

# Vulnerability of family livestock farming on the Livramento-Rivera border of Brazil and Uruguay: Comparative analysis

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## Keywords

Cattle, family farm, risk factor, Brazil, Uruguay

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## Summary

Social, ecological, and economic sciences have all shown interest in studying the social group called family livestock farmers. The main characteristic of this group, which is present in the Pampa biome in Southern Brazil and Uruguay, is beef cattle production based on family work on small lands, expressing an autonomous way of life which is, however, highly dependent on strong relations with the physical environment and marked by risk aversion. In this study we made a comparative analysis of vulnerability factors of family livestock farming in Brazil and Uruguay. We also compared these social actors' perceptions of risks, and the strategies built to mitigate threats. A survey was thus carried out and included 16 family livestock farmers' interviews, eight in each country, near the cities of Santana do Livramento (Brazil) and Rivera (Uruguay). Although these cities are next to each other on each side of the border and thus present environmental similarities, we chose them because family farming was not subjected to the same political and economic conditions which might (or might not) have influenced farmers' perceptions and reactions. Results showed that livestock farmers were mainly affected by vulnerabilities arising from external elements such as the climate (e.g. droughts or harsh winters), but also from internal elements (lack of land access and successors). From the family livestock farmers' standpoint, the highest risks to their production systems and social system reproduction were more related to climate than to price and market variations.

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## ■ INTRODUCTION

Social, ecological, and economic sciences have all shown interest in studying the social group called family livestock farmers. This group, which exists in significant numbers in the Pampa biome in Brazil and Uruguay, is characterized by the production of beef cattle based predominantly on family work in small areas, expressing an autonomous way of life marked by risk aversion and dependent on strong relations with the physical environment. This relation is through the appropriation of nature, with typical elements of the agricultural premodernization period, using primarily energy from nature, with a low degree of manipulation of environmental elements and changes in the landscape.

In general, family livestock farming derives from the dispute for agricultural space with activities that use industrial inputs, industrial models of production, processing and distribution, i.e. crop or livestock production able to provide larger levels of intensification. As a

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result, historically family livestock farming occupied marginal areas that, besides having little interest for capitalism, required innovative approaches, both technological and organizational, to fulfill its productive potential. This situation has been keeping this group with little relation to the agricultural modernization and access to markets, but has been providing an important degree of autonomy, responsible for its own sociocultural and economic survival.

The strategies of social reproduction of family livestock farming may be under threat from a number of factors including the continued lack of awareness of the institutions responsible for generating appropriate innovations to this complex reality, coupled with cultural traits that hinder more advanced levels of social organization, besides the lack of specific public policies for family livestock farming, the rearrangements of agrarian capitalism – which rediscovers the potential of marginalized areas –, drift from the land especially by young people and women, as well as phenomena like climate changes.

The aim of this paper was to make a comparative evaluation on the aspects that cause vulnerability of family livestock farming in the border region between Brazil and Uruguay, as well as these social actors' perceptions on the risks and strategies forged to mitigate the threats.

#### ■ BRIEF REVIEW ON VULNERABILITY

In the context of processes of socioeconomic and environmental changes that have been perceived in contemporary societies, the term vulnerability has emerged as an important heuristic tool for the analysis of events of different nature, intensity and consequences. In Latin America, a general analysis on the overview of rurality shows that since the 1990s there has been an intensification of social inequalities, reflected in the increase of social exclusion and rural poverty (Schejtman and Berdegue, 2003), increase of tensions and conflicts in the countryside (Kay, 2007), and expansion of environmental problems caused by rampant actions toward the appropriation and use of natural resources for the service of the capitalist economy (Leff, 2000). These are the most visible consequences of a modern society that is in a state of crisis and increasingly 'manufactures' uncertainties (Giddens, 1991).

In this sense, the notion of uncertainty becomes a key element to understand the new socio-spatial arrangements, and vulnerability constitutes a promising element to understand the present uncertainty under different spatial and temporal dynamics (Marandola and Hogan, 2006).

The concept of vulnerability takes a polysemic meaning in the literature even with no conceptual consensus (Gunther and Hartgen, 2009); it usually encompasses the concepts of exposure to risks, uncertainty and the inability to recover (resilience) when facing these situations. For Chambers (2006)\* vulnerability refers to the exposure to contingencies and stress, and the difficulty to deal with them. From this, the author mentions that vulnerability can be understood through two overlapping sides, the external (exogenous) that arises from situations that cause shock, stress or risk, and the internal (endogenous) which is the ability to react to impacting external situations.

This approach on vulnerability has become a sort of basic reference for the conduct of works in recent years that deal with the issue of social vulnerability within the social sciences and has also made possible concrete proposals for action in different

international institutions. In this sense, social vulnerability takes into account the insecurity and exposure to risks and disruptions caused by events or economic changes considering at the same time resource availability and strategies that the families adopt to cope with the impacts that affect them (Alves et al., 2008).

In agreement with De Sherbinin et al. (2007), in social sciences vulnerability has been considered the result of three main factors: the degree of risk exposure, the susceptibility to risk and the adaptive capacity (resilience) before risk materialization. In this regard, the situation of higher vulnerability would occur for those people or social groups that in the midst of a dangerous situation have a lesser ability to recover (Moser, 1998). For Sen (2001) vulnerability combines a situation that involves the notion of basic capabilities of individuals from exposure to a risk situation since in these cases the individuals are worsening their well-being situation (deprivation of their freedom). Thus, the higher degree of vulnerability (risk exposure) is proportional to the increase in poverty.

According to Bole et al. [quoted by Mayorga and Mayorga (2011)] the most vulnerable individuals, groups, classes and regions are those who find themselves with a considerable level of exposure to disturbances and have limited mitigation ability, suffering more from the impacts of socioeconomic or environmental crises and, finally, with reduced ability to recover after a crisis.

Part of these findings about the predictability of the future in terms of the past lies in the fact that some strategies adopted by individuals to overcome disturbances are derived from experiences lived in the past (Chambers, 2006). Knowing these strategies is a key step to make predictions about the possible reactions to be adopted by individuals. Ribot (1995), in a study carried out in semiarid regions in the tropics, notes that the identification of strategies adopted by inlanders to face drought supplies important elements to develop policies that will reduce vulnerability, as it is necessary to know the means of problem solving (adopted strategies) that the individuals have, that is, it should focus primarily on how they perceive their own vulnerability.

Chambers (2006) points out that the vision focused on experts' opinion only may not reflect reality because the needs of the poorest has been formulated in parts from models designed by the wealthier dominant group. For this author it is necessary to know what they (whether individuals or groups) perceive as vulnerability and capture the symbolic factors involving needs and priorities.

Considering the nuances between the two – theoretical and ontological – perspectives present in social and natural sciences on the notion of vulnerability, it is important to recognize that both perspectives offer major elements to ponder the questions relative to vulnerability. For this reason, to make a broader theoretical-ontological picture incorporating the different approaches and perspectives around the issue of vulnerability constitutes a challenge for the advancement of knowledge.

This means assuming that the phenomena involving situations of vulnerability do not occur in isolation in separate social and natural contexts. The risks associated with vulnerability occur in specific contexts but both the social and natural dimensions are interconnected. In this sense Marandola and Hogan (2006) offer important elements for reflection. They state that when an investigation on vulnerability is undertaken, it is fundamental to question: "Vulnerability to what?" In other words vulnerability will always be defined from a hazard or set of them at some specific natural and social context.

Based on this theoretical framework, this paper seeks to show what the family livestock farmers along the border region between

\* The original work is from 1989, Chambers R., Vulnerability, coping and policy, *IDS Bull.*, 20 (2).

Uruguay and Brazil perceive as vulnerabilities, the risks they face in the context of socioeconomic and environmental changes, and their capacity to adapt/react to these risks considering the differences between the two countries.

■ METHODS

**Research context**

The study was conducted in Gaucho Pampa, on the border between Brazil and Uruguay. We interviewed sixteen livestock farmers, eight near the city of Santana do Livramento (Brazil) and eight in Rivera Department (Uruguay). In Brazil, the survey was conducted in the town of Cerro da Arvore, and in Uruguay near Tranqueras, in the towns of Ataques and Valle del Lunarejo.

Santana do Livramento is located at 30° 53' 27" S and 55° 31' 58" W with an altitude of 208 meters. This is the same position for Rivera, as both zones constitute practically one location called the 'Integration Border', with a dry border that allows intense cultural, economic and social interconnection.

Santana do Livramento's main agricultural activity is livestock farming (beef and dairy cattle, and sheep), rice and fruit production representing a minor activity. The city has experienced a decline in the population (although mainly in the urban population) with high dropout rates (-9.18%) between 2000 and 2010. Rivera is the capital of the department of the same name in Uruguay where beef cattle and sheep husbandry predominates and, more recently, forestry (monoculture of eucalyptus and pine trees).

**Characteristics of family livestock farmers**

**Access to land**

Sixteen family livestock farmers were interviewed: eight in Brazil, where the farms covered between 30 and 230 ha with an average of 120 ha, and 71% of the farmers owned the land; and eight in Uruguay, where the farms covered between 31.5 and 572 ha with an average of 260 ha, and 81% of the farmers owned the land. In both countries land availability was a limiting factor for the farmers. In Brazil, the main strategy used to overcome this difficulty was to lease areas from neighboring farmers where their animals were moved to, paying monthly for each ('cattle per head'). In Uruguay, this strategy was not used because of the presence of forestry companies which raised land price and thus increased competition and reduced land availability for livestock farming. Most people interviewed (75% in Brazil and 50% in Uruguay) had access to land through inheritance with some later acquisitions. Although there was a quest for more land, the restrictions were greater in Uruguay, where 57% of interviewees kept their areas stable vs 37.5% in Brazil who extended their lands through leases.

**Cattle herd**

The cattle herd average of the family livestock farmers interviewed in Brazil was around 130 head and the main commercialized categories were calves and cull cows. In Uruguay, the cattle herd average per interviewed farmer was around 216 head and the main commercialized categories were also calves and cull cows.

**Families**

Most families comprised a couple and one child (50%) or only a couple (25%). In Brazil, in most of the studied cases, one child (or more than one) migrated to the city in search of alternatives. This configuration denotes a situation similar to that observed in other studies (Azevedo, 2010; Matte, 2010; Ribeiro, 2009). The predominant level of education of the interviewees in Brazil

was incomplete primary level. In Uruguay, education levels were higher, only 25% had primary education and 50% of the interviewees had a relative who had received technical courses.

**Experience in the activity**

The experience of the head of the family in livestock farming was significant in both countries, with an average of 42 years in Brazil and 46 years in Uruguay, which also might show aging of the farmers interviewed (although it could not be generalized to the entire population). Despite this similarity of age there was a major significant difference with regard to access to retirement pensions. In Brazil, 75% of interviewees had at least one retirement pension within the family, which significantly contributed to the support and social reproduction of the family. In Uruguay, the law obliges farmers to retire from farming when they claim their retirement pension. Thus, the Brazilian family farmer was able to rely on an important external income, contrarily to the Uruguayan farmer. In Uruguay we met some producers who had a family member who retired from urban activities and returned to live in the countryside. This was a notable difference between the two countries that contributed to an increased vulnerability of Uruguayan family livestock farmers and which also influenced their production ways because the income had to come entirely from farming.

■ RESULTS AND DISCUSSION

Interviewees identified some issues as their main vulnerabilities, both external and internal, assigning scores from 1 to 5 according to their perception of the importance of each factor (Table I). In general, both in Brazil and Uruguay the question of succession was regarded as one of the major internal vulnerabilities in the medium and long terms (Table I). Interviewees considered that this kind of situation had worsened in recent years as the sons and daughters left to study or work and did not return to the farms. In general, in both countries the vast majority of interviewed people intended to continue their livestock farming activity and preferred that their children also remained on the farm, especially to keep ownership of the land. About 62% of respondents assumed that some of their

**Table I**

Perception of family livestock farmers on the main vulnerabilities to which they are exposed

Variable	Brazil		Uruguay	
	Average*	SD	Average	SD
Difficulty in identifying potential successors	4.50	1.41	4.50	1.41
Mobility difficulties (roads in poor conditions)	4.38	1.40	1.00	0.00
Weather factors (drought and harsh winters)	4.25	1.48	5.00	0.00
Difficulty in hiring labor	3.88	2.10	4.50	1.41
Exchange rates, uncertainties in prices received	2.78	1.98	5.00	0.00
Input price	2.25	1.83	5.00	0.00
Cattle theft	3.63	1.77	3.86	1.85

SD: standard deviation

\* Calculated from a score of 1 (not important) to 5 (very important)

children would be interested in staying. The Brazilian livestock farmers pinned down the access to schools as a major constraint to motivate children and/or young people to stay in the countryside. The relatively long distances from schools combined with transportation difficulties were elements that made life in the countryside difficult. In Uruguay, the level of confidence expressed in livestock farming as a way to survive was much higher than in Brazil.

Table I also shows a similarity between the two countries in relation to cattle theft. Although most livestock farmers in Brazil had not been confronted with cattle theft in the last two years, they knew that it was a chronic problem that impacted livestock production in general. Uruguayan livestock farmers cited animal theft as one of the causes for the decrease in sheep breeding.

A similar perception of climate change issues was also shared by both countries. There was consensus among livestock farmers that weather events (especially droughts) constituted a major problem with regard to production. Thus, around 80% of the interviewees stated that they constantly faced difficulties caused by weather conditions and that they should from then on establish measures to deal with these situations.

Another similar characteristic to both countries related to the difficulty in hiring labor. In Brazil, although the activity was largely based on family labor, the near 'disappearance' of people who work in the field was striking, as stressed by a livestock farmer: "there are no more people in the field." In Uruguay, the difficulty in hiring labor initially related to the competition with intensive crops but today it is rather caused by forestry companies and saw-mills that attract much of the labor in the region. However, one major difference between the two countries concerned reciprocity, i.e. the exchange of services among neighbors without compensation. In Brazil this is a common practice and it helps surmount the lack of manpower, whereas in Uruguay it is not and it thus causes difficulties in some seasons.

Among the differences the Brazilians emphatically cited the poor road conditions that restricted movement, hampering thus cattle trade, services, and more generally commercialization possibilities. The Uruguayans on the other hand did not cite road conditions as an important factor because they considered them as well maintained (especially by forestry companies) and, with the heavy traffic of trucks (also from forestry companies), there was always the opportunity for a ride to the city.

Another difference between the family livestock farmers of both countries concerned commercialization issues. Although neither faced difficulties in accessing distribution channels, the Uruguayans gave more importance to vulnerability factors related to uncertainty over prices charged or prices paid than the Brazilians. The Uruguayans cited as uncertainties the variations in the price of cattle mainly caused by fluctuations in the exchange rate. Above all, they almost unanimously mentioned the high price of inputs. According to the Brazilians commercialization was difficult because of its small scale, lack of definition of breed standards and payment uncertainty. Furthermore, some Brazilians reported buying inputs in Uruguay because they were cheaper than in Brazil.

An analysis of family livestock farming vulnerability ought to include farmers' behavior, strategies, and how they react or would react when faced with a situation of uncertainty or crisis. Some works on family livestock farmers highlight their risk aversion and, among their objectives, tradition, land attachment and satisfaction to work in the field of livestock farming, not necessarily profit (Azevedo, 2010; Matte, 2010; Ribeiro, 2009). These studies

agree with the present research findings. When interviewed on their actions in a crisis situation, the farmers emphatically comment on three main strategies (Table II). The strategy the most often reported by farmers from Brazil and Uruguay was to reduce expenses and wait for the crisis to end. This was probably associated with the ways they managed production, as well as their approach to decision making. Risk aversion made livestock farmers find mechanisms to reduce costs without tinkering with the production system and agrarian structure. Indeed the sale of land or part of it was rather a non-option for this type of livestock farmer.

The Brazilians pointed out, as a second strategy in a crisis, the sale of animals regardless of the price of cattle; the Uruguayans did not mention it. Retirement pensions were identified as a buffer in times of crisis. It was noteworthy that in Brazilians' case they consisted in rural pensions, whereas in Uruguayans' case they consisted in urban pensions brought along by family members.

Although they considered it a difficult activity with high costs, in the event of surplus financial resources the Brazilians would acquire land (average 3.63) and improve housing conditions (average 3.25). Uruguayans would ignore land acquisition as the price of land had risen greatly in the areas because of investments by the forest industry. Thus, Uruguayans' investments aimed more at improving beef cattle breeds and feeding (average 3.86), as well as reinforcing structures and buying equipment, e.g. fences, sheds and tractors (average 3.86).

■ CONCLUSION

These results showed the existence of a group of livestock farmers on the border between Brazil and Uruguay presenting the general characteristics of family farming in small areas, who had very similar perceptions on some issues and some very different ones on others. The similar perceptions of the farmers from both countries on vulnerabilities they might face related to external factors such as the weather (especially droughts), as well as to internal factors such as the lack of successors and the difficulty to expand land by purchase or lease. The dissimilar perceptions on vulnerabilities were caused by differences in public policies (retirement and access to credit), infrastructure (roads) and market (exchange rate fluctuations) conditions. However, the family livestock farmers' perceptions of risks that threatened their production systems and family reproduction were more related to climate than to prices or markets.

Table II

Possible strategies of family livestock farmers facing a situation of crisis and/or vulnerability in 2011

Variable	Brazil		Uruguay	
	Average*	SD	Average	SD
Reduce expenses and expect the crisis to end	4.50	1.41	4.00	1.73
Commercialize cattle	4.25	1.49	1.00	0.00
Use money from retirement pensions	3.50	2.07	3.75	1.89

SD: standard deviation

\* Calculated from a score of 1 (not important) to 5 (very important)

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Résumé

**Waquil P.D., Neske M.Z., Ribeiro C.M., Schlick F.E., Andreatta T., Perleberg C., Borba M.F.S., Trindade J.P., Carriquiry R., Malaquin I., Saravia A., Gonzales M., Claudino L.S.D.** Vulnérabilité des éleveurs familiaux à la frontière entre Livramento et Rivera au Brésil et en Uruguay : analyse comparative

Le groupe social appelé les éleveurs familiaux a suscité l'intérêt des sciences sociales, économiques et environnementales. La principale caractéristique de ce groupe, présent dans le biome Pampa au sud du Brésil et en Uruguay, est la production basée sur le travail familial sur de petites parcelles, exprimant un mode de vie autonome, très dépendant toutefois de fortes relations avec le milieu naturel et marqué par l'aversion au risque. L'objectif de cet article a été de faire une analyse comparative des facteurs de vulnérabilité des éleveurs familiaux du sud du Brésil et d'Uruguay, ainsi que des perceptions de ces acteurs sociaux sur les risques et les stratégies mises en place pour atténuer les menaces. Une enquête a été menée dans le but de répondre à ces questions, à partir d'interviews de seize éleveurs familiaux, huit dans chaque pays, dans les villes de Santana do Livramento (Brésil) et Rivera (Uruguay). Le choix de ces communes a été lié au fait que, malgré leur proximité géographique de chaque côté de la frontière et leurs similitudes environnementales, l'élevage familial n'était pas soumis aux mêmes conditions politiques et économiques, ce qui pouvait ou non influencer leurs perceptions et leurs réactions. Les résultats ont montré que les éleveurs étaient principalement affectés par les vulnérabilités provenant de facteurs externes comme le climat (sécheresses ou hivers rudes, par exemple) mais aussi de facteurs internes (accès à la terre limitée, successeurs). Du point de vue des éleveurs familiaux, les plus grands risques pour leur système de production et leur mode de reproduction sociale étaient plutôt liés aux variations climatiques qu'aux facteurs de prix et de marchés.

**Mots-clés:** bovin, agriculture familiale, facteur de risque, Brésil, Uruguay

Resumen

**Waquil P.D., Neske M.Z., Ribeiro C.M., Schlick F.E., Andreatta T., Perleberg C., Borba M.F.S., Trindade J.P., Carriquiry R., Malaquin I., Saravia A., Gonzales M., Claudino L.S.D.** Vulnerabilidad de las explotaciones ganaderas familiares en la frontera de Livramento-Rivera entre Brasil y Uruguay: análisis comparativo

Las ciencias sociales, ecológicas y económicas han mostrado interés en estudiar el grupo social llamado explotaciones ganaderas familiares. La principal característica de este grupo, presente en el bioma de la Pampa en el sur de Brasil y Uruguay, es la producción de ganado de carne, basada en trabajo familiar en pequeñas extensiones de tierra, expresando una forma de vida autónoma, la cual es sin embargo, altamente dependiente de las fuertes relaciones con el medio ambiente físico y marcada por la aversión del riesgo. En el presente estudio realizamos un análisis comparativo de los factores de vulnerabilidad de las explotaciones ganaderas familiares en Brasil y Uruguay. Comparamos también la percepción del riesgo de estos actores sociales y las estrategias implementadas para mitigar las amenazas. Se llevó entonces a cabo una encuesta, que incluyó entrevistas en 16 establecimientos ganaderos familiares, ocho en cada país, cerca de las ciudades de Santana do Livramento (Brasil) y Rivera (Uruguay). Aunque estas ciudades están próximas una de la otra a cada lado de la frontera y por lo tanto presentan similitudes ambientales, las escogimos porque las fincas familiares no están sujetas a las mismas condiciones políticas y económicas, que podrían (o no) influenciar las percepciones y reacciones de los finqueros. Los resultados muestran que los finqueros ganaderos estaban principalmente afectados por vulnerabilidades originadas en elementos externos como el clima (ej: sequías o inviernos inclementes), pero también en elementos internos (falta de acceso a la tierra y sucesores). Desde el punto de vista de los finqueros ganaderos familiares, los mayores riesgos a sus sistemas de producción y a la reproducción social del sistema estaban más relacionados al clima que a las variaciones de precio o mercado.

**Palabras clave:** ganado bovino, explotación agrícola familiar, factor de riesgo, Brasil, Uruguay

