



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

**Impact of export control policy measures
in an attempt to tame Argentina's inflation**

Paula Rossi, Masaru Kagatsume, Maurizio Proseri

Kyoto University, Japan; Spain; Foggia University, Italy

kagatume@kais.kyoto-u.ac.jp



**Contributed Paper prepared for presentation at the 105th EAAE Seminar
'International Marketing and International Trade of Quality Food Products',
Bologna, Italy, March 8-10, 2007**

Copyright 2007 by Paula Rossi, Masaru Kagatsume, Maurizio Proseri. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.

Impact of export control policy measures in an attempt to tame Argentina's inflation

Paula Rossi¹; Masaru Kagatsume²; Maurizio Proserpi³

^{1,2} Kyoto University, Japan; ³ Foggia University, Italy.

²kagatume@kais.kyoto-u.ac.jp

Summary

Starting in mid 2004 and as a result of an increasing domestic and foreign demand, pressure was put on prices of a staple food in Argentina: beef. The government reacted by launching an aggressive plan to fight inflation which included prices control programs, slaughter restrictions and finally, when these measures were not enough, export bans. But such policies, in any case, are short-run, circumstantial measures that do not attack the root of the problem. When it is true that hadn't had the government intervened in the sector both farm and retail prices would have been higher than what they were, the cost of the intervention has been harmful for the economy and it did not solve the real structural problem. Cattlemen blame the government that the constant change in the rules is detrimental to investment and development that go hand by hand with production. The ban on exports has damaged the country's image as a reliable supplier when international contracts had to be broken. Moreover, the latest shifts in trade flows within the Mercosur members should be read as a sign of warning to the Argentinean authorities when deciding to isolate the country, since markets unattended by Argentina quickly find alternative sources of supply even within Argentina's neighbors.

KEYWORDS: Argentina, beef, inflation, export ban, production, trade.

1. Introduction

With more than 3 million tons produced in 2005, Argentina is the fourth largest beef producer in the world, ranking below the United States, Brazil and China.

The better part of the production is consumed locally (about 80%). Beef is a staple food in Argentina and the Argentines are the world's largest per capita beef consumers (above 60 kg annually). Of all foods, beef is the most sensitive when it comes to its impact on the Consumer Price Index (CPI), accounting for 4.5% of its composition and, thus, having a significant influence on the country's inflation levels.

Starting in mid 2004, and as a result of an increasing demand caused by an improved domestic purchasing power and growing exports, pressure was put on domestic prices causing great concern in the government. Authorities mostly attributed the increase in prices to growing international sales and took a series of measures aimed to retract exports, increase domestic supply and control inflation.

Before the government intervention, Argentina was the third largest world exporter, which means it is also a major player in the worldwide markets and its exports play an important role in global trade. Hence, any policy affecting the beef sector does not stay within the boundaries of the national policy but it becomes a matter of foreign policy as well.

2. Background

2.1. About Argentina

Argentina is the eighth largest country in the world. Approximately one-fourth of the total area is given to the flat, fertile Pampas of east and central Argentina. The soil of the Pampas is among the richest in the world and it is used for both farming and ranching. Therefore, Argentina's economy has always relied heavily on its export-oriented agricultural sector. The 38.7 million Argentines are a highly literate population (97%) and the country's transportation and communication infrastructure is good. However, government's mistakes in the economic policy have kept Argentina's standard of living much below its potential.

2.2. Strong bond between the economic policy and the agricultural sector

Agriculture has a huge impact on the economy, currently representing 13% of the GDP. The economic and political climates are heavily influenced by the agricultural sector (and vice versa) and amongst all sectors, beef is a highly sensitive one because of Argentina's cultural dependence on it, accounting for a 4.5% of the composition of the CPI.

The crisis of 2002, one of the worst economic downturns in the recent history of the country, had a tremendous negative impact on the standard of living of the population diminishing significantly its purchasing power. After the crisis, the abandonment of the pegged exchange rate to the U.S. dollar boosted exports, helping the country to return to growth and gradually reviving domestic demand. Due to the improved purchasing power (**Graph 1**), beef domestic demand has been increasing steadily and so have been exports encouraged by the favorable exchange rate. Production responded accordingly until the second half of 2004 when an unusually strong external demand and a still powerful domestic demand, began to push domestic prices up (**Graph 2**). When market conditions improve, a natural reaction of producers is willing to increase the size of their herds and one way to do it is by decreasing the proportion of female cattle slaughtered which, in turn, due to the biological cycle of livestock, shrinks production temporally, placing even more burden on prices in the short-run.

By March 2005, nominal consumer prices had climbed more than 20% in average with respect to July 2004. The situation called for the government intervention. The first measures introduced were price agreements but extended later to:

- Nov 2005: Prohibition to slaughter cattle below 260 kg. Suspension of beef export rebates (about 5%). Increase in export taxes on fresh boneless beef from 5 to 15%.
- Mar 2006: Prohibition to slaughter cattle below 280 kg. Increase in export taxes on processed beef from 5 to 15%. Ban on beef exports for 180 days (excluding the EU's Hilton Quota, beef cuts not consumed domestically, country-to-country agreements, e.g. Venezuela and Morocco and goods in transit).
- May 2006: Partial lifting of the ban: establishment of an export quota for fresh and frozen beef from Jun until Nov 2006 equal to 40% of the volume exported in that same period in 2005.
- Sept 2006: Additional relaxation of the ban: from Oct 1st to Nov 30th monthly exports up to 50% of the monthly average volume exported between Jun 1st and Nov 30th 2005 were allowed.
- Nov 2006: 50% relaxation of the export ban extended from Dec 1st 2006 until May 31st 2007, taking the monthly average of the volume exported between Jan 1st and Dec 31st 2005.

- Dec 2006: Prohibition to slaughter cattle below 240 kg until Mar 2007.

Government measures did not exert a dampening effect on prices until after exports were effectively stopped in March 2006. The categories which prices were brought down the most were those primarily demanded by foreign markets: old cows and heavy steers (above 450 kg). Local consumers, on the contrary, prefer beef from younger and lighter cattle. However, price's downward trend upon the export ban was not meant to last. Successive relaxations of the ban and a still strong domestic and external demand faced a rigid production in the short-run that kept putting pressure on prices which still could not be brought down to pre-intervention levels (*Graph 2*).

3. Objectives

The purpose of this paper is to analyze whether the success of the government's controlling measures justifies the cost of the intervention and if, given the structure and dynamics of the beef cattle industry in Argentina, the measures taken were the most suitable ones to fight inflation. In order to do so, a model framework will be constructed and the relationships between the variables underpinning the sector will be quantitatively assessed. Further, simulations of different policy scenarios will be performed and alternative courses of action will be suggested based on the findings. Finally, the impact of the measures in the economy and in the regional and worldwide markets will be evaluated.

4. Data and methodology

4.1. Data

Monthly data over January 1990 – November 2006 were used. Data were obtained from the Ministry of Economy and Production of Argentina, the National Institute of Statistics and Censuses and various national organizations related to the beef sector. All monetary variables are expressed in pesos (Argentina's currency). The Consumer Price Index was used as a deflator to account for changes in price levels. In the case of the export price of beef and the international price of corn, that were available in US dollars, they were converted into pesos by multiplying by an exchange rate.

4.2. Model specification

The model was specified according to the conceptual framework. In order to analyze the dynamics of the system, linear multiple regression analysis was carried out for the assessment of the behaviour of each of the endogenous variables, as defined in *Table 1*. Each of the equations was estimated separately by OLS. All dependent variables are taken in their logarithmic form, so coefficients can be interpreted as elasticities or semi-elasticities, according to the equation specification.

There are 5 behavioral equations in the model and 1 identity, as described in *Table 2*. The outline of the model with the directional relations among the variables is presented in *Graph 3*. The Gauss-Seidel algorithm was used to solve the model. To evaluate the forecast ability of the model, a dynamic test was performed. This type of test uses forecasts from previous periods, not actual historical data, when assigning values to the lagged endogenous variables in the model. Results seem to follow the general trend in the data.

4.3. Dynamics and behaviour of the endogenous variables

4.3.1. Supply (Production = Slaughter * Yield)

In the case of beef, because of the reproductive cycle, output cannot react immediately to the current market price. The number of heads producers are willing to offer for slaughtering is determined by the size of the herd they want to keep for future production. The general framework used for estimating producers' slaughtering (output) decisions is Nerlove's partial adjustment-adaptive expectations model (Hallam,1990:51,52) which assumes that there is some desired level of supply, S^* , dependent upon expected prices, P^e .

$$S_t^* = \alpha + \beta P_t^e$$

Actual supply adjusts towards the desired level according to the partial adjustment model

$$S_t - S_{t-1} = \delta(S_t^* - S_{t-1}) + u_t$$

and expectations are formed according to the adaptive expectations model

$$P_t^e - P_{t-1}^e = \gamma(P_{t-1} - P_{t-1}^e)$$

Combining these results we obtain,

$$S_t = \alpha\delta\gamma + [(1 - \delta) + (1 - \gamma)]S_{t-1} - (1 - \delta)(1 - \gamma)S_{t-2} + \beta\delta\gamma P_{t-1} + u_t - (1 - \gamma)u_{t-1}$$

which does not contain any unobservable variable and hence, can be estimated. Nonetheless, the estimating equation presents the problem that the disturbances are serially correlated and the explanatory variables include stochastic lagged dependent variables. A common assumption in practice has been that δ or γ are one. This eliminates S_{t-2} and yields a simple coefficient on S_{t-1} from which δ or γ , and hence α and β , can be estimated. Supposing that we set $\gamma = 1$, the model reduces to

$$S_t = \delta\alpha + (1 - \delta)S_{t-1} + \delta\beta P_{t-1} + u_t$$

The short-run price effect is measured by the compound coefficient on P_{t-1} , and the long-run effect by dividing that by one minus the coefficient on S_{t-1} .

There is a cyclical behaviour of the output explained by the fact that beef cattle are both *capital and consumption good*. Calves are generally weaned at 6 months of age and then fed until they reach the adequate weight to be sent to the market. Naturally, animals of different weights and ages are sent to the market, and when it is true it takes approximately 3 years to breed a heavy weight cow, the shortest period of time producers have to wait until an offspring can reach the market is between 18 and 20 months. This was corroborated by regressing production on farm price introducing a PDL of order 2 and up to 30 lags with an endpoint restriction. The largest weight of lagged farm price was indeed observed at month 18. The dynamics of the cycle is represented in **Graph 4**.

Producers can reduce (or increase) the future herd by increasing (or reducing) the proportion of current female cattle slaughtered. In this manner, the total amount of heads slaughtered (and thus, current output) is affected by changes in past levels of the female cattle slaughter proportion. Therefore, allowing for the biological cycle of cattle, prior 21 months female cattle slaughter proportion was included as a regressor in explaining current slaughtering.

When estimating yield, climate conditions were taken into account. The variable MASW (minimum authorized slaughter weight) was also included along with lagged yield values of 1 and 12 previous months, the latter in order to account for production seasonality.

Moreover, because in Argentina the beef cattle industry is mostly extensive, when crop prices increase in dollars, producers tend to shift much of the pastureland to crop production, moving their herds to less fertile grasslands and this affects negatively future beef yields. Thus, the international price of corn was introduced in the equation lagged 11 months, allowing for the annual production cycle of the corn.

4.3.2. Exports

Nerlove's partial adjustment-adaptive expectations model was also used for the estimation of this equation. Therefore, previous month of export price and quantity exported were included as regressors.

Historically, the domestic market has been the chief destination of production with exports absorbing between 13-15% of the total (**Graph 5**) except in 2001, when due to a Food and Mouth Disease outbreak, foreign markets imposed total bans on Argentine beef and exports shrunk considerably. The dummy variable DFMD in the equation accounts for this.

Exports increased 61% in volume in 2004 and an additional 22% in 2005. The dummy variable DFAVEXT refers to the increased international demand and to the extraordinary circumstances in the major producing and exporting countries that have been causing the latest shifts in worldwide beef trade.

Exports shrunk immediately after the ban was imposed. There have been partial relaxations of the ban since May 2006 which have allowed the gradual recovery of the export volumes but government control on exports remain to date. This is captured by a variable representing the authorized export capacity (AEC).

4.3.3. Prices

To show the effect of the export ban on consumer prices, the variable AEC was included in the consumer price equation. Logically, the variable farm price was included as another regressor in the estimation equation.

In the case of farm price, not only production, but also the export quantity and export price were included in the equation. Prices are logically affected by the output and, to a lesser extent, by foreign demand and international prices. These last two variables were also included in the equation in order to give quantitative support to the previous statement.

5. Results

The empirical estimates of the econometric model are presented in **Table 2**. The coefficient parameters are provided in each equation and the coefficient t-statistics are given in parenthesis under the corresponding estimate. It was not possible to make use of the Durbin-Watson d statistic to test for serial correlation due to the presence of lagged values of the regressand in the right hand side of the equations. Therefore, the Breusch-Godfrey (BG) test was applied. The results of the adjusted \bar{R}^2 are provided at the end of each estimated equation. The coefficients of the lagged dependent variables are statistically significant, positive and less than unity in all cases, suggesting that more than one month is required for the sector to fully adjust to the demand and supply interactions.

Overall, the structural performance of the model is good. Except for the slaughtered heads equation, all equations explain over 80% of the variation in the response variables. Likewise, all the dummy variables introduced in the model are statistically significant and have signs consistent with a priori expectations.

5.1. Elasticity and semi-elasticity estimates

5.1.1. Supply

The coefficient of adjustment of slaughtered heads is 0.79. The short-run elasticity of the 18 months previous farm price is 0.08 and the long-run elasticity is 0.10. The inelastic slaughter response on farm price, both in the short-run and long-run, reflects production rigidities and the fact that there is still room for further production expansion. As for the proportion of female cattle slaughtered 21 months earlier, the elasticity on total slaughtered heads is -0.14 in the short-run and -0.18 in the long-run. This inelastic response is explained to some extent because female cattle slaughter is part of the total slaughter. However, the purpose of the inclusion of the variable in the estimating equation was to show how former producers' decisions with respect to herd size (capital good) can also exert an impact on current slaughtering (consumption good). The low impact of the prohibition of lightweight slaughtering on yield, as shown by the coefficient of the variable MASW in the yield equation, accounts for the fact that output reaction can only be modest in the short-run due to the biological cycles and structural requirements to increase the weight of the animals.

5.1.2. Exports

The short-run elasticity of export price is 0.10 and, given a coefficient of adjustment of export quantity of 0.44, the long-run elasticity becomes 0.23. As expected, the long-run estimates are larger than short-run estimates because in the long-run producers have more time to adjust to external demand shocks. Nonetheless, export response on price is inelastic both in the short and long-run. This is due to the fact that the better part of the production is directed to the domestic market and therefore, the possibilities to respond to an increased foreign demand are constrained by the pressure of the domestic market demand and a productive sector incapable to react accordingly. The significant coefficient of the variable AEC is evidence of the damper effect the government measures have had on exports corroborated also by their rapid recovery as the ban was being relaxed.

5.1.3. Prices

The coefficient of adjustment of farm price is 0.06. Both export price and export quantity's long-run elasticities are larger than the short-run elasticities, as expected, both inelastic in the short and long-run. As for the response on production, farm prices are inelastic in the short-run (-0.16) but highly elastic in the long-run (-2.67), indicating that efforts oriented towards increasing production would be more fruitful when attempting to fight inflation.

The consumer price coefficient of adjustment is 0.09. The response on farm price is inelastic, both in the short-run (0.04) as well as in the long-run (0.44), corroborating what it is observed in practice that consumer prices follow farm prices but present fewer variations. The insignificant coefficient of the variable AEC in the consumer price equation accounts for the fact that the decline in prices immediately after exports were banned was due to the natural reaction of the market upon an increased supply but not because the country's export capability is the main responsible for domestic price levels

5.2. Simulation of production and trade liberalization

For the purpose of policy analysis, the estimated model was used to simulate the impact of the following scenarios until December 2008:

- Baseline: continuity of the current degree of government intervention.
- Scenario 1: absence of government intervention.

- Scenario 2: immediate liberalization of slaughter weight and exports from Dec 2006.

Simulation results from Nov 2005 (first month of government control) are presented in **Graph 6**. Over the 25-month simulation scenarios contemplated it was assumed that the strong domestic demand and the favorable external conditions would continue and that no animal-health related issues that may affect exports negatively will occur in the country during the forecasted period.

5.2.1. Supply

In the baseline as well as in the two scenarios, production shows a clear upward trend and larger monthly averages than those historically registered, the baseline presenting the largest. In the case of the baseline, this is explained by higher monthly yields due to the continuity of the lightweight slaughter restriction. In the case of the two scenarios, the increase in production is the result of an increase in the quantity of heads slaughtered during the second half of the forecast, induced by higher farm prices. These behaviors being compatible with the dynamics of the model previously described.

In all three forecasts, yields present the typical cyclical behaviour but only show a moderate upward trend and monthly averages higher than those historically registered when the lightweight slaughter restrictions are pursued, as expected. The immediate liberalization produces a gradual decrease in yields, with monthly averages resembling those of the absence of restrictions scenario and those historically registered, also as expected.

5.2.2. Exports

Not surprisingly, forecast result in exports reaching record levels when the government does not interfere with market forces. Forecasts further suggest that exports would increase sharply upon the country returning to its full export capacity. On the other hand, it seems that the persistence of the restrictions would result into export levels resembling those historically exported, totally disregarding the current favorable external conditions.

5.2.3. Prices

Either in the absence of government control or upon the immediate liberalization of exports and slaughter weight, forecasted prices are higher than if the government intervention is pursued, farm prices showing larger percentage increases than consumer prices when compared to the baseline, as anticipated. Prices in both scenarios show an upward trend at the beginning of the simulation but enter a downward trend by the end of the forecasted period. Only baseline prices present a constant downward trend since March 2006 when exports were stopped. In the short-run, the scenario of an immediate liberalization yields lower prices than those obtained in the absence of any government intervention but these two seem to converge by the end of the forecasted period.

5.3. Policy implications

Forecast results confirm that despite the damper effect on prices was not felt until exports were stopped, this fall was the natural response to an immediate allocation of additional quantities to the local market, not because increased exports were the main responsible for the rise in prices in the first place, but production constraints:

- Even in a scenario of absence of restrictions, with exports immediately reaching and stabilizing at record levels absorbing over 30% of the monthly production (25% more than before the export ban), prices revert the initial climb and show a downward trend during the second half of the forecasted period. Only production

shows a constant upward trend since the beginning of the forecast which explains the later fall in prices. This behaviour shows that a situation of increased production, record export levels and decreasing prices is achievable.

- Despite the higher export levels in the absence of restrictions scenario than those upon the immediate liberalization, prices tend to converge by the end of the forecast which can only be explained by production in the former scenario surpassing that of the latter.

Simulation also allows affirming that lightweight slaughter restrictions have a moderate impact on yields but their ability to influence prices in the short-run is not significant. This can be proved by the following:

- a) Yields in a scenario of absence of restrictions differ from those of the baseline from the very first month the lightweight slaughter prohibition was announced. However, the difference in consumer prices is almost null until the export ban takes effect 5 months later. The government failed to consider that since beef cuts from younger and lighter cattle are the ones preferred by the Argentineans, the prohibition to slaughter lightweight cattle, if anything, was going to contribute to keep putting pressure on consumer prices not only in the short-run but also in the mid term due to the shortage of stock it generates when forcing producers to slaughter heavier animals.

Simulation outcomes also confirm that the export ban has been extremely harmful for the export sector and thus, for the economy of the country:

- a) In the absence of regulations exports reach unprecedented levels allowing Argentina taking advantage of the current excellent market conditions in which it was recovering its historic position of being one of the world's largest beef exporters. These advantageous conditions would be completely overlooked with the persistence of the ban resulting not only in loss of earnings for the country and a reduction of tax collection (beef exports are levied, in average, with a 15% export tax) but also in loss of ground in the highly competitive foreign markets and distrust among importing countries.

5.4. The impact of the measures in the worldwide markets

The impact the measures taken by the Argentine government clearly do not stay within the boundaries of the country but also affect worldwide trade and the country's relation with trade partners and competitor countries. In order to assess this impact, a look must be taken at the evolution of Argentina's beef exports over the last 5 years.

In 2001, due to an outbreak of Food and Mouth Disease (FMD), foreign markets imposed total bans on Argentine beef and exports reached their lowest level since 1970. The **reopening of markets** was achieved in 2002, which, along with a **favorable exchange rate**, contributed to the rebound of exports to its historical levels.

However, major beef producing and exporting countries have been facing adverse situations since 2004, generating exceptional opportunities for competitor countries. In 2005 Argentina's exports reached the highest levels of the last three decades. The structural changes that the beef worldwide markets and trade flows have been undergoing (**Table 3 and Graph 7**) can be summarized as follows:

After ranking second until 2003, due to BSE-related import restrictions from its major trading partners, the **United States** fell to the ninth overall beef exporter in 2004 and have remained far below the first five exporting countries since then. Likewise, **Canada's** beef has been subjected to import restrictions since the first BSE outbreak in 2003. Despite the fact that Argentina does not compete directly with the United States or Canada in its main

destination markets (hormone-related restrictions limit the amount of U.S. beef that can be exported to the EU), the absence in the international trade of two of the major suppliers together with an increased worldwide demand, boosted the opportunities in the foreign markets for other producing countries.

The **EU** became a net importer in 2003. The trade deficits it has been facing since then are the result of a shift in the policy to decouple support payments under the Common Agricultural Policy (CAP) reform. Shortcomings increased EU's prices which were unable to compete with beef coming from South America (mainly from Brazil and Argentina). The EU is currently the largest export destination in terms of value for Argentina because of the significant share of a high quality/high value beef quota Argentina has been awarded for the past 10 years. The **Hilton Quota** is an annual quota applied to high quality beef imported by the EU. Since 1995 the quota granted to Argentina has been 28,000 tons (almost 50% of the total quota). The Hilton cuts were not reached by the export ban and the EU also imports from Argentina large volumes of out of the quota beef. After the ban, consumer prices in Germany, the main EU destination for Argentine beef, increased 50%.

Until 2002 the **Russian Federation** used to satisfy its beef import requirements mostly from Ukraine and Germany. In 2003, Ukraine began to have production problems and the EU run short on export surpluses. As a result, The Russian Federation was forced to look to South America's largest producers: Brazil and Argentina. Currently it is the largest market in terms of volume for Argentina. After Argentina's self-imposed restriction on exports, the Russian Federation increased its beef imports from the rest of the Mercosur members.

5.6. The Mercosur region

Mercosur members (Argentina, Brazil, Paraguay and Uruguay) have also been taking advantage of the latest shifts in global trade, consolidating their positioning in the worldwide markets: the Region accounted for almost 19% of the total global beef trade in 2001 jumping to over 46% in 2006. In the case of Argentina, its worldwide share grew from merely 3% in 2001 to almost 11% in 2005, decreasing to 8% in 2006 (**Table 3**).

With respect to 2005, in 2006 Mercosur countries reduced their exports 1.4% in volume but increased 15.5% in value as a consequence of the higher international prices. Despite Argentina being the second largest beef exporter in the Mercosur and the third world's largest exporter, the increase in exports from the rest of the Mercosur members in 2006 (consolidating their presence particularly in Chile and the Russian Federation) somehow offset the absence of Argentina's beef in the international markets (**Table 4**).

Even when it is true that the quality of the Argentinean beef is highly valued in the international markets, the aforementioned shifts in the intra-regional trade should be read as a sign of warning to the Argentinean authorities when deciding to self-isolate the country's export sector since, as experienced, markets unattended by Argentina quickly find alternative sources of supply even within Argentina's neighbors.

6. Final Remarks

Hadn't the government intervened in the sector, beef prices would have been higher than what they were which, given the significant impact they have in the composition of the country's CPI, would have put additional burden on 2006 inflation levels. However, based on the degree of success the measures have had, the analysis allows concluding that the government intervention has been more successful in generating unrest among cattlemen and in damaging Argentina's positioning and reputation in the international markets than in effectively controlling inflation.

The lightweight cattle slaughter restriction was not going to be fully translated into lower domestic prices because in the short-run it generates a lack of the cuts that are mostly consumed by the population (from younger and lighter animals), while in the mid term it generates a shortage of stock, putting additional pressure on prices. Following, the export ban was not going to pursue the initial downward trend on prices firstly, because before the ban exports represented less than one-quarter of the total national product; secondly, because the cuts consumed domestically are essentially different from the ones demanded by the export markets; thirdly, because upon restricting exports, paradoxically, an even greater part of the production was going to be directed to the domestic market whose improved purchasing power was one of the main sources of inflation on prices. All in all, what the government did not see was that it was a structural problem (insufficient cattle stock to satisfy a growing domestic demand) what caused the raise on prices and, as such, it cannot be fought by taking circumstantial measures.

The government is still applying its controlling measures although the battle against inflation is not over since prices still remain higher than pre-intervention levels. A more sensible alternative would be the implementation of programs aimed to increase production (breeding and feeding efficiency) in an industry that is working below capacity. In this respect, several beef-related organizations in the country have developed and are currently working together with the government on a series of programs directed to increase cattle stocks.

The United States will slowly recover from its BSE-related incidents but it will surely target its efforts in regaining the lost Asian markets that have been taken by Australia and New Zealand. The decoupling of payments in the EU is expected to achieve 90% by 2012, implying that it is very unlikely that EU will revert its current situation as a net importer in the future. This, in turn, will force the Russian Federation to continue to be dependent on South American beef imports and it will also open opportunities in the Middle East and North African markets.

The future looks promising for Argentina. The solution the situation is calling for requires not only the change of the course of action of the government but the active participation of all members in the private sector as well.

7. References

- Argentine Beef Promotion Institute, Catholic University of Argentina (ed.) (2006). Guidelines for the Formulation of Scenarios for the market of bovine meat in Argentina. Buenos Aires, Argentina.
- Argentine Beef Promotion Institute, Catholic University of Argentina (2006). Argentine Beef Market: Situation and Perspectives Report: June 2006. Buenos Aires, Argentina.
- Argentine Beef Promotion Institute Website. Beef Production and Trade Statistics. www.ipcva.com.ar
- Center of Documentation and Information of the Ministry of Economy of the Argentine Republic Website. Regulations related to the beef sector. several. www.infoleg.gov.ar
- Gujarati, Damodar N. (ed.) (2003). Basic Econometrics – International Edition 2003. New York, USA: McGraw-Hill/Irwin.
- Hallam, David (ed.) (1990). Econometric Modelling of Agricultural Commodity Markets. London, UK: Routledge.
- International Monetary Fund - International Financial Statistics Website. Argentina's Exchange Rate. www.imf.org/external/data.htm

Liniers Livestock Market Website. Farm Price Statistics. www.mercadodeliniers.com.ar

Ministry of Economy and Production - Coordination of Cattle Markets - Direction of Agro-alimentary Markets Website. Beef Market News Fortnightly Report – several numbers. www.sagpya.mecon.gov.ar

Ministry of Economy and Production - Coordination of Cattle Markets - Direction of Agro-alimentary Markets Website. Beef Production and Trade Statistics. www.sagpya.mecon.gov.ar/new/0-0/programas/dma/index.php

Ministry of Economy and Production - Coordination of Cattle Markets - Direction of Agro-alimentary Markets Website. Beef Sector Indicators Monthly Report: several numbers. www.sagpya.mecon.gov.ar

National Institute of Statistics and Censuses Website. Macroeconomic Statistics of Argentina. www.indec.gov.ar

National Office of Farming Commercial Control Website. Beef Production and Trade Statistics. www.oncca.gov.ar

Steiger, Carlos (2006). Modern Beef Production in Brazil and Argentina. American Agricultural Economics Association: 2nd quarter 2006 – 21(2). Choices Magazine. 105-110.

United States Department of Agriculture - Foreign Agricultural Service Website. Production, Supply and Distribution Online: Beef and Veal Selected Countries Summary. www.fas.usda.gov

United States Department of Agriculture - Foreign Agricultural Service (2006). Argentina – Livestock and Products – Gain Reports Number: AR6009 and AR6029. USA.

World Organization for Animal Health Website. World Animal Health Situation. Geographical Distribution of Countries that reported BSE Confirmed Cases since 1989. www.oie.int/eng/en_index.htm

Tables

Table 1. Variables definition

Endogenous variables:

SLGHT : Slaughtered animals, heads.

YIELD: Yield, tons per head (carcass weight).

Q : Production, tons (carcass weight)

XQ : Export quantity, tons.

FP : Farm price, pesos/kg.

CP : Consumer price, pesos/kg.

Exogenous variables:

SLGHTFP : Proportion of female cattle slaughtered over total slaughtered heads, percentage.

RF : Average rainfall, Pampas and North-East Region, mm.

T : Average temperature, Pampas and North-East Region, °C.

CPI : Consumer Price index, chained series 1999=100.

EXCH : Exchange rate, pesos/US\$.

PCORN : International price of corn, pesos/ton.

MASW : Minimum authorized slaughter weight, kg/head.

AEC : Authorized export capacity, on a scale from 0 to 100, 100 = no restrictions.

XP : Export price, pesos/ton.

DFMD : Food and mouth disease dummy, 2001:03 ~ 2002:02 = 1 and 0 otherwise.

DFAVEXT : Favorable external conditions dummy, 2004:06 ~ 2006:09 = 1 and 0 otherwise.

Table 2. Empirical estimates**Slaughtered heads:** Sample (adjusted): 1991:10 2006:11

$$\begin{aligned} \log(SLGHT) = & 2.33 + 0.08 * \log\left(\frac{FP}{CPI}(-18)\right) - 0.14 * \log(SLGHTFP(-21)) \\ & (2.26) \quad (3.22) \quad (-2.04) \\ & + 0.21 * \log(SLGHT(-1)) + 0.27 * \log(SLGHT(-2)) \\ & \quad (2.95) \quad (3.90) \\ & + 0.15 * \log(SLGHT(-3)) + 0.18 * \log(SLGHT(-12)) \\ & \quad (2.17) \quad (3.49) \end{aligned}$$

$$\bar{R}^2 = 0.59$$

Yield: Sample (adjusted): 1991:01 2006:11

$$\begin{aligned} \log(YIELD) = & -0.13 - 0.004 * \log(RF) - 0.003 * \log(T) \\ & (-1.95) \quad (-3.33) \quad (-0.83) \\ & - 0.005 * \log\left(\frac{PCORN * EXCH}{CPI}(-11)\right) + 0.00004 * MASW \\ & \quad (2.11) \quad (2.36) \\ & + 0.81 * \log(YIELD(-1)) + 0.07 * \log(YIELD(-12)) \\ & \quad (19.37) \quad (1.85) \end{aligned}$$

$$\bar{R}^2 = 0.82$$

Production: (identity) $Q = SLGHT * YIELD$ **Export quantity:** Sample (adjusted): 1991:01 2006:11

$$\begin{aligned} \log(XQ) = & 1.58 + 0.10 * \log\left(\frac{XP * EXCH}{CPI}(-1)\right) + 0.01 * AEC + 0.56 * \log(XQ(-1)) \\ & (2.24) \quad (3.21) \quad (7.00) \quad (11.97) \\ & + 0.10 * \log(XQ(-12)) - 0.50 * DFMD + 0.18 * DFAVEXT \\ & \quad (2.63) \quad (-6.49) \quad (2.56) \end{aligned}$$

$$\bar{R}^2 = 0.84$$

Farm price: Sample (adjusted): 1990:02 2006:11

$$\begin{aligned} \log\left(\frac{FP}{CPI}\right) = & 1.55 - 0.16 * \log(Q) + 0.03 * \log(XQ) + 0.01 * \log\left(\frac{XP * EXCH}{CPI}\right) \\ & (2.48) \quad (-2.88) \quad (2.78) \quad (2.66) \\ & + 0.94 * \log\left(\frac{FP}{CPI}(-1)\right) \\ & \quad (51.12) \end{aligned}$$

$$\bar{R}^2 = 0.95$$

Consumer price: Sample (adjusted): 1990:02 2006:11

$$\begin{aligned} \log\left(\frac{CP}{CPI}\right) = & 0.08 + 0.04 * \log\left(\frac{FP}{CPI}\right) + 0.0004 * AEC + 0.91 * \log\left(\frac{CP}{CPI}(-1)\right) \\ & (1.74) \quad (3.76) \quad (1.59) \quad (33.57) \end{aligned}$$

$$\bar{R}^2 = 0.89$$

Table 3: Shifts in worldwide beef trade flows

Total Exports	2001	2002	2003	2004	2005	2006(p)	2007 Oct(f)
United States	1,029	1,110	1,142	209	317	523	680
Canada	575	609	383	557	551	455	440
Australia	1,399	1,366	1,264	1,394	1,413	1,420	1,495
New Zealand	496	486	558	606	589	540	570
Brazil	748	881	1,175	1,628	1,867	1,945	1,985
Argentina	169	348	386	623	762	560(n)	600
Uruguay	145	262	325	410	487	510	520
EU-25	502	485	388	358	255	200	200
India	370	417	439	499	627	750	800
Others	239	310	279	212	224	153	164
World Total	5,672	6,274	6,339	6,496	7,092	6,996	7,454

Source: USDA-FAS Livestock. Units: thousand of tons (cwe). *(p): preliminary, *(f): forecasted, *(n) national estimations.

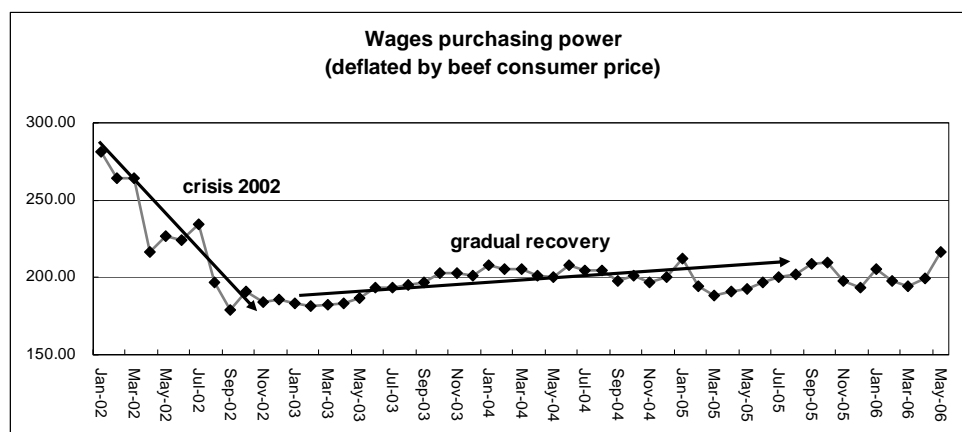
Table 4: Shifts in shares of Mercosur countries in worldwide beef exports

Total Exports	2005	2006 (p)	Net Variation	% Variation
Argentina	762	560	-202	-26.50%
Brazil	1,867	1,945	78	4.17%
Paraguay	193	248	55	28.50%
Uruguay	487	510	23	4.72%
Total Mercosur	3,309	3,263	-46	-1.40%
Total World	7,092	6,996	-96	-1.35%

Source: Ministry of Economy and Production, Argentina. Units: thousand of tons (cwe). *(p): preliminary.

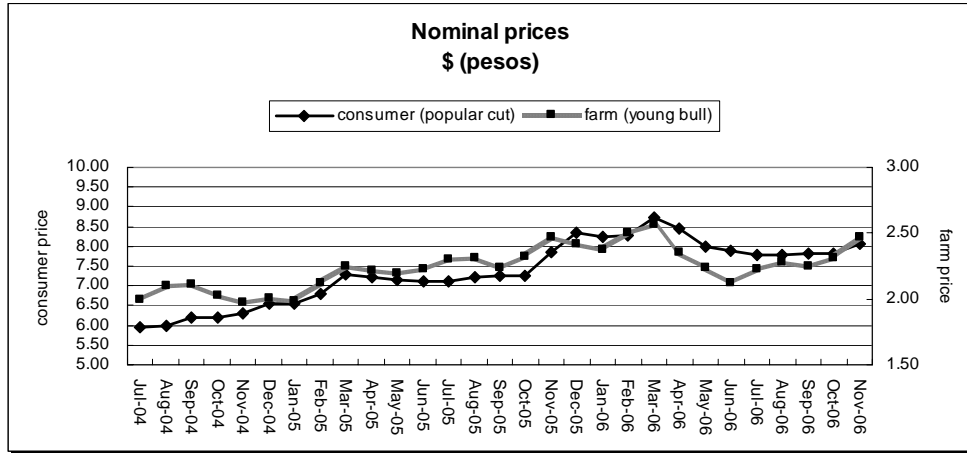
Graphs

Graph 1: Evolution of the purchasing power after the economic crisis of 2002



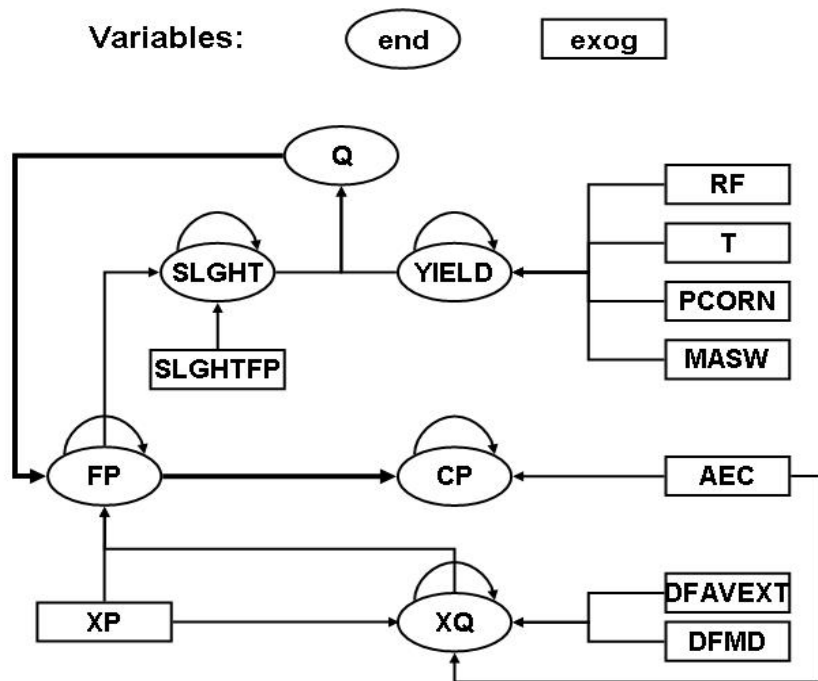
Source: National Institute of Statistics and Censuses; Ministry of Economy and Production, Argentina.

Graph 2: Evolution of nominal prices in Argentina from the second half of 2004



Source: Ministry of Economy and Production, Argentina.

Graph 3: Model framework

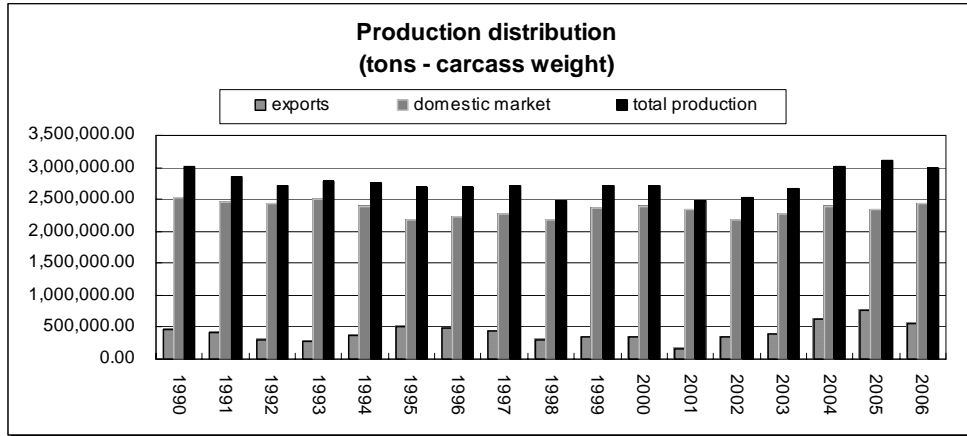


(The thicker line represents the variable exerting the strongest impact on prices).

Graph 4: Dynamics of the beef cycle

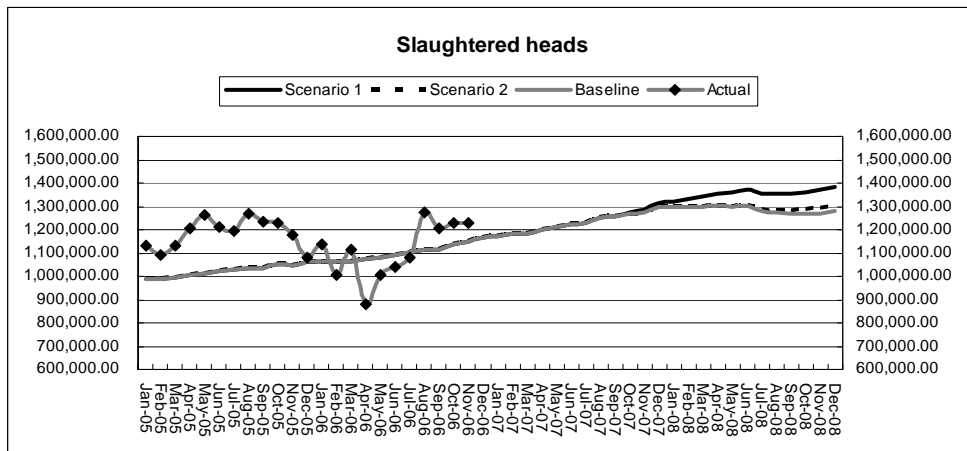
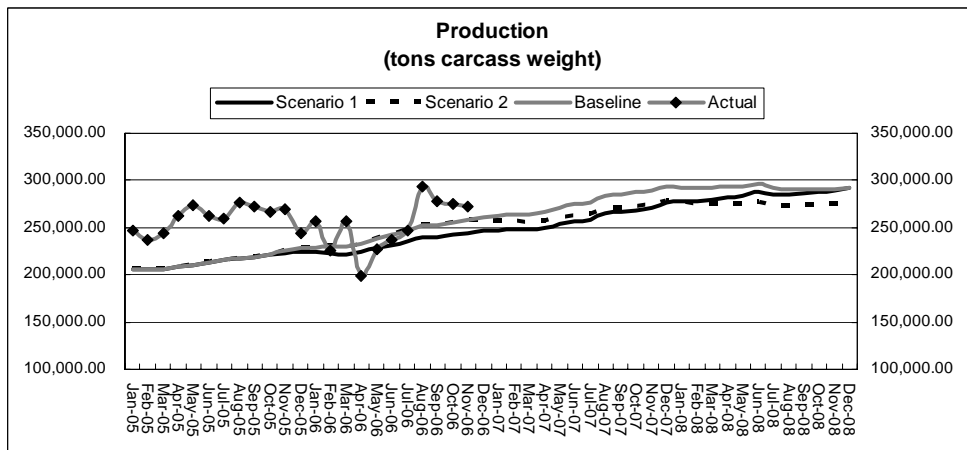


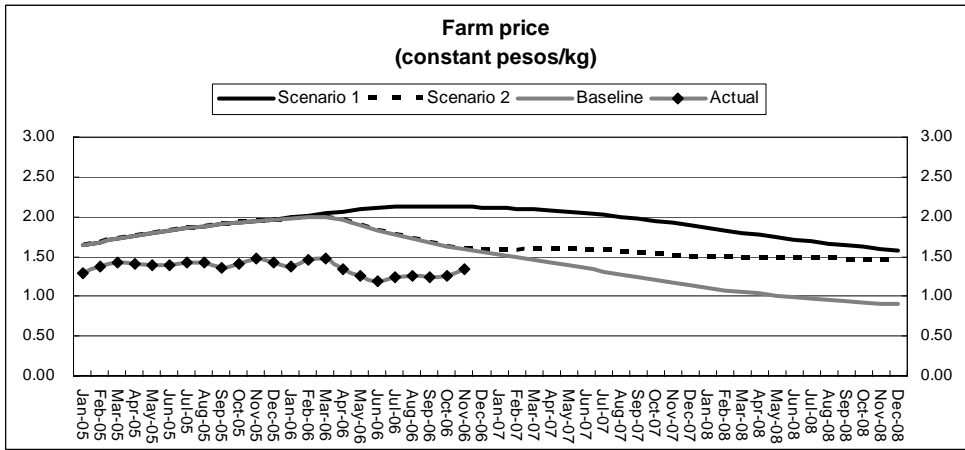
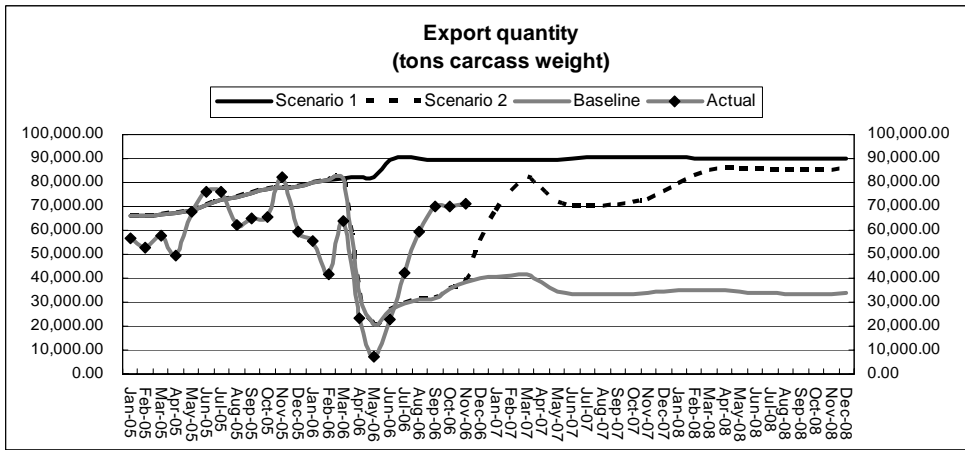
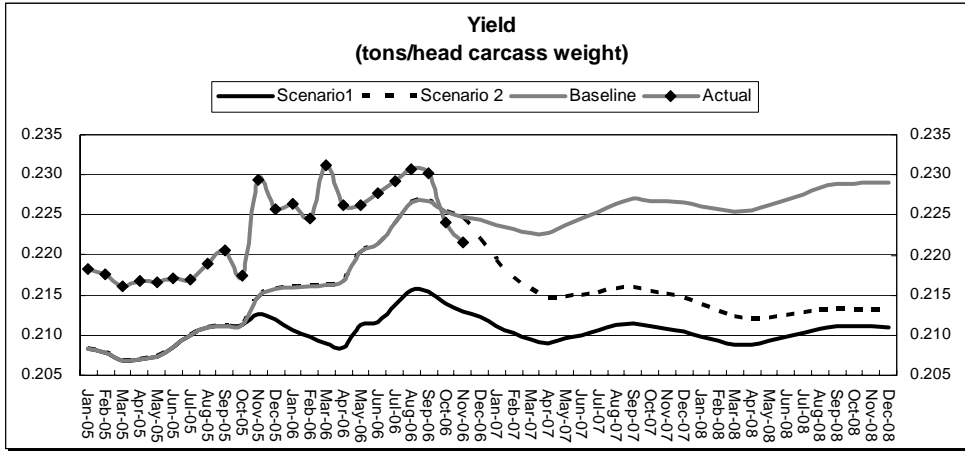
Graph 5: Distribution of production in Argentina from 1990 to 2006

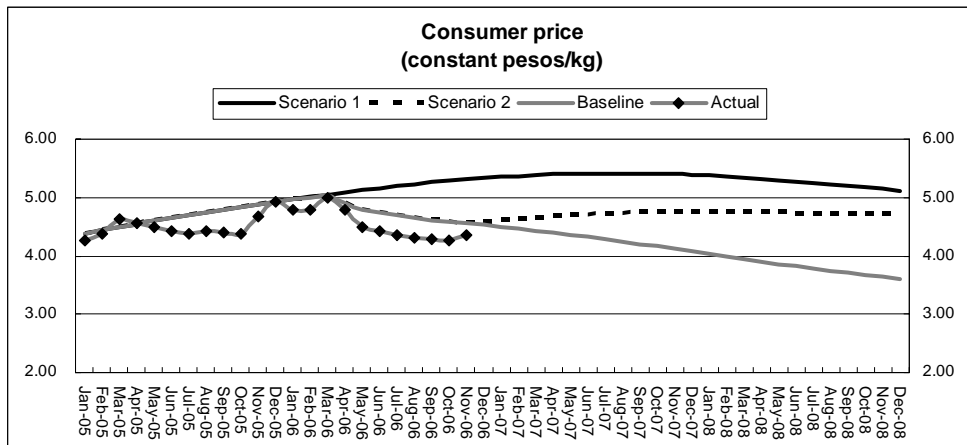


Source: Ministry of Economy and Production, Argentina. *data for Dec 2006: estimated

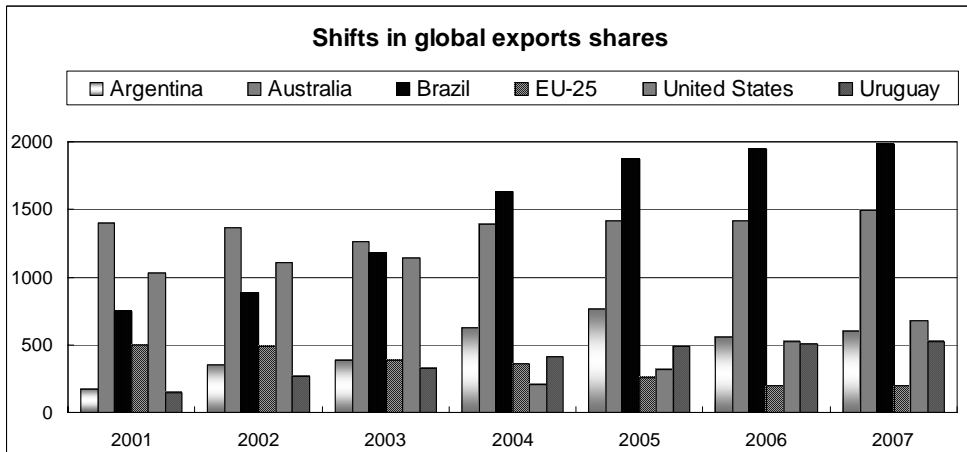
Graph 6: Simulation results







Graph 7: Shifts in global meet exports shares



Source: USDA-FAS, Livestock. Units: thousand of tons (cwe). 2006: preliminary. 2007: forecasted.

Contact information

Division of Natural Resource Economics
 Graduate School of Agriculture
 Kyoto University
 Kitashirakawa Oiwake-cho
 Sakyo-ku, Kyoto
 Japan 606-8502

Fax: +81-75-753-6191

E-mail: kagatume@kais.kyoto-u.ac.jp