# The Role of Geographical Labelling to Insert Extensive Cattle into Beef Marketing Channels. Evidence from Three Spanish Case Studies[1]

**Almudena Gómez Ramos[2]•, Isabel Bardají Azcárate•• and Ignacio Atance Muñiz•••**

## Abstract

Beef cattle sector is readapting to increasing requirements from the demand, which looks for a differentiated product, with constant quality, in a market beginning to be dominated by great distribution companies. Mechanisms to differentiate production are been implemented in this context, co-ordinating both production and marketing processes and integrating livestock farmers into the commercial system. Extensive cattle systems have an important weight in Spain because of their social and environmental values. However, their structure and level of profitability are obstacles for their adaptation to new market trends. This situation requires instruments able to insert the farmer in this adaptation process and to add value and differentiate products. These instruments can be promoted by institutions or the own private sector by mean of quality labels based on the geographical origin of the product. This paper aims to characterise the process of adaptation of Spanish extensive cattle systems through three case studies representing three different kind of extensive systems located in the Northern, Central and Southern mountains of the country. The development of a Logit model based on a survey to farmers has allowed to identify which are those variables with greater influence in the decision of integration into quality labels based on the geographical origin. The study conclude that mechanisms are not unique. Some factors like the institutional framework or regional market impose differences among mechanisms determining the final degree of success.

## Introduction

Beef production faces an important changing process in Spain affecting primary marketing processes but also having repercussions on production systems. Due to consumers' loss of confidence, specially intensified after the BSE crisis, the beef sector has been forced to renounce to marketing strategies based on quantity and prices and to redirect them those strategies towards consumers' demands. Consumers demand not only a guaranteed safety product but also with a constant and homogeneous quality. In this context Common Agricultural Policy (CAP) plays also an important role, due to the low profitability of extensive cattle farms, CAP direct payments and requirements increasingly influence production decisions.

Extensive systems are characterised by the use of natural pastures, low use of out-farm feed and low costs and productivity. Most extensive farms sale their calves 6-7 months of lactation (breeding farms)

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[2] Contact person, e-mail: almgomez@eco.etsia.upm.es.

\* Dpto. de Economía y CCSS Agrarias. Universidad Politécnica de Madrid.

\*\* Dpto. de Economía y CCSS Agrarias. Universidad Politécnica de Madrid.

\*\*\* Área de Economía Agraria. E.T.S.I. Agrarias de Palencia. Univ. de Valladolid.

to be fed in intensive fed-lots (feeding farms), while the rest feed their own calves (breeding & feeding farms). Extensive systems present severe structural problems: low dimension of farms, low qualification of farmers, high marketing and transport costs, problems to access markets, etc. In opposition, these systems conserve social and environmental values potentially able to constitute competitive advantages considering consumers' willingness to compensate the maintenance of these values through product prices.

Labels based on the geographical origin of products present at a same time potential to respond to consumers' quality demands, to impulse structural changes, organisation and co-ordination of extensive systems, and to capture the latent demand for social and environmental values.

This paper aims to characterise the process of adaptation of Spanish extensive cattle systems through three case studies representing three different kind of extensive systems located in the Northern, Central and Southern mountains of the country. The paper analyses the process of integration of farms into the differentiation instruments (labels) existing in each of the studied areas analysing those factors explaining farmers' decision of participation. It is also studied the importance of these factors in the success of each mechanism and their potential to be considered in the designing process of agricultural policy.

Methodology is based on econometric models (Logit models) used to explain farmers' decisions to participate or not in those labelling systems. Models have been specified for each case study. Results allow to analyse the role of geographical labels on each case, factors highly influencing on it and to prospect their future evolution.

## Main problems of extensive cattle systems

A great proportion of Spanish beef production is characterised by the physical separation of the breeding phase (mainly located in mountain areas where pastures are available) and the feeding phase, due to climatic limitations. Breeding phase presents an extremely atomised structure of farms and a high dependence of the land factor. Although it exists a tendency to feed calves (closing the productive cycle of the farm), breeding farms selling calves after lactation to be fed in intensive farms are still a majority. These systems remain far from vertical integration processes and other concentration frequent processes in the current agri-food system.

Atance et al. (2003) have identified the main problems and obstacles for the participation of cattle farms in marketing channels. Problems detected are: low profitability of farms, absence of integration and atomisation. Experts perceive low profitability as an increasing problem in the long term that can not be attribute to the absence of public aids. In opposition, integration and atomisation problems are viewed as decreasing problems in the long term. Other endogenous problems are the mentioned consumers' loss of confidence, the insufficient level of differentiation of products and the poor structures of the cattle sector. All of them are perceived as decreasing problems in the long term. On the contrary, experts do not currently concede importance to the possible suppression of reduction of CAP payments and to international competence but both increase in the long term.

All these problems detected affect directly to extensive systems. However, extensive systems are also receptors of consumers' appreciation towards beef as a quality product. Thus, Gilg and Battershill (1998) consider that production conditions, taste and wholesomeness are attributes highly valued by consumers that associate them to traditional production systems. In this sense, the increasing demand for

quality meat can be a satisfactory element to maintain those traditional systems, including extensive cattle systems, supporting rural communities and reducing their dependence from public payments.

According to this, Atance et al (2003) shows how successful strategies should be focussed on promoting those attributes of the product related to quality when differentiating it. Thus, competition against other products would fall on differentiation based on quality attributes, far away from price strategies (Fearne and Kuznezof, 1994). In consequence, strategies must point more attention to inform than to promote.

Differentiation requires not only a correct election of attributes but also to look for homogeneous products. In fact, homogeneity has been the key factor in the differentiation of other meat products (pork, chicken) and the consumers is not willing to renounce to it. Differentiation requires co-ordination among production and marketing phases, thus operating as a mechanism of integration of the production systems (Ward and Estrada, 2002). In the case of the beef sector, this co-ordination is frequently assured by the use of two different and alternative kinds of mechanisms: private brands and geographical labels.

Intensive systems present those elements most needed for their integration into marketing channels: lower problems of heterogeneity in their products, larger farms and a close relation with slaughterhouses and meat industries (both able to impulse private brands). Thus, private brands are the most adequate way to integrate intensive systems into modern marketing channels.

However, extensive systems must cope with serious inconveniences to join marketing channels due to the own structure of their farms and their organisation. First, farms are small and scarcely profitable. Their production would require greater concentration to access markets in favourable conditions. Second, there exists a lack of homogeneity in their products. Third, it is extremely frequent in these extensive systems the coexistence of breeding, breeding & feeding and feeding farms, making difficult to organise their production. Geographical labels present a great potential to solve these inconveniences, favouring at the same time the social and environmental values of extensive systems (Gómez Ramos and Iraizoz, 2003).

## Geographical labels as product differentiation mechanisms

The final objective of a quality label based on the geographical origin of production is to guarantee to consumers the existence of better product's attributes based mainly in its geographical origin. In the case of meat, these attributes are reinforced by breeds selection, fed and sanitary controls and traceability of products (Fernández Barcala et al., 2002).

Geographical labels can be promoted either by private agents or public agencies. In the case of private agents, geographical labels would operate similarly to private brands: both production and promotion fall on the same agents and external independent companies carry out those quality controls required. In opposition, public promoted brands present a clear separation between production (cattle farmers) and promotion (public agency owner of the label). In this case, there exist a public independent institution ("Consejo Regulador") leading the process. Tasks of the Consejo Regulador would include the elaboration of label's regulations, monitoring of quality controls, information to potential participating farmers and promotion to consumers.

Geographic Protected Indication (GPI) is the most used quality label used in the case of quality beef labels promoted by public agencies. GPI guarantees a differential quality based on the geographical origin of the basic product or the place where it has been transformed. In the case of beef, GPIs must be

considered explicitly a promotional instrument to increase consumption, but implicitly they support extensive systems facilitating their access to markets at competitive prices.

**Three geographical labelling case studies from Spanish extensive systems**

*Case studies selected*

To assess the role played by geographical labelling in extensive systems we have chosen three case studies representative of Spanish extensive cattle systems. First system, Navarra, is located at the North representing extensive systems from Atlantic mountain areas. Sierra of Guadarrama (Madrid) is located at the Central mountains and represent Spanish continental mountains systems. Valley of Pedroches (Andalucia), at the South is a good example of mountain 'dehesas'. Main characteristics of these systems are described bellow and summarised in Table 1:

− *Navarra*: High rainfall and cold winters characterise climatically this area. Cattle must be frequently supplemented with grain and fed during winter when it is kept under cowsheds while in summer natural pastures are abundant. Farms have a medium-low size, averaging 25 cows. Calves are usually fed at the own farm (breeding & feeding farms). Cattle farming is not combine with crops or other livestock activities, but a great proportion of cattle farms in this system has been reconverted from dairy farms.

− *Sierra of Guadarrama*: The area presents a continental and mountain climate, with cold and humid winters and hot and dry summers. Cattle require important fed supplementation both in winter (when it must be kept in stables) and summer (since pastures are frequently dried, scarcely productive from August). Farms average 60 cows (medium size) and present low livestock densities but there exist some located problems of over-intensification during summer. Breeding and breeding & farming farms are present in a similar proportion in the area.

− *Valley of Pedroches*: Under a Mediterranean and mountain climate, with mild and humid winters and hot and dry summers, cattle is not kept in stables but requires fed supplements in summer. Farms' size is medium-high (50-100 cows), livestock densities are low, but over-intensification is extreme in the most flat areas. Farms correspond to both breeding and feeding farms (breeding & feeding are not representatives). Cattle livestock is frequently combined with pigs. In farms combine pigs and cattle, pigs used to be the main activity.

**Table 1: Main agro-climatic characteristics of the case study areas**

|  | **Navarra** | **S. Guadarrama** | **V. Pedroches** |
|---|---|---|---|
| *Climate* | Atlantic | Continental | Medtierranean |
| *Farm size* | Small | Medium | Medium-large |
| *Extensification* | Medium | Medium-high | High |
| *Productive orientation* | Cattle | Cattle | Cattle and pig |

*Geographical labelling in the case study areas*

The Navarra's and Guadarrama's GPIs have been developed by the initiative of their respective regional governments, promoting the product at an institutional level. 705 farms are included in Navarra, representing 57 % of total farms in the region. In Guadarrama, 120 farms participate in the GPI representing 11 % of total farms in the area (Iraizoz, 2003).

Finally, the geographical label in the Valley of Pedroches is not a GPI but a geographical private brand promoted by 'COVAP' co-operative with 210 members involved. COVAP is a leader co-operative operating in the beef, pork and dairy sectors whose experience and commercial fame has allowed the impulse of the brand as a quality label protected by the regional Government. In his case, public impulse is reduced to the authorisation to use a label officially recognised, while promotion and obviously commercialisation fall only on the co-operative owner of the brand. The members of the co-operative are breeding farmers supplying calves to be fed at the co-operative's feedlots. Price negotiations between farmers and co-operative are one of the key factors under this scheme.

The main marketing channel in this case is the processing sector, but in recent years COVAP has contacted some local supermarkets as an alternative channel. To use these alternative and more direct channels, the co-operative needs to increase production by building additional feedlots.

Table 2 below shows main requirements of the three geographical labels studied. The main differences observed is the requirement of calves' origin. Navarra and Madrid impose that calves must be born in the same region. This constitutes an important obstacle for the integration of feeding farms. As it can see there are no special controls in  the production process along the three cases. The private brand imposes some condition in the payment of products and the exclusivity of sales.

**Table 2: Main requirements of the three labels analysed**

| Requirement | IGP "Ternera de Guadarrama" | Quality Brand "Valle de los Pedroches" | IGP "Ternera de la Sierra de Guadarrama" |
|---|---|---|---|
| Age of the animals | Yes | Yes | Yes |
| Weight of the animals | Yes | Yes | Yes |
| Natural feed | Yes | Yes | Yes |
| Authoctonous origin of the calf | Yes | No | Yes |
| Control of the production process | No | No | No |
| Payment condition: price and time | No | Yes | No |
| Need of investment | No | No | No |
| Exclusivity agreement | No | Yes | No |

Navarra and Sierra of Guadarrama could be considered quite close models. Both cases are located in urban populated regions where the maintenance of livestock farming is considered strategic for the preservation of rural communities and environment. Atomisation and low profitability make extremely difficult for farms in these areas to promote mechanisms to increase added value from livestock activities. The institutional response from public agencies has been the promotion of geographical labels under the figure of GPIs.

However, the development of the GPIs differs among both cases. Associative is well rooted in Navarra where a great part of cattle farmers are members of a co-operative. The existence of the co-operative allows supply concentration and better marketing, improving producers position along the marketing chains. Since the existence of the GPI reinforce these advantages, the own co-operative has also promoted it collaborating with the regional Government. Thus, farmers integration into the GPI, with the subsequent improvement in their position along marketing channels, has been facilitated by the double promotional functions developed by the regional Government and the co-operative.

In opposition, there is not an 'associative spirit' among Guadarrama farmers thus information to farmers about the GPI must be developed alone by the regional Administration, mainly through the work of the rural agricultural offices. As a result, farmers integration in the GPI varies along the potential area depending of factor such as the kind of farms and the own impulse given to the GPI promotion by each territorial office. Integration must be so qualified as more spontaneous than in the case of Navarra deriving in some troubles to adjust supply (breeding farms) and demand of calves (breeding & feeding and feeding farms).

Additionally, the horizontal integration through a co-operative explains also some of the marketing differences among Navarra and Madrid. Navarra must be considered better integrated into marketing channels. Thus, the presence of the mentioned co-operative in the Navarra GPI, does not only undertake promotional tasks but also participates actively in marketing duties, negotiating with supermarkets and other retailers chains. This situation allows farmers integrated in the GPI to receive higher prices for their products.

In the case of Guadarrama, marketing is still an individual and atomised activity. Each farmer must assume this task usually conducing to local sales to butchers located in rural areas. Due to atomisation only the larger feeding farms (most of them out of the GPI) can supply to supermarkets. Consequently, Guadarrama must be considered standing some step below Navarra in the process aimed to insert extensive systems into modern marketing channels.

*Logit models results*

Quantitative comparative analyses of the three case studies have been developed using Logit models. In this case, the Logit models analyse the influence of qualitative and quantitative variables in the decision of participating or not into the geographical labels. The models allow establishing relations between specific characteristics of farms and their probability to be integrated into the labelling schemes.

Models have been developed from 229 questionnaires to farmers. 73 questionnaires correspond to Navarra, 58 from farmers participating in the GPI and 15 from not participating farmers. 102 questionnaires were carried out in Madrid (55 participating and 47 not) and the rest 54 correspond to the Valley of Pedroches (25 participating and 29 not).

Variables selected in each case study can be classified as farmer's variables (age, studies, dedication succession), farm's variables (size, type) and marketing management's variables (buyers, attitude towards prices, investments, etc.). Table 3 shows the explanatory variables used in the models.

**Table 3: Summary of explanatory variables used in the Logit models**

*Farmer's variables*

- **Age:** Continuous variable expressing farmer's age.
- **Training:** 1: no studies or primary studies; 2: second or high studies.
- **Dedication:** 1 full time; 2: partial time.
- **Succession :** 1: succession in the farm is guaranteed , 0: not

*Farm's variables*

- **Type:** 1: breeding & feeding; 0: breeding or feeding
- **Size:** Continuous variable expressing number of cows.
- **Density:** Continuous variable (livestock units/acreage)
- **Area:** 1: near to the area of GPI influence, 0: not near to the area of IGP influence.
- **Hired land:** 1: yes 0: no.

*Marketing management's variables*
- **Prices**: 1: preference for a good price, 2: preference for sure prince.
- **Sales**: 1: preference for assuring sales by exclusivity agreement 2: preference for diversifying sales.
- **Quality:** 1: perceiving the quality as a mean of protection against market crisis , 2: perceiving the quality as guarantee to consumers .
- **Investment** : 0: no one , 1: < 6000 €, 2: 6-18000 €, 3: 18-30000 €,  4: > 30000 €
- **Financial** :  1: by own resources , 2: borrowed
- **Marketing**: 1: sale to the great distribution channels, 2: sale to butcher, 3: sale to a co-operative, 4: sale to dealer, 5: sale to slaughterhouses, 6: sale to feed farms.

Table 4 summarises models' results, indicating the signification rate for each of the explanatory variables. Percentage of correct predictions of the models range from 77% to 89% suggesting good models fit.

**Table 4: Signification rate for each of the explanatory variables for three IGP considered. (t-value in parethesis)**

| C.F. De Navarra "Ternera de Navarra" | | Valle de Los Pedroches "Covap | | Sierra de Guadarrama "Ternera de La Sierra de Guadarrama" | |
|---|---|---|---|---|---|
| Age | -0.0719 (-1.0545) | Age | 0.0366 (0.8179) | Age | 0.0221 (0.2506) |
| Training | -0.5125 (-0.3673) | Training | -0.5803* (-1.2247) | Training | 0.6987* (1.3289) |
| Dedication | 2.5769** (2.1710) | Dedication | 0.2542 (0.2759) | Dedication | -0.1142 (0.1350) |
| Succession | 3.7444** (2.3378) | Succession | -1.5654* (1.2127) | Succession | -0.2832 (-0.4960) |
| Type | 2.6750** (2.0400) | Type | -1.5822*** (-1.9926) | Type | 0.5275* (1.0632) |
| Size | 2.5990*** (2.5135) | Size | -0.0057 (0.3403) | Size | 0.0084** (1.6631) |
| Price | 0.34961 (0.39224) | Price | -0.6924 (-0.5770) | Price | 2.1770*** (2.2777) |
| Sales | -0.60506 (-0.6078) | Sales | 0.5863 (0.6036) | Sales | -1.0977* (-1.4438) |
| Quality | 0.8652 (1.5171)* | Quality | 0.6869 (0.6738) | Quality | -0.3719 (-0.5125) |
| Investment | -0.1813 (-0.3760) | Investment | -0.0946 (-0.2199) | Investment | -0.0586 (-0.2192) |
| Financial | -0.0114 (-0.1283) | Financial | 0.8156 (0.8347) | Financial | 0.4402 (0.3816) |
| Marketing | -1.2342*** (-2.5004) | Marketing | 0.2030 (0.5955) | Marketing | 1.2294* (1.3872) |
| | | Hired Land | 1.9596** (1.5660) | Density | -1.8465** (2.4126) |
| | | | | Area | -2.6762*** (-4.3244) |
| **% of right predictions** | **89,04** | **% of right predictions** | **77.2** | **% of right predictions** | **82.6** |

*,**,*** Significant at  10, 5 and 1% confidence level

Results from the Navarra's model show how the greater probability to participate in the GPI would correspond to larger farms selling their products to those commercial agents closer to consumers (butchers, supermarket, etc.). Additionally, breeding & feeding farms, partial-time farmers, guaranteed

succession and perception of the label as a tool to give information to the consumer are also significant variables to explain farmers' integration in the GPI. According to these results it is possible to identify two kind of farms staying out of the differentiation mechanism: feeding farms and smaller farms. Feeding farms do not participate due to the scarce availability of calves for feeding, that should be born in Navarra to be allowed to participate in the GPI. In the case of smaller farms, they use to correspond to breeding farms, selling their calves to dealers or intensive feeding farms and without guaranteed succession. Most of these farms will probably disappear in the short and medium term, facilitating the increase of size and competitiveness of the remaining farms integrated in the GPI.

In the case of Sierra de Guadarrama, the probability of participation in the GPI is greater for breeding & feeding, large and low-density farms. Two additional variables must be highlighted: area and marketing. As it was commented before, farmers' integration into the Guadarrama GPI varies substantially among the territory covered by the instrument. As a consequence, the variable 'area' results very significant explaining how farms from the *Valle del Lozoya* and *Colmenar Viejo* areas would have greater tend to participate. Related to marketing, those farmers selling their products to commercial agents closer to consumers present also have a greater probability to participate in the GPI. Finally, farmer's education and attitude towards price risk would also contribute to explain participation.

For the Valley of Pedroches, farm and farmers characteristics are essential to explain participation in the label. The probability is greater for breeding farms, based on hired land and for training farmers. Those larger farms, devoted also to feed the calves stay out of the label, probably due to their own capacity to access markets.

In a comparative approach it is important to point the relevance of off-farm variables, both related to institutional but specially marketing issues to explain participation in geographical labelling systems. These variables would explain how farms with similar characteristics, located in areas such as Navarra and Madrid (not too different, as it was previously set out), would differ in their decisions of joining geographical labels. These off-farm variables would be closely connected with the role of regional Governments, the regional economic development level and the marketing trends in the region. On the contrary, the own development of each label and the mentioned external variables would affect decisively into their success and their effectiveness for reaching their final objective of integrating the extensive systems into marketing chains.

**Conclussions**

Extensive cattle systems have an important weight in Spain because of their social and environmental values. However, their structure and level of profitability are obstacles for their adaptation to new market trends. This situation requires instruments able to insert the farmer in this adaptation process and to add value and differentiate products. These instruments can be promoted by institutions or the own private sector by mean of quality labels based on the geographical origin of the product. Along this paper we have studied the role of these instruments through three case studies in Spain. From these case studies, three main conclusions must be pointed:

1. Mechanisms to insert farmers into modern marketing channels are not unique, even in the case of using a common figure such as a GPI. Indeed, some factors like the institutional framework or regional markets impose differences among mechanisms determining their final degree of success. Thus, two identical farms, with same characteristics can adopt different decisions in front of two different GPIs.

2. Participation rates in these instruments show their current role in the insertion of extensive farms into modern marketing channels. However, although accepting the importance of off-farm variables, models have shown also the existence of some kind of farms that remain out of these instruments. First, feeding farms due both to their problems to buy calves to feed within the territorial boundaries of each label and their usual direct access to markets. Second, smaller farms, a significant variable in Navarra and Guadarrama models, but not in Pedrches, probably due to the larger size of farms in this area. And third, those farms that sale their products to marketing agents (cattle dealers, intensive feeding farms) more distance from consumers, probably because they do not perceive the utility of these labels.

3. The existence of co-operatives or other market-oriented institutions in a geographical label, as it is the case of Navarra or Valley of Pedroches, contributes to its success. Their capacity to concentrate production and access marketing channels is an extra incentive for farmers to participate in the label. Indeed, the future of these labels is influenced significantly by their capacity to concentrate production in order to reach markets in a most favourable condition. In this sense, the Sierra of Guadarrama GPI would stay in a developing phase, requiring a higher level of internal structure of production to face future in better conditions.

Demand for each of the three labels also has a strong influence in their development. Navarra faces a demand formed by consumers that value majority the quality associated to the geographical origin of the product and accept a higher price. Furthermore, there exist a certain quantitative balance between production and demand.

In the case of Guadarrama, the GPI must face the major demand of the country. Paradoxically, this fact currently limits its potential of growth as far as promotional actions must be limited to avoid consumers unsatisfied. Moreover, GPI should access to supermarkets and other retailers chains to satisfy this large demand, something currently impossible under its restricted production. So, it seems necessary for the GPI to determine previously which are its production objectives in order to structure properly its marketing.

Finally, although the current demand for Valley of Pedroches' label is rather confined to the local production area, growth potential for this label is great because of the absence of restrictions imposed to the calves' origin. Indeed, without this restrictions imposed in the other two labels due to the own requirements of the figure of a GPI, the Pedroches quality brand could find potential participating farms in adjacent areas able to supply calves to be fed in the new feedlots that have been currently planned.

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