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# **CATTLE TRADE AND THE RISK OF IMPORTING ANIMAL DISEASES INTO THE NETHERLANDS**

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# CATTLE TRADE AND THE RISK OF IMPORTING ANIMAL DISEASES INTO THE NETHERLANDS

**Thom J. Achterbosch, Dörte D.V. Dopfer, Andrzej A. Tabeau**

## Abstract:

Projections of live cattle trade in the EU-25 assist to reduce the uncertainty on the risk of importing animal diseases in the Netherlands. The accession of 10 member states to the European Union has a potentially large impact on livestock trade in the EU as it liberalized in one stroke a trade that was administered by the Management Committee for Beef until May 1, 2004. The approach combines AG-Memod partial equilibrium with GTAP general equilibrium modelling in order to estimate the impact of quota liberalization. Quota removal will substantially alter the regional structure of livestock imports, as the share of new EU member states in the east triples to 25%. The risk outlook indicates a need for enhanced animal health services in the new member states.

## Keywords:

livestock, animal disease, trade, projections, quota, EU-enlargement (JEL F17, I18, Q17)

## Introduction

The World Organization for Animal Health (OIE) defines "import risk analysis" as follows: '...the principal aim of import risk analysis is to provide importing countries with an objective and defensible method of assessing the disease risks associated with the importation of animals and their products.<sup>a</sup> Cattle trade transfers pathogens either through infected animals or contaminated transport vehicles. A quantitative analysis on the risk of importing animal diseases through the imports of live bovine animals into the Netherlands found that, at present, such risks are non-negligible, especially for highly infectious animal diseases such as foot and mouth disease (FMD) (Achterbosch and Döpfer, 2005).

The risk of importing FMD depends first and foremost on the length of the high risk period (HRP), i.e. the time interval between the first infection and first detection of FMD virus. Following the UK veterinary authorities, it seems reasonable to assume that the length of the HRP in the European Union (EU) should be estimated at about 21 days. The risk assessment shows that a HRP of >15 days results in a non-zero probability of FMD infected cattle being shipped to the Netherlands by means of intra-communitarian trade. If an infected animal is shipped and it is infectious, it is unlikely to be detected before the disease spreads.<sup>b</sup> Second, the risk of importing FMD depends on the structure of livestock industries in the origin countries and the volume of trade. Small-scale production, i.e. a pattern of numerous small farms rather than concentrated production, results in cattle shipments being assembled from a large number of herds. Large trade volumes increase the likelihood of importing cattle from infected farms. As the Netherlands hold a central position in EU livestock trade, imports of live cattle imply the possibility of a major outbreak of FMD in the Netherlands, specifically in the eastern part where there is high density of livestock holdings.

We provide a quantitative outlook on cattle imports into the Netherlands that allows the veterinary authorities to anticipate future demands on the system of import risk analysis in the Netherlands. We examine whether EU enlargement and the Mid Term Review of the EU common agricultural policy (CAP) affect live animal flows into the Netherlands. The focus lies on imports of bovine animals from the new member states of the EU (NMS) in the years up to 2010. The accession of 10 member states to the European Union has a potentially large impact on livestock trade in the EU as it liberalized in one stroke a trade that was administered by the Management Committee for Beef until May 1, 2004. The approach combines AG-Memod partial equilibrium with GTAP general equilibrium modelling in order to estimate the impact of quota liberalization. In addition, we draw on desk study, and expert interviews with resource persons from the realms of government, business and from the relevant product board whose comments will appear throughout the text.

The organization of the paper is the following. Section 1 provides an overview of Dutch livestock imports, and deals with the validity of available trade statistics. Section 2 discusses the current policies to manage import risk related to bovine animals in the Netherlands. Then we analyze the drivers of trade, for imports into the Netherlands (section 3), for exports from new EU member states (section 4), and for bilateral trade between Netherlands and the NMS (section 5). The projections of bilateral trade are described in sections 6 (methodology) and 7 (results). Section 8 reviews the results against policies and institutions. Section 9 provides summarizes the findings and discusses the implications for the import risk on the medium term.

## 1. The Netherlands in EU Livestock Trade

The Netherlands holds a central position in European livestock trade. Imports and exports of live animals amount to several hundred million euro each year. The bulk of live animal imports into the Netherlands are ruminants, mainly cattle. In the years 1990-2000, an average of 640 thousand head of cattle was annually imported into the Netherlands. In the years 2001-02, when calamities on BSE and Food and Mouth Disease (FMD) strongly disrupted meat markets in Europe, imports plunged. In 2003 trade recovered (table 1). Dutch imports largely originate from neighbour countries (figure 1). The import volume of cattle from Poland doubled for three years in a row up to 40 thousand head in 2003, yet its share remains small.

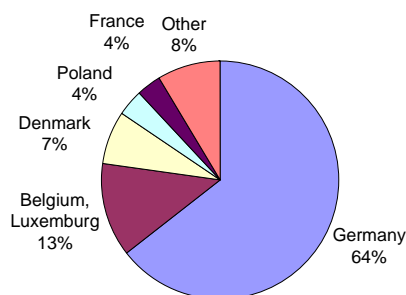
Table 1. Cattle imports into the Netherlands, 2000-03, by type (1,000 head)

	2000	2001	2002	2003
Calves	580	278	430	534
Breeding cattle	5	20	1	3
Other cattle /1/	92	32	10	16
Total live cattle	677	330	441	553

/1/ Other cattle covers slaughter cattle, and grazing cattle. Source: Product Board for Livestock, Meat and Eggs, Zoetermeer.

Calves made up 97 per cent of all cattle imports in 2003. These calves, mostly male and two weeks of age, are imported by the Dutch veal producers. Some arrive at a few months of age for a short period of fattening before the calf is slaughtered at 6 months of age. For animals from Poland, this is even more so, which comes to no surprise as the cattle breeds in Poland are less suitable for beef production, for which reason they either remain on local dairy farms or are exported to meat producers in the EU-15.

Trade in newborn calves is very mobile. As one interview respondent from the realm of trade stated, a price difference of 3 euro (on a price of about 140-180 euro per newborn) can induce a trader to redirect the destination of transport. The issue of breed quality is a minor attribute in newborn calve trade. Another respondent noted that Dutch importers prefer Polish calves, however, the reason being their "robust" constitution. Due to the harsh circumstances on some Polish farms only the stronger animals make it to an exported consignment.



**Figure 1. The origin of Dutch live cattle imports, 2003**

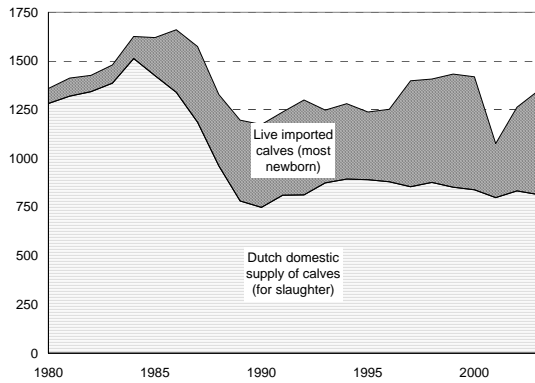
## **2. What Drives Calve Imports into The Netherlands?**

### *The Dutch veal industry is second largest in the EU*

Over the years, Dutch producers maintain a share in EU veal markets of 15 to 20 percent. The market share of the Dutch appears to be stable under fluctuations in total consumer demand in the EU. Dutch households consume just 10 percent of domestic veal production; 80 percent is exported to Italy, Germany and France; the remainder is exported to other destinations in Europe and the Middle East.<sup>c</sup> Each year between 1.2 and 1.4 million calves are slaughtered for veal production. Apart from the Netherlands, major veal producers in the EU are France (1.9 mil head slaughtered in 2003) and Italy (1 mil). Total veal production amounted to 186 mil ton in 2003. By the end of 2003, the Dutch stock of meat calves counted 748 thousand head held on 3,250 farms. The province of Gelderland is the centre of specialized veal production. The veal industry is characterized by strong concentration. A small number of dominant companies that are referred to as *kalverintegraties* (integrated veal producers) produce 90 percent of domestic veal supply. The integrated producers contract farmers who provide him with newborn calves and feed. Calves are fed on synthetic milk for about 6 months at the end of which the integrated producer has the animal slaughtered. Producer prices for veal have been rather low in the EU since the reduction of EU-administered intervention prices for meat in the 1990s. By means of compensation producers receive a slaughter premium under the common agricultural policy.

Intensive livestock production in the Netherlands is having difficulties facing the competition from producers in countries with more land resources and/or cheaper labour, both in the EU and abroad. It is expected that pork and poultry production will decline in the coming years (Bondt et al., 2003). While under similar pressure from foreign competition, Dutch veal producers expect to be able to uphold their share on the EU market.

Several respondents relate the strong position of Dutch veal on the EU market to the integrated organization of production that manages both costs and quality. Dutch veal has earned a reputation for high quality, which dwells on technological advance; the advanced level of Dutch veterinary control; and is buttressed by substantial investments in quality control in recent years.



**Figure 2. Calve supply in the Netherlands, 1980-2003 (1,000 head)**

### *The productive stock: newborn calves*

Veal production in the Netherlands has its economic origin in the over-supply of newborn calves and milk in the dairy sector. While the Dutch dairy sector is still the main supplier of newborn calves to the veal producers, imports have gained importance. The annual snapshots at calves supply reproduced in figure 2 reveal that domestic supply dropped during the 1980s. By 2003, the dairy herd amounts to 1.5 million dairy cows, which produce about 1.4 million newborn calves. Of the total supply of newborn calves, 30 percent are used for replacement and 70 percent go into fattening. Due to the diminished scale of specialized beef production in the Netherlands, practically all of the 1 million newborns destined for fattening are supplied to the veal producers.

Annually 400 to 600 thousand head (30 to 40 percent of supply) are imported in order to overcome shortages in the domestic supply of newborns, which has the additional effect of driving down domestic calf prices. One analyst ascribed the 30 percent drop in domestic calf prices between August 2003 and 2004 to the recent surge in imports of newborns from the new member states (Van der Linde, 2004).<sup>d</sup> Prices of newborn calves are structurally related to the EU intervention prices for beef, which in turn affect veal prices (De Bont et al., 2003); changes to veal prices generally transfer into similar adjustments of the price of newborn calves (Van Leeuwen, 1998).

## **4. Livestock exports from the new EU member states**

Eastern expansion of the European Union on May 1, 2004 added about 10 million head of cattle and 30 million pigs to the EU livestock. The cattle stock increased by 15 percent to 92 million head.<sup>e</sup> The new member states (NMS) bring a large supply of export cattle into the common European market. More than half of all cattle stock in the NMS is located in Poland (54%). The second largest cattle stock is found in the Czech Republic (14%), then Hungary and Lithuania (8%), and Slovakia (6%). Between 1998 and 2002 the cattle stock in the NMS decreased by 13 percent. As specialized meat production is quite uncommon in the NMS, most of the cattle stock is in the dairy sector.

### *Poland*

Polish agriculture stands near to self-sufficiency in dairy and beef. Beef consumption in Poland is low compared to pig meat, which is the country's favourite. Over 60 percent of meat consumed is pig meat. Beef consumption per capita shrank from 20 kg in 1990 to 6 kg in 2003, and remains limited despite recent welfare increases. Beef production in 2003 amounted to 275 thousand ton, down from 838 thousand ton in 1990. Animal husbandry is done at small scale in mixed farming activities. Less than 1 percent of farms keep more than 50 head of cattle; 85 percent keeps less than 10 animals (source: PVE).

After the liberalization of price support for beef and dairy in the late 1980s, beef production became closely tied to the dairy sector. Dairy farming is done on a vast number of small-scale farms that are scattered throughout the country. Between 1990 and 2003 the dairy herd contracted by 35 percent to

2.9 million head, and milk production dropped by 27 percent. Of the total annual production of raw milk of 12 million ton, just 6.4 to 7.4 million ton (55 to 65 percent of raw milk production) is delivered to the dairy factories; the remainder is consumed or sold at the farm. This leaves ample space for growth of the deliveries under the annual production quota of 9.4 million ton. It remains to be seen whether and how the deliveries quota will be fully utilized in the coming years. The key question is whether additional deliveries require capacity growth – which leaves production for on-farm use untouched – or whether local and foreign investors will reorganize the current capacity on larger farms. Growth of the deliveries will require scale enlargement at the farm level under strong competition of the foreign dairies. It is assumed that the size of the dairy herd remains stable throughout the transition: the negative impact of productivity growth and small-farm exits on the herd size should cancel out against increases in the cattle stock elsewhere.

Market forces in the NMS will likely increase the average scale of husbandry, especially in Poland where dairy production is in the process of undergoing a transformation. While market forces will work a bit to assemble consignments from fewer herds, the fact that newborn calves are residual to dairy farming impedes a large supply of animals from a single farm.

Recent years have seen an increase in the export supply of live cattle from Poland. While the stock declined by 11 percent in the years 2000-03, the number of slaughtered animals dropped by 22 percent. Often the animals exported are young animals that are fattened for beef or veal in the destination countries. The most important destinations are Italy (48% of exports in 2002), and Bosnia-Herzegovina (24%).

#### *Exports of live animals in Czech Republic, Slovakia and Hungary*

In the last decennium, animal husbandry in the Czech Republic, Slovakia and Hungary underwent enormous change. Subsidised production volumes in the beef and dairy declined while pork and poultry production increased. Meat production is not specialized but related to dairy production. Between 1990 and 2003 the stock of beef and dairy was halved. Milk production was reduced by 30 percent in the decennium after 1992, beef production shrank by 47 percent. As beef and dairy consumption declined as well, the regions were able to maintain near self-sufficiency in these products. In the Czech Republic and Hungary the average herd size on the dairy farm is a lot bigger than in Poland. The milk is of better quality due to the abundance of cold storage; 80 to 90 percent of the raw milk supply is delivered to the dairies.

Exports of live cattle in the Czech Republic amounted to \$16 million worth of mostly newborn calves that were shipped to Italy and Germany; the Netherlands were among the smaller destinations (export value \$1.3 million). In Slovakia, live cattle exports amounted to \$ 10 to 20 million in the last decennium, and are declining further. Italy is the most important country of destination, before the Czech Republic and Germany. Hungary is the second largest exporter of live cattle in the region (after Poland). Annual exports amount to \$35 million, down from \$50 million in the 1990s. Croatia has become the major country of destination, absorbing a flow of \$23 in 2002. Alternative destinations for Hungarian cattle are Bosnia-Herzegovina, Rumania, Italy, Slovenia, and Greece.

## **5. Factors driving Dutch cattle imports from the new member states**

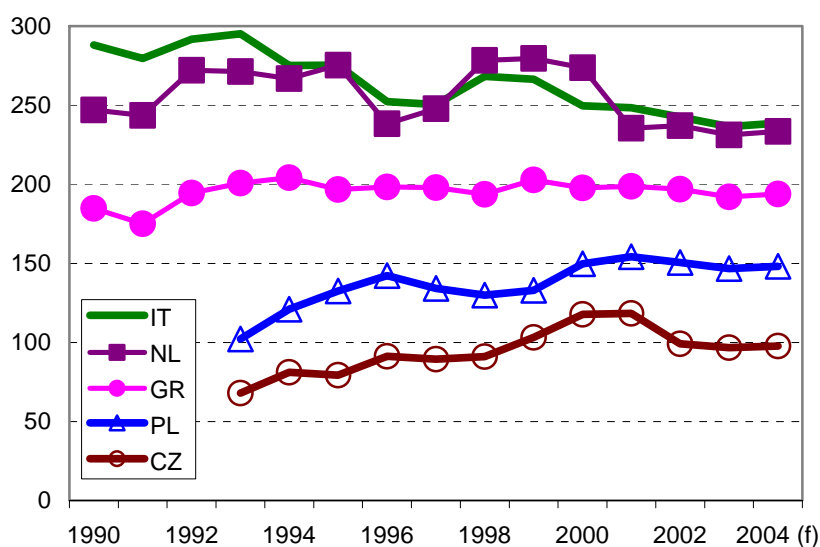
Our goal is to examine the development of Dutch cattle imports on the medium term. The recent EU enlargement gives this research topical interest in view of the sudden surge of imports from Poland and the historical fact of a sudden influx of cattle from the former DDR after German reunification.

The enlargement of the EU bears a strong impact on European markets. To explore how markets will respond, requires a two-stage analysis. First, we assess the factors that drive cattle imports. These are generally the factors underlying supply and demand, as well as policies and other elements in the economic context. Second, we analyze how these drivers change, and what impact this has on volume and the regional structure of cattle imports.

From desk study and consultations of experts within the ranks of government, product board, business and research, we have found the following to be among the most important forces driving the

volume and regional structure of cattle imports from the new member states (NMS) into the Netherlands:

- *Economic growth.* Income growth bears a positive impact on the demand for beef and dairy products in the NMS. Economic growth has a negative impacts on the competitive position of the Dutch producers vis-à-vis veal producers in France, Germany and Italy largely because of the large opportunity costs of land and capital resources currently tied into veal production.
- *Consumer preferences & consumer concerns:* As diets in the EU shift towards convenience food and pre-packed meals, beef and veal consumption decline. At the same time, the investments that address concerns over food safety, animal health, animal welfare and environmental impact increase the costs of meat supply.
- *The Mid Term Review of the Common Agricultural Policy.* The coming years will see the implementation of the Mid Term Review of the CAP, which aims to decouple to a degree farm payments from output. Yet, Dutch policy support to veal and beef producers remains largely coupled to production. Minimal changes to the dairy quota will result in a contraction of the Dutch dairy milk herd and slightly increased supply.<sup>f</sup> The income support to NMS producers is below EU15 levels.
- *Technological and organizational change in dairy.* Rising milk yield per cow reduces the size of the dairy herd in the Netherlands, Czech Republic, Slovakia and Hungary. Of relevance to the size of the herd in Poland is the speed at which the raw milk deliveries to dairy plants in Poland grow under the EC-imposed quota.
- *Integration of the markets in the EU25.* The removal of EU-administered import quota restricting EU imports from NMS to 500.000 head each year allows for competition to address the biased position of Italian importers; as well as remaining tariff barriers between EU-15 and NMS (see next section). We will see a swift decline of (unaccountable) price differences between EU15 and NMS for beef and cattle away (see figure 4).



Source: AGRIS

**Figure 3. Veal prices in selected countries (EUR/100 kg live weight)**

Table 2 indicates the impact of each of these drivers of change. Some factors will reduce cattle imports from the NMS region, other will have a positive effect. The following sections provide a quantitative outlook on the weight of the various forces on the medium term.

## 6. Projections of cattle imports into the Netherlands

The following sections explore the development of the Dutch imports of cattle from four Eastern new member states of the EU up to 2010: the Czech Republic, Hungary, Poland and the Slovak



Republic. For this purpose, we will analyse the possible total import demand for cattle as well as the possible changes in the regional import structure, which could result from enlargement of EU15 to EU25 and different development of the world economy.

### *Scenarios*

To take into account the possible different macroeconomic development of the economy in both the importing region and the exporting region we analyze two possible scenarios, one characterized by strong economic growth, the other by weak growth. Table 3 presents the selected scenario assumptions made for the Netherlands and the new member states.

The policy assumptions made for both scenarios are similar: enlargement of EU15 to EU25 and mid term review (MTR) of CAP. As the MTR of meat policy is concerned, we assume full decoupling of domestic support for all EU15 countries with exception of Denmark, France and the Netherlands. For these three countries the cattle and sheep premiums are partly coupled.<sup>8</sup> For new EU members, full decoupling of direct payments was assumed. These premiums are equal to 55% of EU15 payments in 2004 and increase gradually to 95% in 2010. We have assumed that since 2004 30% of full EU15 rate will be financed from rural developments funds and national budgets, as was agreed in the accession agreement. For all EU25, the MTR reform of agricultural policy concerning milk and dairy sector was implemented according to the Luxemburg Agreement.

Table 2. Factors driving cattle imports from the new member states into the Netherlands

Driver of change	Outlook, impact of change	
	Netherlands	Poland, Czech Republic, Slovakia, and Hungary
Economic growth	Veal demand responds positive to strong growth of household income. However, the competitiveness of intensive husbandry in the Netherlands declines rapidly in case of strong growth because the returns on non-agricultural activities grow faster.	Income growth will have modest impact on domestic beef demand, as prices will also go up under EU policies. Under strong growth, NMS will gradually loose competitive edge vis-à-vis EU15 countries. Under weak growth imports from NMS remain cheap.
Consumer preferences, consumer concerns	The incorporation of concerns over food safety, and animal welfare in production and transport could raise production costs and reduce veal demand vis-à-vis less costly meats. A shift of diets towards convenience food will further reduce veal demand irrespective of price movements. Dutch veal supply contracts.	Veal consumption in the NMS is practically nonexistent. Price rises of beef will contribute to the shift towards pork and poultry meat.
Mid Term Review of CAP (Common Agricultural Policy)	Meat supply declines due to modulation (reduction) of direct payments of 3-5%	Only gradual build-up of EU support levels; strong competition with EU15 exporters on domestic meat markets
- beef & veal	Veal prices remain unaltered. Income support remains fully coupled to production in NL up to 2010. Capacity declines somewhat due to immobility of rights.	Beef intervention prices are introduced, which further suppress beef demand vis-à-vis pig meat and poultry. Livestock prices in the NMS converge to EU15 average, speed depends on economic growth.
- dairy	Milk prices down. NL dairy quota expansion 1-1.2% reduced supply of newborn calves; costs of calf milk decrease by 4%.	Introduction of dairy quota in the NMS. Binding (or nearly binding) for all except Poland where some consolidation of dairy farms is likely; larger companies will fill the quota; dairy herd remains stable
Technological change / Milk yield	Cow productivity improves 1.8% annually; combined with quota effect, the results is a net annual decline of the dairy herd	Annual productivity growth, in combination with quota, results in gradual shrink of the dairy herd in Czech R, Slovakia, Hungary
Integration of EU25 market (removal of quota, border tariffs)	Removal of the EU-administered quota liberalizes imports from new member states. Dutch share of NMS cattle could rise when competing directly to Italian traders that historically held quota rights.	Export flow of cattle to Balkan countries could shift to EU15 importers depending on price gaps. Poland looses 10% preference margin on EU15 borders vis-à-vis other NMS, which thus become more competitive.

Table 3. Scenario assumptions: average yearly growth rates in selected variables in 2001- 2010 period

	National income (GDP)	Employment	Population	Exogenous land yield in cattle sector
<b>High-Growth Scenario (HGS)</b>				
Netherlands	2.82	0.60	0.62	0.53
New member states /1/	3.14 : 4.22	-0.37 : 0.25	-0.46 : 0.07	0.01 : 0.59
<b>Low-Growth Scenario (LGS)</b>				
Netherlands	1.37	-0.1	0.37	0.19
New member states /1/	1.39 : 2.34	-0.59 : 0.06	-0.61 : -0.08	-0.32 : -0.005

Note /1/ Assumptions are country-specific. The table reports the range of assumptions for four NMS: Poland, Hungary, Czech Republic and Slovakia. Source: EURURALIS 1.0 (CD ROM), October 2004, <http://www.dow.wau.nl/clue/europe/>.

### *Changes to consumer tastes and consumer concerns*

The analysis examines possible developments on the supply-side of the cattle and beef sector. We can, however, expect that in the period up to 2010 consumer tastes might change, that transporters will innovate, and that regulations concerning cattle trade will tighten. We explore the consequences of two of these changes on the cattle sector. First, we simulate a shift of consumer taste towards other meat products than beef, implemented as a decrease of cattle meat consumption by 1% per year throughout the projection period. Second, we implement more stringent safety and quality measures concerning cattle imports. Such measures increase the costs of trading, and it is the rise of costs that is incorporated in the analysis. A differentiation between intra-EU trade and imports from third countries allows us to include the beneficial impact of shared EU institutions in the analysis. Trade costs within EU25 increase by 1% in 2005 and again in 2007; the costs of imports from third countries into the EU25 increase by 2% in 2005 and 2007.

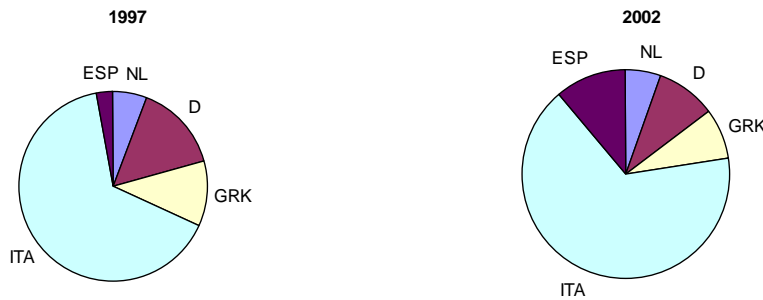
### *Approach to making projections*

The complete recipe for brewing projections of cattle imports is described in a background note. We dwell on a range of economic modelling techniques in addition to expert opinion and secondary literature. This makes our approach to arrive at economic projections quite common (McCalla and Revoredo, 2001; Van Meijl et al., 2003). Our aim is to give a quantitative weight to the driving forces of cattle imports in the years 2004-2010 that resulted from desk study and expert interview (summarized in table 3).

The analysis of scenarios combines two model representations of the cattle market in the EU. The one is geared towards studying agricultural relations in Europe (AG-Memod); the other, GTAP (the model of the Global Trade Analysis Project), specializes in simulating global international trade relations.

The biggest challenge in this exercise was to estimate the impact of the removal of quota for cattle imports from the former EU candidate countries into the EU. The EU and the countries Poland, Czech Republic, Slovakia, Hungary, Romania, Estonia, Latvia and Lithuania agreed under the Europe Agreements that cattle imports from these countries into the EU15 were restricted under two quota: 178 thousand newborn calves up to the weight of 80 kg, and 153 thousand head of cattle with a weight between 80 and 300 kg.<sup>h</sup> Commonly, the quota was filled to the maximum. Each year, the Management Committee for Beef of the European Commission allocated the import licenses to traders from EU15 countries. On historical grounds, the lion share of the import licenses were granted to traders from Italy (over 60%). Dutch traders accounted for about 10% of licenses, and have lobbied for a bigger share in recent years but with limited success as revealed in Figure 4, which shows modest growth of market share of the Dutch in EU-15 imports from Poland, Czech Republic, Slovakia and Hungary. Quota removal will have several repercussions on the volume and structure of cattle trade. In view of the similarity of veal prices in Italy and the Netherlands (recall figure 3), we expect to find that the share of Dutch traders grows at the expense of the Italian share.

To estimate the implications of cattle imports quota removal for Dutch cattle imports, we use our desk study results concerning Dutch cattle imports in 2004. First, we eliminate in a GTAP simulation all import tariffs and export subsidies as between the EU15 countries and ten new members states (NMS) and set NMS import tariffs and export subsidies on the average level of EU15 tariffs and subsidies to implement the EU enlargement. This tariff elimination, however, alters NMS cattle exports to The Netherlands much less than we observed in our preliminary data for the first eight months of 2004. This indicates that the quota abolition could have much higher impact on the Dutch imports by country of origin than it can be achieved by simple by tariffs elimination. Therefore, on the basis of data on preliminary imports in 2004, we adjusted the imports efficiency parameters in GTAP in order to arrive at more realistic imports growth rates.



**Figure 4. Cattle imports from Poland, Czech R., Slovakia and Hungary into EU-15 (\$), 1997 and 2002**

## 7. The Results: Projections until 2010

### *Cattle imports into the Netherlands grow...*

A recovery of the total imports after BSE crisis is expected but the imports is predicted to stay below the pre-crisis level. Imports will grow from around 587.000 head in 2004 to 600.000 head in 2007, and 615.000 head in 2010. As figure 3 shows, imports will show steeper growth in the strong-growth scenario than under weak growth, which reflects the fact that meat production in the Netherlands competes strongly with alternative allocation of land and labor resources. EU demand for beef and veal is quite insensitive to economic growth. These prospects of import growth are in stark contrast to earlier estimates by Bondt et al. (2003). Based on an extrapolation of the 1992-2000 trend they projected Dutch cattle imports to decline to 400.000 head in 2007. The divergence of projections reflects mainly on the policy to maintain coupled farm payments in the veal sector, which was not foreseen by Bondt et al. In addition, positive market prospects for veal products from the Netherlands on the medium term were not taken into account in their analysis. According to the simulation results Dutch producers will uphold their market share vis-à-vis competitors in Italy, Belgium, Spain and elsewhere, albeit with more ease under weak economic growth. Consequently, cattle imports will grow.

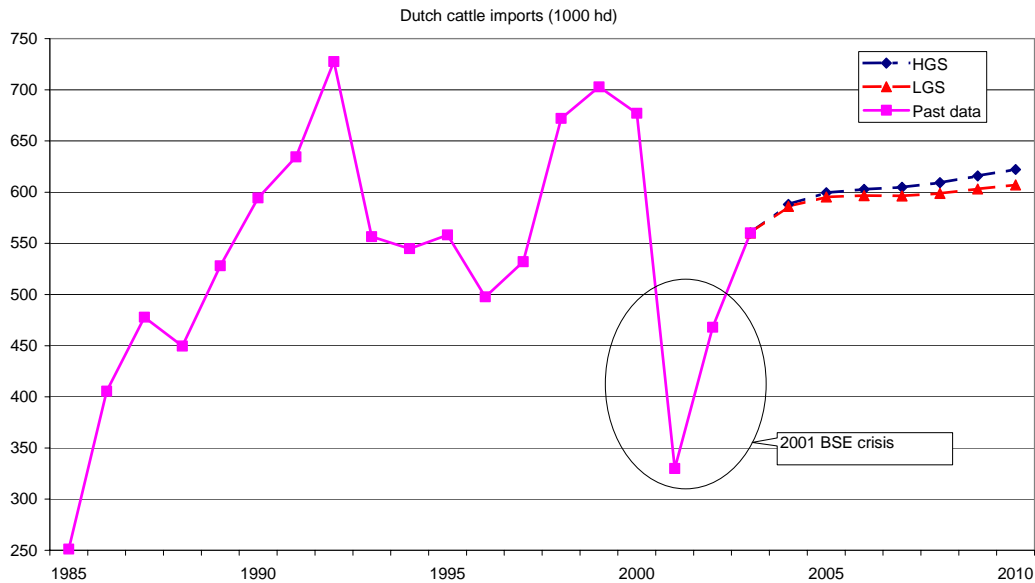


Figure 3. Cattle imports into the Netherlands, 1985-2010 (1,000 head)

*...But shifts in consumer tastes may reduce import growth*

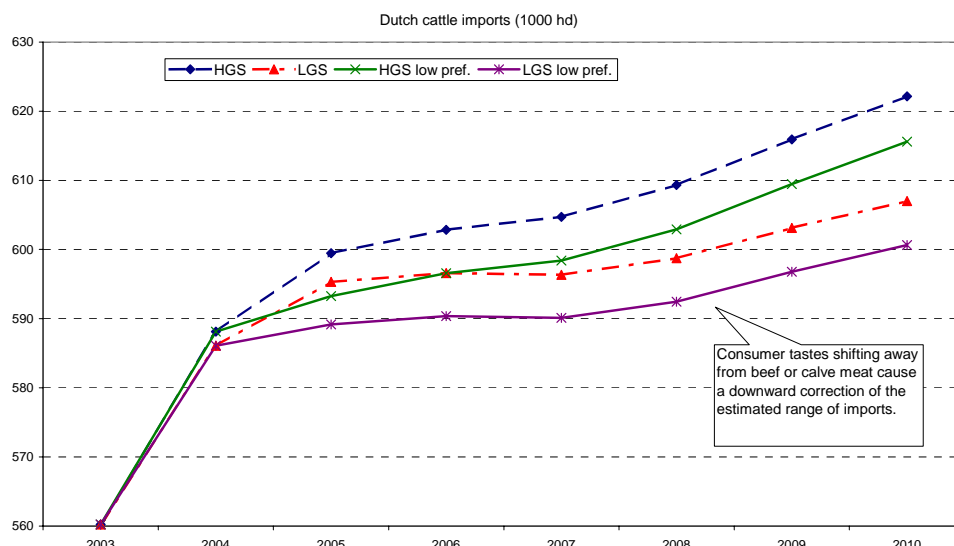
It is quite likely that consumers will structurally lower the share of ruminant meat in their diet. We explore the impact of the demand reduction on the Dutch cattle sector. In model terms this is done through a reduction in the fixed component of consumer demand by 1 percent for all years of the projection period. Figure 5 confirms that imports by veal producers are largely responsive to the prospects for the marketing of products. Reduced demand puts downward pressure on prices to which producers respond by curtailing supply. According to our results, a demand fall-out by 1 percent results in a proportional decline of Dutch imports.

For current purposes, we must assess the impact of shifting consumer tastes on the range of uncertainty in the projected imports. The range is consistently widened over the projection period through a 1 percent downward reduction on the projected imports under the weak growth scenario. The scenario that examines demand fall-out under weak economic growth provides us with a lower bound to our projections of cattle imports into the Netherlands.<sup>1</sup>

*Imports from New Eastern Member States surge*

In the early years of the projection period Dutch cattle imports from the new member states (NMS) step up, then peak in 2005, followed by a gradual decline. Total imports from the NMS grow from 40.000 in 2003 to between 160.000 and 190.000 in 2010, depending on the level of economic growth. The equivalent import share grows from 9 per cent in 2003 to between 26 en 31 per cent in 2010. Average annual growth in the years 2003-10 is as large as 200 per cent.

Surprisingly, the flow of imported cattle from NMS is bigger under weak economic growth than strong growth. This reflects the feature that differences in factor costs between NMS and EU15 are more resilient under weak growth – stated otherwise, imports from NMS countries remain cheap under weak growth.



**Figure 5. Consumer preferences and cattle imports, 2003-10 (1,000 head)**

Imports from Poland, the Czech Republic and Hungary show particularly strong growth. A comparison of year-on-year import volumes by origin country reveals the following interesting features in the projections:

- Dutch cattle imports from Poland and Hungary triple as they respond strongly to EU enlargement. Imports from the Czech Republic jump by 400-500 percent but the Czech import share remains limited to about 6 percent. Cattle imports from Slovakia were next to nothing and decline even further.
- The NMS bite share from traditional origin countries such as Germany, Belgium and Denmark. Nevertheless all traditional partners remain important sources of origin as not a single country experiences dramatic decline. Ireland also gains importance. Hence, the import structure broadens over the coming years.
- While imports of Czech and Hungarian cattle peak towards to the end of the projection period, Poland shows a declining trend from 2005 onwards. After 2005, NMS imports diversify in term of origin and the traditional countries recover some of their losses.

Table 6 reports traded volumes and import shares between 2002 and 2006 under weak economic growth. Most adjustments occur in these years. After 2006 there is a slight reversal of effects. The share of Polish cattle will grow from 7 per cent in 2003 to about 25 per cent from 2005 onwards, replacing the Belgium/Luxemburg region as runner-up origin country. Note that Hungary's booming trade does not result in a substantial share in Dutch cattle imports.

**Table 6. Import volume and structure, 2002-2006**

	2002	2004	2006	2002	2004	2006
	Volume (1000 head)			Structure (%)		
Germany	249.2	248.3	203.3	53	42	34
Poland	31.2	112.2	157.9	7	19	26
Belgium/Lux	107.9	108.7	106.2	20	19	18
Ireland	12.6	30.6	41.4	3	5	7
Czech R	6.2	22.3	34.6	1	4	6
France	9.6	32.1	29.5	2	5	5
Denmark	45.8	28.3	18.5	10	5	3
Other	5.8	2.0	3.2	4	1	1
Total	468.3	586.1	596.6	100	100	100

Source: 2002 data from the Netherlands Ministry of Agriculture, Nature and Food Quality: Animal Identification & Registration service; 2004 and 2006 data are projections under the low growth scenario.

### *Causes of import growth*

EU enlargement in May 2004 is the prime driver of import growth from the eastern countries. The enlargement removed remaining trade barriers, notably the import quota of 500.000 head administered by the beef committee under the European Commission. By consequence of price differences between EU15 and NMS, surplus cattle are directed towards the former EU15 countries. Also, it is expected that a larger share of EU imports from NMS will flow to the Netherlands such that the Dutch share on the European input markets is more in line with the 20-25 percent Dutch share on output (i.e. veal) markets.

A second cause for steep growth is the (partial) decoupling of support to cattle farmers in the EU15 countries in 2005. Lower subsidies means lower production so price increases for meat in EU15 compared with NMS. As the price response for "production cattle" is strongly correlated to veal prices (Van Leeuwen, 1998), we expect a price rise for calves in EU15 relative to NMS. This pulls even more cattle from the eastern countries into the former EU15.

After 2006, we see imports from NMS decline due to limited export supply and a loss of competitive edge. Export prices of cattle in NMS increase more than in EU15, because it was assumed that productivity increases more in EU15 than in NMS.<sup>j</sup> In this way the NMS gradually loose their competitiveness.

## **8. Policies governing animal transports over the long distance**

The outlook is for a recovery of cattle imports to their highs from the late 1990s and for increased trade from the new member states. This section examines whether the outlook is consistent with the changes that occur to policies and institutions governing cattle trade over the projection period.

In recent years, the transport of cattle over the longer distance has provoked intense debate on both national and EU platforms. Some consider such animal movements out of line with the EU-wide efforts to prevent the spread of animal diseases, and to raise the welfare of production animals. Others point to the notion that animal transports are part and parcel of the pan-European food market. The livestock carriers themselves oppose to the notion that transport is a source of risk and animal maltreatment. At the Agricultural Council of November 2004, the political debate in the EU culminated in an agreement on stricter welfare rules for the transport of animals over long distances. Below the import outlook results are reviewed in view of this agreement.

More trade results in more transport. By 2006 the share of our neighbour countries has reduced to just over 50%, while that of the NMS will have risen to 25%. Cattle transports from Belgium and Germany into the province of Gelderland, the centre of veal production in the Netherlands, span 200 and 500 kilometres, on average. A transport from Poland, say from the Warsaw area, stretches over 1,200 kilometres and about 18 hours. Prague, the capital of the Czech Republic, is 800 kilometres and about 12 hours away. Some tentative calculations on the data in table 5 and travelling distances reveal that the average distance over which import animals are transported to the Netherlands will increase from 509 kilometres in 2002 to 694 in 2006 (if both scenarios are equally likely), a 36% rise.

Despite a call from European Parliament to restrict the transport of live animals to 500 kilometres and 8 hours, the November 2004 agreement left current policies on travelling time and distance unchanged. While the debate on a more restrictive maximum to travelling time and distance will proceed, EU agreement on the matter is not to be expected in the coming years. Meanwhile, efforts will focus on the enforcement of animal transport rules. Carriers should prepare to have satellite navigation tools implemented in their vehicles by 2009. Transparency and private disciplinary rules should provide them with incentives to align their behaviour 'on the road' to the public interest.

There are basic rules for animal welfare during transport. One respondent stated that the maximum load for the vehicles restricts the density of animals. In addition, there are rules regarding the supply of water, feed, and fresh air. According to the respondents who represent carriers and integrated veal producers, animal welfare concerns should be addressed through the conditions during transport, rather than the time and distance travelled. To some extent traders have an operational interest in improving the conditions during transport, as far as these reduce stress with the animals. The

respondents from the realms of business seek to employ technology in order to improve animal welfare during transport such as the use of closed cabins with air control.

We conclude that animal welfare rules and policies governing transport will not impede more trade. Provided that the Dutch livestock carriers that service the new member states will maintain their investments in technological improvements of animal conditions, the necessary expansion over the projection period of animal transports from the east is feasible within the policy context, and likely.

## **9. Discussion**

### *The recovery of Dutch cattle imports continues until 2006*

The study examined the growth and regional structure of cattle imports into the Netherlands in the coming years. Still recovering from the low levels of 2001 when BSE and FMD crisis disrupted meat markets, total imports of live cattle into the Netherlands will grow to around 600.000 head in the coming years.

### *The share of NMS cattle rises*

Dutch imports from Poland, the Czech Republic and Hungary triple after EU-accession. The new member states deliver at least 25% of Dutch imports by 2006. After 2006, the growth of Dutch imports from the NMS slows down. Trade growth is most resilient, however, in case of sluggish economic development in the NMS.

Already in 2004 Poland becomes the second most important origin country for cattle imports into the Netherlands, after Germany but replacing Belgium as runner up. The flow from the Czech Republic also increases, up to levels of Ireland, France and Denmark. Trade with some of the minor countries is resilient, i.e. the import structure broadens. The uncertainty in the projections – measuring up to 30.000 head in 2010 – is due to macroeconomic growth in the EU25, productivity growth, and developments in consumer tastes and consumer concerns. The uncertainty increases further if the demand outlook on the EU market is more positive than we assumed. The surge in imports from the new member states is stronger under weak economic growth, basically because imports remain cheap under an economic slowdown.

### *EU animal welfare policies will not impede more trade*

More trade and more distant countries of origin result in more transport over longer distance. The average distance over which an imported animal is transported will rise from 509 kilometres in 2002 to an estimated 694 kilometres in 2006, a 37% increase. The transport of animals over longer distances is subject to debate with respect to the welfare of transported animals. An agreement of the European Council in November 2004 leaves travelling time and distance untouched, and focuses on better enforcement of existing rules. Provided that the Dutch livestock carriers that service the new member states will maintain their investments in technological improvements of animal conditions, the necessary expansion over the projection period of animal transports from the east is feasible within the policy context, and likely.

### *Risk outlook*

The Dutch veterinary authorities should be more cautious of importing animal diseases through livestock trade in case of a sudden slowdown in economic activity in the NMS, for two reasons. First, the scenario analysis on Dutch cattle imports found that livestock from the east remain rather cheap under weak growth, thereby supporting livestock trade. Projected imports from the NMS into the Netherlands in 2010 amount to 190 thousand head of cattle under weak growth; under more positive growth prospects, imports from the NMS are projected at 160 thousand head in 2010.<sup>k</sup> This growth of cattle trade and the consequent transport over long distances is probably feasible under the EU legislation on animal welfare.

The second argument for caution under economic slowdown in the NMS is that sluggish growth will slow down the process of institutional development required for quality control in the private sector and enhanced surveillance by the veterinary authorities.



Fortunately, the current prospects for economic growth in the NMS until 2006 are rather positive: recent forecasts by the World Bank (2004) and by the Organization for Economic Cooperation and Development (OECD, 2004) are quite in line with our assumptions under the strong-growth scenario.

The issue of institutional development is related to the speed at which the new member states integrate with the European Union. While European markets integrated within a heartbeat on May 1, 2004, the integration of institutions goes much slower. While a basic level of institutional alignment in the veterinary field was achieved through the preparations for accession, improved quality control in the public and private sector in the areas meat, dairy and feed is still highly desirable.

Strong economic growth is generally believed to improve the quality of government institutions. Under sluggish growth, the development of governmental capacity is also slow. Hence, the EU should carefully monitor the need for assistance to NMS governments in addressing veterinary challenges such as the reduction of the high risk period and the eradication of endemic diseases.

In short, the outlook for import risk in the first couple of years after EU enlargement in 2004 depends strongly on economic and institutional developments. Animal disease risk in the EU25 increases when markets are integrated but institutions are not.

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## References

- Achterbosch, T.J. and D.D.V. Döpfer, 2005, "Cattle trade and the risk of importing animal diseases from the New Member States into the Netherlands," forthcoming research report, Den Haag: LEI
- Berkhout, P. and Bruchem, C. van (2004), Landbouw-Economisch Bericht 2004, Den Haag: LEI
- Bondt, N. et al., 2003, "Ontwikkelingen in de vleesindustrie tot 2007", Rapport nr. 5.03.07, Den Haag: LEI
- De Bont, C.J.A.M. et al., 2003, "Vleeskalveren en Hervorming Gemeenschappelijk Landbouwbeleid", Rapport nr. 6.03.09, Den Haag: LEI
- Leeuwen, M.G.A. van (1998), "De prijzen van kalfsvlees en nuchtere kalveren, een analyse voor de Europese Unie," Den Haag: LEI
- McCalla, Alex F. and Cesar L. Revoredo, 2001, "Prospects for global food security: a critical appraisal of past projections and predictions," Washington DC: IFPRI
- MinANFQ (Ministry of Agriculture, Nature and Food Quality), brief aan het Parlement betreffende de "Implementatie van het hervormde GLB in Nederland" d.d. 23 april 2004 (Letter to Parliament)
- OECD, 'Economic Outlook No. 76,' Paris: OECD
- PVE (Productschappen Vee, Vlees en Eieren), 2004, "Vee, vlees en eieren in cijfers. Statistisch jaarverslag," Zoetermeer
- Raad voor het Landelijk Gebied en de Raad voor Dierenaangelegenheden (2003), "Dierziektebeleid met draagvlak: Advies over de bestrijding van zeer besmettelijke dierziekten", Amersfoort/Den Haag
- Van der Linde, A.-M. (2004) "Import zit prijs dwars" Boerderij, Vol. 89 no. 46 (August 17)
- Van Meijl et al., 2003, "Prijzen op agrarische wereldmarkten: een verkenning van projecties," Den Haag: LEI
- World Bank, 'Global Economic Prospects: Trade Regionalism, and Development,' Washington DC, The World Bank, 2004

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## Endnotes

<sup>a</sup> See the forthcoming publication by OIE "Introduction & qualitative risk analysis" Volume I.

<sup>b</sup> Animals start shedding FMD virus on average 4 days before they show clinical signs of FMD. A consignment that includes one infected animal upon embarkation is likely to be entirely infected by the time it arrives in the Netherlands and it will not be detected immediately.

<sup>c</sup> The model analysis reported below found that any change in total demand for veal in the EU results in proportional changes to the volume of Dutch veal supply to the EU.

<sup>d</sup> The analyst stresses the importance of price differences between new member states and the Netherlands. Apart from this declining price gap, the years 2003-04 saw a further recovery in EU veal demand, and eastward expansion of the EU.

<sup>e</sup> Numbers are taken from the December 2002 count in the EU.

<sup>f</sup> Rising dairy prices and the desire to control the attributes of feed has induced the use of synthetic milk substitutes. Calf milk remains a substantial input in calf milk. Under MTR policies, dairy prices will drop to the extent that the price of calf milk could drop by 4 percent (de Bont et al. 2003, pp. 22)

<sup>g</sup> In particular, 50% of sheep and 75% of bulls premiums are coupled in Denmark; suckle cows premiums and slaughter premiums for calves are fully coupled and, 60% of other slaughter premiums and 50% of sheep premiums are coupled in France; 100% of slaughter premiums for calves and 40% for adult cattle is coupled in The Netherlands. We also assumed the modulation of direct payments, which leads to cut of direct payments by 3% in 2005, 4% in 2006 and 5% in 2007. For more detail please confer to the latest edition of Landbouw-Economisch Bericht (Berkhout and Van Bruchem, 2004, p.p. 38-41). Belgium will also keep the cattle premium fully coupled to production, following a tripartite agreement of the Ministers of Agriculture of the Netherlands, Belgium and France, see MinANFQ (2004).

<sup>h</sup> Under GATT provisions there is a third quota for imports of young bovine animals into the EU, to the amount of 169 thousand head. While the quota is open to all countries outside the EU, until Polish accession, only newborn calves from Poland were imported under the quota.

<sup>i</sup> Projected imports in the demand fall-out scenario under weak economic growth differ significantly from imports in the high growth scenario at the 10 per cent significance level.

<sup>j</sup> The assumptions on total factor productivity were taken from the EURURALIS analysis. Yearly growth rates are 0.53 in EU15 versus 0.014 in Poland in HGS

<sup>k</sup> Under weak growth we assumed average annual growth of national income in the new member states under study of 1.4-2.3%; under strong growth we assume 3.1-4.2%). The level of economic growth in the EU15 bears only minor effects on imports.