control measures (FAO, 2016). With the advancement of science and the globalisation of trade, in recent years, states are led to take stricter approaches to animal diseases. This includes both developed and developing countries, and researchers have discussed how an effective animal disease management could lead to poverty reduction. The World Trade Organisation (WTO) has consigned the World Organisation for Animal Health (OIE) as the organisation to create sanitary and phytosanitary measures (Walton, 2000) and as a result, trading restrictions are implemented to countries which have not eliminated specific diseases. It is therefore important from the perspective of international development to discuss on what kind of governance systems and policies are truly effective to disease prevention. However, since an effective policy can vary upon the condition of a country's market, state of industry and political conditions, it is not appropriate to compare between countries. Thereby in this research, it will focus on the UK and how it managed to change its government systems and policies after a substantial disease outbreak.

2. OBJECTIVE

2001 became a turning point for the UK's livestock industry with the outbreak of FMD. The outbreak resulted in more than 2000 cases and 6 million animals culled which cost the UK a £ 8 billion worth of loss. However, six years later, when another FMD outbreak broke out, it only resulted in 8 positive cases with £ 140 million worth of loss. From the two FMD cases which ended in very different outcomes, and the succession of keeping exotic diseases (i.e., ASF and CSF) out in current years, I hypothesised that that 2001 FMD outbreak created a change in livestock disease prevention policy and the livestock industry in the UK. In order to examine this hypothesis, the research was conducted "To analyse how an outbreak experience can be used to create an effective policy and its effects on an industry." To achieve this, I set up the research question as; "How has the 2001 FMD

outbreak affected animal health policy and the livestock industry in the UK?"

3. METHODOLOGY

The research was conducted through the following two steps: case study and the analysis of the changes in the industry and policy. The case studies refer to the FMD outbreaks of 2001 and 2007. Here, I used government reports to break down what happened during and after the outbreak. As for the analysis of the industry, I have used the statistical data published by the government to see the changes in livestock output and trending animal diseases. For policy, I used the UK legislation site which stores all of the previous and current enactments and the Defra website. I have also referred to the book. 'A Manufactured Plague' (2004) written by Abigail Woods for historical context.

4. CASE STUDY

The outcome of the 2001 and 2007 case turned out to be drastically different. This can be explained by four factors; the government's response, source and detection of the virus, the timing of report to authorities, and livestock numbers. For the 2001 outbreak, the government took three days from the first confirmation, to implement a national livestock movement ban whereas in 2007, it was introduced on that day. Additionally, the 2001 case took a longer time to identify the source of the virus due to the failure of notification by a farmer. 2007 also had a smaller livestock population compared to 2001.

ANALYSING THE CHANGES

i. Changes in the Livestock industry

To further understand how an outbreak experience impacted the industry, I focused on three variables, livestock output and consumption, prices of produce and productivity and looked into its change. When looking at livestock output and consumption, we could see that when a livestock disease occurred, decrease in output and changes in constituents in what farmers consumed for their business were observed. For prices, though direct impact on retail value was not measured in 2001 since FMD infected many livestock species, when looking into the

1996 BSE outbreak, we could see a drop in beef prices and an increase in pork and lamb prices. As for livestock productivity, after the 2001 FMD outbreak, the number for beef and lamb has been stagnating. This could be explained by the decrease in livestock number, a drop in the workforce and the tightening of animal welfare and environmental laws. Looking at these variables, we cannot deny the negative economic influence disease outbreaks had on the livestock industry.

ii. Trending diseases and how it affects the industry

With events such as Brexit, further changes are expected to occur for the livestock industry. Thus, it is important to understand how the trending diseases have also changed after FMD and how it affects farms in a more micro level. Firstly, in order to analyse how the trending diseases for each livestock has transferred throughout the years, I used the dashboard created by APHA and plotted its changes through 2012 to 2019. As a result, a substantial drop was measured for the number of diseases which affect the cattle and sheep. Although both cattle and sheep numbers has dropped (3% and 2% drop respectively) comparing 2012 to 2019, for the top 10 most reported diseases, there has been an average decrease of 60.6% for cattle and 52.2% for sheep. However, for pig, there have been some increase for some diseases such as PRRS and Rotavirus all which are infectious. This could be explained by the increase in pig population (10.9%) unlike the sheep or cattle.

Next, by using the same dashboard I analysed the economic impact of livestock disease by using the following two models:

$$\ln revenue_{it} = \beta_0 + \beta_1 \text{sheepir}_{it} + \beta_2 \text{cattleir}_{it} + \ln revenue_{it-1} + \gamma_t + R_i + U$$

ln revenue: log(livestock revenue), sheepir: infected rate of sheep, cattleir: infected rate of cattle, γ_t : Time dummy, R_i : Fixed Effect (region)

$$\ln vet_{it} = \beta_0 + \beta_1 \text{sheepir}_{it-1} + \beta_2 \text{cattleir}_{it-1} + \ln vet_{it-1} + \gamma_t + R_i + U$$

ln vet: log(veterinary fees)

The results obtained here can be seen in Table 1. With the exception of the impact sheep infectious rate has on vet fees, statistically significant results which show the impact livestock diseases has on livestock revenue and vet fees was not found. The reason for this could be explained by the limited number of publicised disease surveillance data and the small number of samples from the Farm Business Survey.

Table 1. Impact infectious rates have on livestock revenue and veterinary fees

	(1)	(2)
VARIABLES	lnrevenue	lnvet
sheepir	-1.065 (1.395)	1.257** (0.476)
cattleir	0.308 (0.214)	0.163 (0.276)
L.lnrevenue/vet	0.184* (0.0895)	0.258** (0.0918)

iii. Changes in Policy

Changes made after the 2001 FMD outbreak was different compared to history, from the perspective of science and government's notion. This was apparent from the Inquiry Report (2002) which criticised the handling of the 2001 case and became the guidance of animal health policies afterwards.

After the publication of this report, two main changes were implemented. First was the reorganisation and the policy changes of the government body. MAFF, a department which specifically focused on agricultural issues was ordered a dissolution and the newly created Defra became its successor to handle animal diseases. Unlike MAFF, Defra's main focus was not on agriculture but rural issues. This was unique and unprecedented in a sense that an industry significant as agriculture would be tackled as a rural task rather than those which should be focused singularly. The second change was the amendment of the Animal Health Act 1981 done in 2002. Here, the length to which the government were allowed its powers during an outbreak were specified and the weight prevention had in the law had become prominent.

These policy changes could have affected the farmers' decision-making process regarding animal health. The series of policy changes led to the creation of qualitative surveillance systems which monitors the movement of livestock and the creation of stakeholders' networks which allows animal health experts and industry workers to be involved in animal health policies together. I argued that these series of changes could have affected farmers by improving their accessibility to accurate information and reducing their uncertainty of notifying a disease.

5. CONCLUSION

The 2001 FMD outbreak gave explosive and detrimental economic impacts which struck various industries, mostly in the rural regions of the country. It also acted as a trigger for the British government to reflect and dramatically change its animal health policies with the trend still proceeding today.

6. REFERENCE

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