Animal health certification in cattle market : impact on the safety of trade and on farmers surplus

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INTRODUCTION

New infections of herds by pathogens are often due to trade involving infected animals. Because the health status of an animal is not well known by the buyer, there is an asymmetric information between buyers and sellers. Information on the health status can be given, among others, by a test after purchase to detect the pathogen, or by the certification of the animals being sold.

Certification can reduces the risk of infection for the buyer and enables sellers to provide certified animals at a premium price. Certification can also decrease the risk of infection in a given area, by decreasing the proportion of infectious herds, thereby creating a positive externality. The impact of a certification scheme depends on its cost, and on costs of other measures to prevent herds infection.

Objective: *evaluate the impact of an animal health certification scheme on farmers gain and on the positive externality due to the increase in safe trade.*

MODEL DESCRIPTION

Decision of the farmers
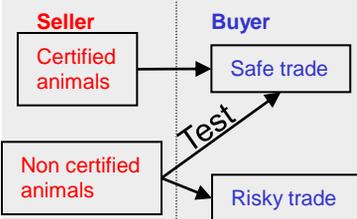
Aggregation of farmers decision gives:

Demand curve : proportion of buyers that decide to buy certified animal (depends of the risk of infection and of the cost of the test)

Supply curve : proportion of sellers that decides to sell certified animal (depends on the cost of certification)
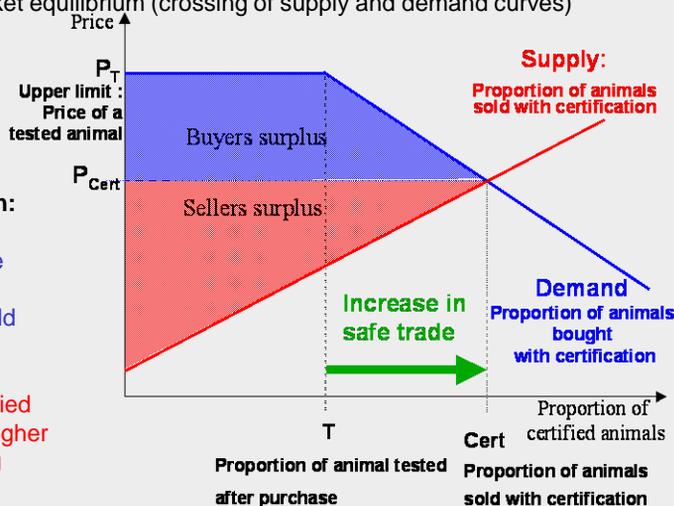
Equilibrium

•**Price of a certified animal: P_{cert}**
  Price is given by the market equilibrium (crossing of supply and demand curves)

•**Increase in safe trade**
  Market equilibrium gives the proportion of animals certified, and so, the increase in safe trade
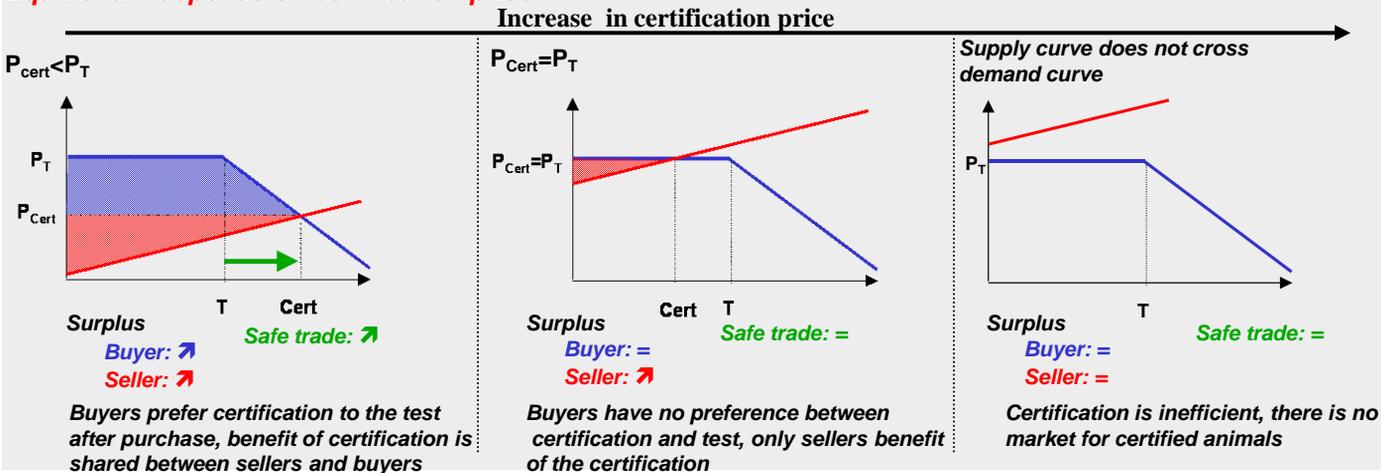
•**Surplus due to certification:**
  •Gain that buyers benefit by being able to purchase certified animal at a price that is less than they would be willing to pay
  •Gain that sellers benefit by being able to sell certified animal at a price that is higher than they would be willing to sell for.

RESULTS

Equilibrium depends on certification price

Increase in certification price

$P_{cert} < P_T$

Surplus
Buyer: ↗
Seller: ↗
Safe trade: ↗

Buyers prefer certification to the test after purchase, benefit of certification is shared between sellers and buyers

$P_{Cert} = P_T$

Surplus
Buyer: =
Seller: ↗
Safe trade: =

Buyers have no preference between certification and test, only sellers benefit of the certification

Supply curve does not cross demand curve

Surplus
Buyer: =
Seller: =
Safe trade: =

Certification is inefficient, there is no market for certified animals

CONCLUSIONS

The impact of certification on the safety of trade and on the surplus of farmers depends on certification price. If certification price is too high, certification scheme are not efficient. So, it is important to study the impact of certification on the market before its setting up. This model can be used to study certification for diseases such as paratuberculosis or BVDV. But it needs to be more representative of a market that is not as simple as the market modelled here. It must also take into account the dynamic impact of the positive externality, that decreases the risk of infection and so, decreases the interest of the certification for buyers.

Reference: RAT-ASPERT O, WELDEGEBRIEL H, STOTT A, FOURICHON C. Managing animal health status information in the cattle market. EAAE, 2008, Gent, Belgium