

# Performance of Rural Credit in the Municipalities of Rondônia, Brazilian Amazon

Carlos Alberto Paraguassú-Chaves<sup>1</sup>, Fabio Robson Casara Cavalcante<sup>2</sup>, Raimunda Lirineide de Brito<sup>3</sup>, Carla Dolezel Trindade<sup>4</sup>, Simão Aznar Filho<sup>5</sup>, Ana Maria Moraes da Fonseca Cavalcante<sup>6</sup>, Fabrício Moraes de Almeida<sup>7</sup>, Simão Dolezel Aznar<sup>8</sup>, Levi Pereira Granja de Souza<sup>9</sup>, Ricardo Guanabara<sup>10</sup>, Carlos Eugenio Pereira<sup>11</sup>

<sup>1</sup>PhD in Health Sciences - University of Brasília - UnB, Brazil; PhD in Science - University of Havana (Cuba); Post-Doctor in Health Sciences - UnB and Degli Studi D'Aquila University - IT. Full Professor at the University Institute of Rio de Janeiro - IURJ, Brazil. E-mail: [carlos.paraguassu@gmail.com](mailto:carlos.paraguassu@gmail.com)

<sup>2</sup>PhD in Sciences: Socio-environmental development - NAEA / UFPA. Associate professor, Federal University of Rondônia – UNIR. Leader of the Group of Studies and Research in Social and Environmental Sciences and Public Policies – GEPCAP.

<sup>3</sup>Degree in Environmental Management - Federal University of Rondônia, Brazil.

<sup>4</sup>PhD in Law - Universidad Nacional de Lomas de Zamora (Argentina). Post-doctorate - Università degli Studi di Messina (Italy). Full Professor at the University Institute of Rio de Janeiro - IURJ, Brazil

<sup>5</sup>PdD in Law - Universidad Nacional de Lomas de Zamora (Argentina). Post-doctorate - Università degli Studi di Messina (Italy). Full Professor at the University Institute of Rio de Janeiro - IURJ, Brazil

<sup>6</sup>Master in Agronomy - Federal University of Pernambuco (UFPE). Researcher of the Institute of Health Sciences and the Amazon environment - AICSA.

<sup>7</sup>PhD in Physics (UFC), with post-doctorate in Scientific Regional Development (DCR/CNPq). Researcher of the Doctoral and Master Program in Regional Development and Environment (PGDRA/UNIR). Leader of line 2 - Technological and Systemic Development, and Researcher of GEITEC — Federal University of Rondonia, Brazil. E-mail: [dr.fabriciomoraes001@gmail.com](mailto:dr.fabriciomoraes001@gmail.com)

<sup>8</sup>Graduated in Law. Master of Law Student, Specialist in Law. Professor at the University Institute of Rio de Janeiro, Brazil

<sup>9</sup>Master's Degree in Administration from Estácio de Sá University, Brazil. Professor at the University Institute of Rio de Janeiro, Brazil. Professor at the University Institute of Rio de Janeiro, Brazil

<sup>10</sup> PhD in Political Science from IUPERJ, Brazil. Professor at the University Institute of Rio de Janeiro, Brazil.

<sup>11</sup>Specialist in Education - UniverCidade. Graduated in Law – Gama Filho University. Professor at Faculdade Instituto Rio de Janeiro – FIURJ - Brazil

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**Keywords—** Investment, Rural Credit, Municipalities, Rondônia.

**Abstract—** In this work, objective issues stand out, such as the survey of the number of contracts granted for the agricultural activity in the years 2000 and 2010, classified as "costing" and "investment", and the survey of the volume of financial resources released for agricultural activity in 2000 and 2010, classified as "costing" and "investment" for the municipalities in the micro-region of Vilhena. Based on the institutional incentive of the Brazilian rural development policy (rural credit), granted to the agricultural sector, through financial availability, it was defined as a general objective to analyze the situation of the municipalities in the microregion of Vilhena, State of Rondônia, in order to identify the possible livestock development process. This is an applied, descriptive, cross-sectional research with a quantitative approach. Based on the data analyzed and based on the concept that the cost is linked to the maintenance of what already exists and the investment is expansion, it can be said that there were, in general, investments aimed at strengthening the livestock activity in the microregion, proving the hypothesis of the development of livestock in the

## I. INTRODUCTION

At the beginning of the creation of the state of Rondônia, rural credit played an important role in the conduct of agricultural policy as an instrument for regional development and, based on it, discussions on the issue of socio-environmental problems, mainly related to the deforestation of native areas, also emerged. and conflicts with indigenous peoples. Based on the colonization policy, the Brazilian State instituted incentive mechanisms, based on land tenure regularization, aiming at promoting economic growth and improving the quality of life, in general. Almost half a century after the beginning of the colonization process, Rondônia still seems to experience the effects of the 1970s policy, configuring itself today as one of the leading states in the production of cattle raising. However, it remains to be seen whether it is possible to analyze, based on the federal government's credit policy, with information and data from the statistical yearbook of rural credit, prepared by the Brazilian Central Bank, if this reality was institutionally stimulated by the State, which could indicate a incentive strategy for the sector in this microregion under the auspices of the federal government.

This work is part of a study program on "livestock raising in Rondônia", linked to the Group of Studies and Research in Social and Environmental Sciences and Public Policies – GEPCAP, under the coordination of Professor Dr. Fábio Robson Casara Cavalcante. To analyze the scenario in Rondônia, data were collected for all municipalities in the state, which were grouped by micro-regional geographic classification.

The results brought in this study are linked to the reality of the microregion of Vilhena, belonging to the Eastern Rondoniense mesoregion. The theme of rural credit was born from the need to analyze the regional scenario in Rondônia in relation to the policy carried out by the federal government to encourage the Brazilian agricultural sector through rural credit. The choice of the theme was materialized by the historical characteristic of Rondônia, mainly during the period of agricultural colonization of its territory, where the issue of rural credit was always present. Thus, based on the colonization policy, the State instituted incentive mechanisms based on land tenure regularization, which required proof of "improvements" on the properties for the purpose of issuing definitive land ownership titles. The Institute for Colonization and Agrarian Reform (INCRA), in this context, was the federal agency responsible for land policy in Rondônia. As a result, access to rural credit was only possible upon proof of the 'improvements' required by INCRA which, after

being guaranteed, made financial resources accessible to rural producers.

The result of this policy in Rondônia was the rapid economic growth of the region, based on agricultural activities, which showed growth rates from that moment on. However, from the socio-environmental point of view, questions about the credit policy also grew based on the basic criteria of analysis by the federal government based on the proof of "improvements".

The problem is that such "improvements" were synonymous with deforestation in the area. And in view of this reality, what can be observed, in general, is that, directly or indirectly, the economic growth of Rondônia, during the period of agricultural colonization, resulted from an accelerated process of regional deforestation, a factor with great national and international repercussions. In this work, objective issues stand out, such as the survey of the number of contracts granted for the agricultural activity in the years 2000 and 2010, classified as "costing" and "investment", and the survey of the volume of financial resources released for agricultural activity in 2000 and 2010, classified as "costing" and "investment" for the municipalities in the micro-region of Vilhena.

Given the above, behold, the epistemological problem of this research arises. Using a spatial cutout, where a micro-regional analysis of Rondônia is glimpsed, can one speak of a process of "pecuarization" in the municipalities of the Vilhena micro-region promoted by the federal government, through the rural credit policy?

Based on the institutional incentive of the Brazilian rural development policy (rural credit), granted to the agricultural sector, through financial availability, it was defined as a general objective to analyze the situation of the municipalities in the microregion of Vilhena, State of Rondônia, in order to identify the possible livestock development process.

## II. METHODOLOGY

### 2.1 Type of Search

It is an applied, descriptive, cross-sectional research with a quantitative approach, since the objectives generate knowledge for practical application, which includes the number of contracts and the volume of financial resources for agriculture and livestock in the municipalities of the microregion of Vilhena, Rondônia, Brazilian Amazon, in a period corresponding to the years 2000 and 2010.

## 2.2 Data Collection

Data collection took place through reports from the rural credit statistical yearbook of the Central Bank of Brazil for the years 2000 and 2010.

## 2.3 Microregion Definition Criteria

For definition of microregion, the criterion of geographic microregions was used for statistical purposes of the Brazilian Institute of Geography and Statistics - IBGE [1].

## 2.4 Municipalities surveyed that make up the micro-region of Vilhena

The micro-region of Vilhena is made up of six municipalities: Chupinguaia, Parecis, Pimenta Bueno, Primavera de Rondônia, São Felipe D'Oeste and Vilhena.

# III. RESULTS AND DISCUSSION

## 3.1 ANALYSIS BY MUNICIPALITIES

### 3.1.1 Analysis of the municipality of Chupinguaia

#### 3.1.1.1 Number of contracts for agriculture and livestock

By analyzing the data in Table 1, an increase in the number of "costing" and "investment" contracts signed for the agricultural activity in the municipality of Chupinguaia is evidenced, between the periods analyzed, where in 2000 there were 9 contracts and, in 2010, this quantitative increased to 28, that is, an increase of more than 211.11%. When observing the reality of agriculture in the municipality, it was noticed that the most significant increase in this segment was for "investment", which represented 66.7% of contracts signed in 2000 and 71.4% of contracts signed in 2010, which may indicate a trend towards expansion of agriculture in the municipality of Chupinguaia.

In relation to the quantity of contracts for cattle raising in the municipality of Chupinguaia, there was a significant and high increase in the "costing + investment" modalities, reaching 3,030% between the years analyzed. As can be seen in Table 1, in 2000 only 10 contracts were signed, with the "costing" representing 60% of them, showing that the livestock activity was already part of the reality of the municipality of Chupinguaia, which started to maintain it, due to the "costing" data observed this year. The 2010 data show that the livestock activity was strongly stimulated, where the number of contracts signed in the "investment" modality represented 85.9% of the total contracts signed, which represented a jump in relation to the previous period under analysis. A growth of the order of 6.625% compared to 2000 and 2010. Therefore, it is inferred, with this, that there was a strong adhesion of rural producers to the

livestock activity in this municipality, since it was observed that the livestock activity continued to be promoted, when verifying the very sharp increase in the "investment" modality, which translates into expansion, that is, opening new areas.

*Table 1 - Numbers of contracts for agriculture and livestock.*

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	3 (33,3%)	8 (28,6%)	166,67
Investment	6 (66,7%)	20 (71,4%)	233,33
Costing + Investment	9	28	211,11
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	6 (60,0%)	44 (14,1%)	633,33
Investment	4 (40,0%)	269 (85,9%)	6.625
Costing + Investment	10	313	3.030

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

#### 3.1.1.2 Volume of financial resources made available for agriculture and livestock

Table 2 illustrates the volume of resources destined to agriculture, by the rural credit policy, in the municipality of Chupinguaia. From the data, it is possible to observe that agriculture was strongly stimulated in 2000, when a percentage of 98.7% of the volume of resources for "investment" was observed, against 1.37% for "costing". In the following period of analysis, it was observed that, in 2010, the costing represented 63.2% of the volume of resources, which indicates that part of the agricultural activities implemented in 2000 started to be managed with the "costing" resources in 2010, even observing resources destined for "investment" in the last year analyzed. Thus, it can be deduced that there was a brief reduction in new investments, an event that cannot be characterized as a decline in agricultural activity in the municipality of Chupinguaia, as there was still a certain balance in the amounts allocated by the rural credit policy.

Table 2 shows that the resources allocated by the rural credit policy to livestock in the municipality of Chupinguaia represented a very significant increase in this activity segment, recording a 3.306% increase in total resources released (costing + investment) between the two years surveyed.

With regard to the “investment” segment, it was observed that in 2000 it reached 66% of the volume of resources from the federal government's rural credit operations and the “costing” 34%. This result strengthens the idea that such activity started in this period, as was observed in other municipalities in the same micro-region, where the “investment” surpassed the “costing”. When observing the year 2010, it can be seen that between the “costing” and “investment” modalities there was an inversion of values in relation to the previous year surveyed. Thus, in 2010, it was “costing” that prevailed, reaching 66% of the resources against 34% for “investment”. This result indicates a certain maintenance of livestock activity with greater “investment” in 2000, which allowed the expansion of said activity in the region, as explained above.

*Table 2 - Volume of financial resources for agriculture and livestock.*

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	7.749,66 (1,3%)	4.736.820,36 (63,2%)	61,02
Investment	601.899,45 (98,7%)	2.760.043,34 (36,8%)	358,55
Costing + Investment	609.649,11	7.496.863,70	1129
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	156.445,55 (34,0%)	10.345.490,82 (66,1%)	6.512
Investment	303.158,80 (66,0%)	5.310.921,43 (33,9%)	1.651
Costing + Investment	459.604,35	15.656.412,25	3.306

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

From the perspective of the volume of financial resources made available, it was found that in 2000 the volume of resources made available for agriculture was R\$ 609,649, which represented 57.02% of the total volume of resources released to the municipality in that year. For livestock, it was BRL 459,604.35, which represented 42.98% of the contracts. In 2010, R\$ 7,496,863.70 was released for agriculture. When analyzing the volume destined to livestock for the same year, that is, 2010, it was found that there was a significant increase in relation to the previous year, reaching R\$ 15,656,412.25, which corresponds to 67.6% in relation to agriculture.

Thus, it is evident that cattle raising also accounts for the highest percentage of destination of financial resources released, via rural credit, in the municipality of Chupinguaia. This aspect materializes the cattle raising in Chupinguaia arising from the federal government's rural development policy

### 3.1.2 Analysis of the municipality of Parecis

#### 3.1.2.1 Number of contracts for agriculture and livestock

When analyzing the data in Table 3, a strong reduction in the number of contracts signed for agriculture through rural credit is evidenced between the analyzed periods. When verifying the “costing” modality in 2000, it is deduced that the agricultural activity was operating in the municipality of Parecis, as it was responsible for 77.8% of the contracts for this segment, with a small percentage decline in the year of 2010, where 71.4% of the contracts signed were registered. It was not noticed a trend in the continuity of this culture because the “investment” for the years analyzed represented a small portion. In 2000, 8 contracts were signed, representing a percentage of 22.2% and in 2010 it fell to only 2 contracts, so when analyzing the years 2000 and 2010 together, it was noticed that the decrease in the “costing + investment” modalities totaled - 80.55% of the contracts carried out for this culture. It is noteworthy that the largest signature of the contract in the “funding” modality indicates that there is a historical process of coexistence with agricultural practices in the municipality, indicating, in principle, that agriculture is a reality present in the local scenario in the region. However, it is still not possible to verify whether this reality is in fact the consolidation of agriculture as the focus of credit policy in the region.

Based on Table 3, it can be seen that there was a very sharp increase in the number of contracts for “costing” and “investment” in 2010 compared to 2000, and the “investment” modality exceeded “costing” in both surveys. When verifying the 2000 data, it is clear that cattle ranching already showed a strong predominance for this activity, and for the first year analyzed in “costing” it was found that there were 42.9% of contracts made and for “investment” 51.1% of rural credits were obtained for livestock. In 2010, the “investment” was 73.8% (in relation to the cost) and in relation to “investment” for the two periods analyzed, it represented a growth of 1.062% in the number of contracts for this modality, indicating, with this, a new impetus to livestock activity encouraged by the federal government in 2010.



Table 3 - Numbers of contracts for agriculture and livestock.

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	28 (77,8%)	5 (71,4%)	-82,14
Investment	8 (22,2%)	2 (28,6%)	-75
Costing + Investment	36	7	-80,55
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	6 (42,9%)	33 (26,2%)	450
Investment	8 (57,1%)	93 (73,8%)	1.062,5
Costing + Investment	14	126	800

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

### 3.1.2.2 Volume of financial resources made available for agriculture and livestock

By analyzing the financial scenario through Table 4, it appears that in 2000 the volume of financial resources acquired through rural credit for this activity achieved a balance between the "costing" and "investment" modalities, with the "costing" surpassing with 56.4% "investment", inferring that agriculture was already part of the local scenario before the year under analysis in the municipality of Parecis. In 2010, the volume of resources for the "costing" modality had a strong increase, reaching 97.2% of the resources acquired and only 2.8% of the resources were destined for the "investment" modality. This scenario indicates that agriculture is stagnant in the region, where it is verified, through the rural credit policy, that the activity has not expanded, indicating that a large part of the resources released by the credit policy were for the maintenance of agriculture.

Table 4 shows the financial amounts applied to the livestock activity in the municipality, arising from rural credit. Observing the amounts injected in 2000 for the "costing and investment" modalities, it appears that, in a way, the cattle raising activity was already part of the local scenario before 2000, this because 58.2% of the resources were linked to "funding" in 2000. This percentage indicates that there were resources to maintain the activity that was already being practiced in the region. In 2010 there was an increase in livestock activity under the

stimulus of the federal government when it verified that the "investment" was 62.8% of the resources released in relation to the contracts signed that year.

Table 4 - Volume of financial resources for agriculture and livestock.

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	85.603,71 (56,4%)	688.934,21 (97,2%)	704,8
Investment	66.119,51 (43,6%)	19.848,44 (2,8%)	-69,98
Costing + Investment	151.723,22	708.782,65	367,2
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	220.590,00 (58,2%)	1.708.288,73 (36,99%)	674,4
Investment	158.648,51 (41,8%)	2.887.966,63 (62,83%)	1.720
Costing + Investment	379.238,51	4.596.255,36	1.111

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

Based on the number of contracts, it can be seen that in 2000 36 contracts were signed for agriculture, which represented 72% of the total and for the livestock activity there were 14 contracts, equivalent to 28%. In 2010, only 7 contracts were signed for agriculture, equivalent to 5.3%, and for livestock, 126 contracts were signed, which today represents 94.7% of the contracts. It is observed that agriculture in the municipality of Parecis, in 2000, received R\$ 151,723.22 from rural credit, equivalent to 28.6% of the total volume of resources and livestock, even with few contracts, was responsible for a volume of resources from rural credit greater than that allocated to agriculture, that is, R\$ 379,238.51, which represented 71.4% of the total released by rural credit for the year 2010. This fact is important to highlight. Although with fewer contracts signed, the volume of resources from 2000, as the data show, was always favorable to cattle raising, probably indicating a greater degree of specialization and a greater technological level. Thus, it can be inferred that there was a concentration of resources for livestock in 2010, which reached R\$ 4,596,255.36 of the total volume of resources destined for the municipality in that year, and the agricultural activity was left with only R\$ 708,782.65, equivalent to 13.4% of this volume. Thus,

it appears that the process of “cattle raising” in the municipality of Parecis had been growing since 2000 and its picture expanded in 2010, as a result of the federal government's credit policy.

### 3.1.3 Analysis of the municipality of Pimenta Bueno

#### 3.1.3.1 Number of contracts for agriculture and livestock

When analyzing the data in Table 5, a strong reduction in the number of “costing and investment” contracts is evidenced. In the case of “costing”, this reduction was 78.5% between 2000 and 2010 and an 89.4% reduction in the “investment” modality, indicating a significant decrease in the number of contracts signed between the years surveyed. Based on numbers, it appears that this corresponded to the “investment” having dropped from 369 to only 39 contracts effected by the rural credit policy, and for the “funding” modality the fall was from 335 to 72 contracts effected, in relation to the period 2000 and 2010. Analyzing each modality in isolation, it appears that the “investment” obtained a greater number of contracts in relation to the “costing” modality, indicating signs of expansion of the agricultural activity in that municipality. However, it was important to note that even though the number of contracts for the “investment” segment was lower in 2000, it can, in a way, be inferred that the municipality was already developing the agricultural activity at that time, as it obtained 47, 6% of the contracts signed for this modality of “costing”. Based on the year 2010 and considering the “investment” to have been higher in 2000, it was expected that the “costing” would be higher in 2010, which gives an idea of maintaining what was stimulated previously, as can be seen confirm by analyzing the available data, where “costing” represented 64.9% of contracts and “investment” 35.1% of them. However, the hypothesis of a process of deceleration in agricultural activity is something that cannot be actually verified yet.

In relation to the previous item, it was found that the agricultural activity in the municipality of Pimenta Bueno has been suffering a drastic drop in the number of contracts signed with the rural credit sector of the federal government. In 2000, in the livestock activity, the “investment” represented 78.8% of the contracts and the “costing” only 21.2%, which indicates that the livestock activity was stimulated through the rural credit policy this year in Pimenta Bueno and, in 2010, it was observed that this activity continued to expand as the number of contracts for “investment” purposes remained at the level of 74.7% in relation to “costing”. Even so, there was also a generalized reduction in the number of contracts, both for “investment” and for “costing” in relation to the two

periods analyzed, reaching a reduction of 73.8% and 67.1%, respectively.

Table 5 - Numbers of contracts for agriculture and livestock.

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	335 (47,6%)	72 (64,9%)	-78,51
Investment	369 (52,4%)	39 (35,1%)	-89,43
Costing + Investment	704	111	-84,23
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	143 (21,2%)	47 (25,3%)	-67,13
Investment	530 (78,8%)	139 (74,7%)	-73,77
Costing + Investment	673	186	-72,36

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

#### 3.1.3.2 Volume of financial resources made available for agriculture and livestock

Differently from what was previously observed when there was a reduction in the number of contracts, here, however, in terms of volume of resources, this trend was not observed in relation to the period analyzed. On the contrary, there was an increase in resources, both for “costing” and for “investment”, reaching 919.7% and 258.6%, respectively, between 2000 and 2010. This behavior may indicate that a smaller number of rural producers now have access to a larger share of resources, which may indicate a concentration of resources and also greater specialization of activities in technological terms. When analyzing the financial scenario, through Table 6, it can be seen that in 2000 the “investment”, which reached 56.9% of the resources, surpassed the “costing”, which represented 43.1% of the total resources contracted. This scenario, as already seen, indicates a certain expansion of agricultural activity in the mycoregion. In 2010, the fact that “costing” reached 68.3% of the resources against 31.7% of the “investment” indicates that that year there was a certain stabilization of the agricultural activity, where the resources were, for the most part, destined for the maintenance of agricultural activity in the microregion.

Table 6 shows the volume of resources from the rural credit policy for the livestock sector. Thus, when comparing the year 2000 with the year 2010, the values arising from “costing + investment” there was an increase

of 105.2%, with the "investment" segment being superior to "costing" in the two years surveyed, indicating an expansion trend in 2000. In 2000, the "investment" corresponded to 55% of the resources destined to cattle raising and the "costing" to 45%. In 2010 there was an increase aimed at "investment", which reached 68.6% of the volume of resources contracted against 31.4% of the "costing". This scenario indicates expansion of livestock activity in the microregion in the two periods in question

*Table 6 - Volume of financial resources for agriculture and livestock.*

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	1.661.956,08 (43,1%)	16.947.654,71 (68,3%)	919,7
Investment	2.195.391,16 (56,9%)	7.873.338,01 (31,7%)	258,6
Costing + Investment	3.857.347,24	24.820.992,72	543,5
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	2.438.073,58 (45,0%)	3.496.780,15 (31,4%)	43,42
Investment	2.978.593,25 (55,0%)	7.621.607,51 (68,6%)	155,8
Costing + Investment	5.416.666,83	11.118.387,66	105,2

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

It can be observed a decrease in the number of contracts for both agriculture and livestock in the two periods analyzed. Regarding agriculture, 704 contracts were observed, which corresponded to 51.1% of the contracts and cattle raising formalized 673 of them, representing 48.9%. In 2000, agriculture was the main reason for the signing of contracts signed with the federal government. In 2010, livestock was the one to formalize the largest number of contracts (62.6%), surpassing the agricultural sector (37.4%), even observing a reported drop of both in relation to the period analyzed. In terms of volume of resources, the largest share in 2000 was for livestock, even though in terms of contract it was observed for agriculture. In 2000, the volume of resources destined to agriculture was R\$ 3,857,347.24, which represented 41.6%, and R\$ 5,416,666.83 was destined for the livestock activity, which represented 58.4% of the total volume of resources from the rural credit policy. In 2010, although the number of

contracts for cattle raising was higher, the volume of resources contracted by the rural credit policy was greater for agriculture, with R\$ 24,820,992.72, representing 69.1% of the resources. For livestock, R\$ 11,118,387.66 was earmarked, which represented 39.9% of the total resources.

### 3.1.4 Analysis of the municipality of Primavera de Rondônia

#### 3.1.4.1 Number of contracts for agriculture and livestock

By analyzing the data in Table 7 it is evident that the agricultural activity was already a reality in the municipality when observing that the "funding" modality represented 86.1% against 13.9% of the "investment" in 2000 in relation to the signed contracts. In 2010 the "investment" in agriculture reached 89.7% against 10.3% in "costing", indicating a strong trend towards the strengthening of agriculture in the micro-region.

It was found that agricultural activity in the municipality of Primavera de Rondônia suffered a very sharp drop in the number of contracts signed with the federal government's rural credit sector for 'funding', that is, maintenance of what is already consolidated. In 2000, there is a small predominance in the livestock segment for the "costing" modality (58.5%), revealing that this activity was already part of the scenario of the micro-region. The "investment" was equivalent to 41.5% of the contracts. In 2010 there was a very significant increase in the livestock activity where "investment" represented 86.9% of contracts, that is, it doubled compared to the previous year analyzed and in the "costing" modality there was a decrease, recording 41.7%

*Table 7 - Numbers of contracts for agriculture and livestock.*

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	210 (86,1%)	4 (10,3%)	-98,10
Investment	34 (13,9%)	35 (89,7%)	2,94
Costing + Investment	244	39	-84,02
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	24 (58,5%)	14 (13,1%)	-41,66
Investment	17 (41,5%)	93 (86,9%)	447,06
Costing + Investment	41	107	160,98

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

### 3.1.4.2 Volume of financial resources made available for agriculture and livestock

Table 8 illustrates the volume of resources destined to agriculture, by the rural credit policy, in the municipality of Primavera de Rondônia. In 2000, it can be observed that in the “funding” modality 69.2% of the resources, which may, therefore, infer that there was already an agricultural activity operating in the municipality before that period of time. In 2010 “costing” represented 54.3% of the resources and “investment” was responsible for 45.7%. Although there was a certain superiority of “costing” in relation to “investment”, looking more closely, it is possible to verify that both “costing” and “investment” had a decrease in contracted resources from 2000 to 2010 in the order of 88.7 % and 78.6%, respectively. This fall in resources can characterize a crisis scenario for the agricultural sector in the microregion, as this reduction was significant.

Table 8 shows the volume of resources from the rural credit policy for livestock. When analyzing the 2000 scenario, it is noted that a higher amount was allocated to the “investment” modality in the order of 71.6%, while for the “costing” modality it was only 28.4%. This scenario indicates a strong attempt to grow the livestock activity in the microregion. In addition, the level reached by the “investment” modality indicates that cattle raising was institutionally stimulated, indicating an increase in activity in this municipality. In 2010, the numbers continued to rise for the “investment” modality (79.1%), indicating an increase in livestock activity in the region, against 20.9% for “costing”, that is, the percentage destined to the maintenance and management of activities already existing. It is worth noting that from 2000 to 2010, both “costing” and “investment” had an increase in the amounts transferred by the government, where there was an increase of 191.5% and 336.7%, respectively, for the period analyzed.

*Table 8 - Volume of financial resources for agriculture and livestock.*

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	741.986,37 (69,2%)	83.818,14 (54,3%)	-88,70
Investment	331.059,49 (30,8%)	70.692,50 (45,7%)	-78,65
Costing + Investment	1.073.045,86	154.510,64	-85,60
Year / Livestock			
Contract	2000	2010	V.P.(%)

Costing	139.305,58 (28,4%)	406.120,37 (20,9%)	191,5
Investment	351.266,35 (71,6%)	1.533.808,43 (79,1%)	336,7
Costing + Investment	490.571,93	1.939.928,80	295,4

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

It can be noted that there was an inversion from agriculture to livestock, where, in 2000, the number of contracts made available for agriculture was 244, which corresponded to 85.6%. For livestock, the number of contracts was only 41, equivalent to 14.4% of the total number of contracts entered into. In 2010, the number of contracts for agriculture dropped to 39, which represented 27.7% and livestock was responsible for 107 contracts, equivalent to 73.3% of the total.

In 2000, R\$ 1,073,045.86 were contracted, equivalent to 68.6% of the resources of the credit policy destined to agriculture and R\$ 490,571.93 or 31.4% of the resources for livestock. In 2010, livestock led the concentration of values, with BRL 1,939,928.80, equivalent to 92.6% of the volume of resources, and in agriculture only BRL 154,510.64 were injected, which represented 7.4% of the resources offered. In this case, the cattle raising process in this municipality was evidenced, which had institutional encouragement from the federal government, through the rural credit policy.

### 3.1.5 Analysis of the municipality of São Felipe D'Oeste

#### 3.1.5.1 Number of contracts for agriculture and livestock

Analyzing the data in Table 9, there is a large reduction in the number of “costing and investment” contracts signed for agricultural activity in the municipality of São Felipe D'Oeste between the periods analyzed, reaching 95.9%. In 2000, the “financing” modality represented 76.9% of the contracts signed by the rural credit policy, which allows us to infer that agriculture was already consolidated in the micro-region even before that year under analysis. The “investment” was responsible for only 23.1% of the number of contracts. In 2010, it was found that the variations in the number of contracts had decreases for both “costing” and “investment”, so it is noticeable that there is a significant stagnation of agricultural activity for the municipality of São Felipe D'Oeste, which reinforces that the agricultural activity decelerated between the years of study.



Thus, in 2000, when analyzing the data, it is immediately verified that there was a great attempt to expand the livestock activity, as for the first year analyzed 97.5% of the contracts were formalized in the “investment” modality and only 2, 5% for “costing”. In 2010, even with a drop of 37.39% in the two “costing + investment” modalities, it is clear that there was an attempt to grow the livestock activity because the ‘investment’ modality, which represents expansion, was still responsible for 96.6%.

Table 9 - Numbers of contracts for agriculture and livestock.

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	474 (76,9%)	8 (32%)	-98,31
Investment	142 (23,1)	17 (68%)	-88,03
Costing + Investment	616	25	-95,94
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	6 (2,5%)	5 (3,4%)	-16,66
Investment	232 (97,5%)	144 (96,6%)	-37,93
Costing + Investment	238	149	-37,39

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

### 3.1.5.2 Volume of financial resources made available for agriculture and livestock

Table 10 shows the volume of resources from the rural credit policy for the livestock sector. In 2000, the investment value corresponded to 86.4%, while the costing value represented only 13.6%. Thus, it is possible to observe that the livestock activity was strongly stimulated by the rural credit policy, where the year 2000 represented the largest investment of resources for its expansion. In 2010, the value for investment reached 97%, thus indicating a strong livestock activity in the region being increased with more federal resources, through the rural credit policy. This reality effectively demonstrates the livestock development process in this municipality.

Table 10 - Volume of financial resources for agriculture and livestock.

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	1.462.957,09	183.802,45	-87,44

	(74,1%)	(40,8%)	
Investment	512.009,06 (25,9%)	267.039,87 (59,2%)	-47,84
Costing + Investment	1.974.966,15	450.842,32	-77,17
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	109.659,45 (13,6%)	42.233,53 (3,0%)	-61,49
Investment	696.572,11 (86,4%)	1.347.847,03 (97,0%)	93,50
Costing + Investment	806.231,56	1.390.080,56	74,42

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

It can be seen that, in 2000, agriculture held 616 contracts, which represented 72.1% of the total number. Livestock was responsible for 238 contracts, equivalent to 27.9%. In 2010, there was a decrease in the number of contracts for both activities. Agriculture, that year, signed only 25 contracts, which represented 14.4%, and livestock had 149 contracts, equivalent to 85.6% of the contracts.

Agriculture in the municipality of São Felipe D'Oeste, in 2000, received R\$ 1,974,966.15 from rural credit, equivalent to 71% of the volume of resources. In that same year, cattle raising involved the amount of R\$ 806,231.56, equivalent to 29% of the total. In 2010, cattle raising advanced, reaching BRL 1,390,080.56, equivalent to 75.5% of the total volume of resources allocated to the municipality in that year, while only BRL 450,842,32 was allocated to agriculture, which represented 24.5% of the total volume of rural credit resources.

### 3.1.6 Analysis of the municipality of Vilhena

#### 3.1.6.1 Number of contracts for agriculture and livestock

By analyzing the data in Table 11, a reduction in the number of “costing” and “investment” contracts signed for the agricultural activity in the municipality of Vilhena is evidenced, in which a drop of 55.81% was registered for the two years surveyed. It is possible to verify that both in 2000 and in 2010, the number of contracts for “investment” surpassed the number of contracts for “costing” in the order of 62.2% and 57.9%, respectively.

By analyzing table 11, it can be seen that in the livestock activity there was a succinct decrease in the number of contracts in which “costing + investment” fell by 21.57%.

By analyzing the data in table 11, it appears that "costing" in 2000 represented 20.6% and "investment" represented 79.4% of the contracts, indicating that the livestock activity was strongly stimulated, giving impetus to livestock in the region. In 2010 the same trend is observed, which translates into the strong trend of this activity, which is still in full growth in the region, under the stimulus of the federal government's rural credit policy. However, it is necessary to analyze the volume of financial resources made available for agriculture and livestock to complement the analyzes carried out on this economic segment in the region in question.

*Table 11 - Numbers of contracts for agriculture and livestock.*

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	130 (37,8%)	64 (42,1%)	-50,77
Investment	214 (62,2%)	88 (57,9%)	-58,88
Costing + Investment	344	152	-55,81
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	63 (20,6%)	53 (22,1%)	-15,87
Investment	243 (79,4%)	187 (77,9%)	-23,05
Costing + Investment	306	240	-21,57

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

### 3.1.6.2 Volume of financial resources made available for agriculture and livestock

The increase from 2000 to 2010 in relation to the volume of resources contracted, both for "costing" and for "investment", reached the order of 944.7% and 379.1%, respectively, of growth in financial resources released for the projects contracted. When analyzing the volume of resources for "costing", which in 2000 came to represent 47.4% of the total volume made available, one can make a reservation to what was previously stated. That is, this percentage indicates that the livestock activity had already been developed in the region before the year 2000, since the "costing", although lower than the "investment", has

reached a significant percentage, demonstrating that there was an activity before this period of time.

In 2010, resources destined to the "costing" modality reached 66.2% of the volume of resources and only 33.8% of these resources were destined to "investment". This scenario indicates that the activity is being maintained without expansion, but with maintenance of existing areas.

Table 12 shows the volume of resources from the rural credit policy for the livestock sector. By analyzing the data in Table 12, it is evident that for the first year analyzed, the livestock activity was strongly stimulated by the rural credit policy, indicating a percentage of "investment" corresponding to 67.1%, while the value of "funding" represented only 32.9% of the resources. In 2010, even with a small drop, the "investment" modality was still responsible for 63.5% of the resources for livestock in Vilhena and the "costing" modality represented 36.5%. Also noteworthy is the increase in resources for "funding" and "investment" in relation to the years surveyed, which showed a growth in the order of 415.5% and 339.7%, respectively. This reality demonstrates the strength of livestock in the region. However, agriculture, even so, is an equally strong reality in the region.

*Table 12 - Volume of financial resources for agriculture and livestock.*

Year / Agriculture			
Contract	2000	2010	V.P.(%)
Costing	1.951.344,33 (47,4%)	20.385.926,75 (66,2%)	944,7
Investment	2.167.932,33 (52,6%)	10.387.340,53 (33,8%)	379,1
Costing + Investment	4.119.276,66	30.773.267,28	647,1
Year / Livestock			
Contract	2000	2010	V.P.(%)
Costing	764.727,35 (32,9%)	3.942.227,63 (36,5%)	415,5
Investment	1.559.258,45 (67,1%)	6.855.675,86 (63,5%)	339,7
Costing + Investment	2.323.985,80	10.797.903,49	364,6

Source: Statistical Yearbooks of Rural Credit 2000 and 2010 [2].

In 2000 there was a certain predominance of the agricultural activity, where the number of rural credit

contracts granted by the federal government was 344, equivalent to 52.9%. For livestock, in that same year, 306 contracts were signed, which represented 47.1%. In 2010 there was a drop in the number of contracts for both activities. For agriculture, 152 contracts were signed, which represented 38.8% of the total and for the livestock activity, 240 were signed, equivalent to 61.2% of the total contracts.

As for the amounts of credit financing, it appears that the volumes of financial resources released by the rural credit line in the years analyzed prevailed in a higher quantity for agriculture, that is, even with the decrease in the number of contracts carried out in 2010, the segment has obtained very significant financial resources. In 2000, the agricultural activity contracted R\$ 4,119,276.66, which corresponds to 63.9% of the total volume of resources. For livestock, R\$ 2,323,985.80 was made available, equivalent to 36.1%. In 2010, agriculture obtained R\$ 30,773,267.28, equivalent to 74%, and R\$ 10,797,903.49 were injected into livestock, which represents 26% of the volume of resources made available by the rural credit line. Thus, it is possible to deduce that there was an intensification of agricultural activity in the municipality, however, obtaining resources indicates a certain concentration of resources in few properties. It is, therefore, important to note that the largest portion of the volume of resources injected into the municipality of Vilhena was destined for funding, that is, maintenance of the cultures inserted in years prior to the research.

It is noteworthy that even with a lower volume of resources than agriculture, the greatest demand in the livestock activity was for investments, which can be characterized as activity growth, which can infer that there was a livestock development process in the municipality of Vilhena, although agriculture is still an activity with strong evidence in the microregion. Soybeans, among other crops, could be one of the examples of agricultural production in Vilhena.

According to Silva [3] both agriculture and livestock were encouraged since the 1960s by the federal government through credit policies and since then Brazilian agribusiness has increased its production volume. For Almeida and Zylbersztajn [4] the proper functioning of the credit market represents one of the foundations for production, particularly in agribusiness. In the current Brazilian economy, the agribusiness sector has been very important in generating income and positive balances in the trade balance. Its Gross Domestic Product (GDP) reached, in constant 2009 values, R\$735.3 billion [5]. Based on GDP and trade balance data, agribusiness is characterized as one of the main economic activities in

Brazil and in recent years it has favored the advancement of the Brazilian economy worldwide, placing the country as one of the largest producers and exporters in the world, especially in the production and export of food [6].

In this sense, in recent decades the national cattle raising has leveraged its production in a way that considerably increased its herd. According to data from the Brazilian Institute of Geography and Statistics (IBGE) the national cattle herd in 2014 was 212,343,932 heads of cattle. The herd in the North region has 45,826,142 heads (21.58% of the national total). The region known as the Brazilian Amazon has undergone countless transformations in recent decades. The demographic “emptiness” and the “late” occupation have given way to cities driven by agribusiness, whether in soybeans, rice or cattle raising [3].

To stimulate economic activities in the Legal Amazon, the federal government, in addition to investments in infrastructure (such as the construction of highways) and the colonization projects it carried out, instituted tax incentive policies and credit lines to stimulate economic activities in the region [7].

The development plans for the Amazon were aimed at favoring the implementation of large projects, through subsidies and tax incentives offered by the federal government and facilitated access to land for large private groups, which caused profound changes to the environment [8]. Silva [3] reports that cattle ranching expanded in the Amazon from the integration policies of the region in the 1960s, in which several factors contributed to its more accelerated expansion. Santos [8] highlights that the introduction of livestock in the late 1960s was sponsored by government incentives through SUDAM and the Superintendence of the Manaus Free Trade Zone (SUFRAMA), which privileged livestock enterprises through exemption from income and tax direct financing for pasture implantations with the resulting practice of deforestation.

According to Carvalho [9], between 1965-1967 institutions (laws and agencies) were created to support the process of occupation of the Amazon frontier based on encouraged livestock, that is, modern and business livestock farming that had the support of the policy of fiscal and fiscal incentives provided by the Federal Government through SUDAM and BASA. For the authors Santos and Braga [10], in the 1970s and 1980s, a period in which credit was subsidized and distributed according to the size of establishments owned by borrowers, a large portion of rural credit was directed to large landowners. This aspect ended up being a credit restriction generator, mainly for small farmers, who could not offer the proper guarantees

“generally land”. According to Greenpeace [11], cattle ranching in the Amazon developed mainly within the territory known as the “Arc of Deforestation”, whose activity has been in constant growth since the 1970s. The massive presence of cattle in the Amazon stems from more than 30 years of public policies that stimulated the construction of infrastructure “roads and dams”, occupation of the territory “induced migration” and financing of the activity with public funds from SUDAM and, more recently, from the Fund Constitutional of the North (FNO) and National Development Bank. For Silva [3], the expansion of cattle ranching in the Amazon has been questioned for its environmental impacts and low social contribution, as it is associated with high rates of illegal deforestation and for employing little labor. Employees are mostly informal workers. Added to this is the fact that many of the properties used to carry out the activity do not have titles, that is, they face land regularization problems

A study of the causes of deforestation indicates that the cause of deforestation is associated with land use and directly affects the environment and vegetation cover. The study associates the proximate causes (here called direct causes) of deforestation into three categories, namely: expansion of pastures and agricultural areas, logging and expansion of infrastructure. Such land use changes are driven by economic processes that sustain them [12]; [13]. For Cooney et al [14] the deforestation process is basically growing as a result of some key activities: logging, soy growth, cattle expansion and family farming. Another prominent factor is the range of government subsidies that help facilitate the expansion of these processes. FNO, SUDAM and PRONAF are clear examples of government support for activities strongly associated with deforestation. Public financial subsidies for livestock continue and there are signs that they encourage deforestation. The subsidized loan provided by the Constitutional Fund of the North - FNO should only be used to improve the quality and productivity of livestock, as the Fund prohibits investments in deforestation [15]. However, as FNO constitutes a subsidy, it tends to increase investment in this activity more than would be normal (using market interest rates) and may even indirectly stimulate deforestation. As an example, Barreto; Pereira and Arima [15] mention that a farmer can deforest new areas without a loan, because he knows he will get good income using the subsidized loan to buy the herd. For these authors, subsidized rural credit for the Amazon should exclude agroculture and livestock, as they indirectly stimulate deforestation. If it is to maintain some type of subsidy for the region, which is directed to activities that produce public benefits, such as

environmental and ecological services - for example, reforestation that encourages the conservation of biodiversity and carbon sequestration.

According to Vale and Andrade [16] Rondônia is a state that well synthesizes the different facets of the Amazon. At the same time that it still has two thirds of its area fully forested, it is home to one of the most dynamic economic areas in the region, with older, more deforested municipalities and with high human development, both in relation to the region and in relation to Brazil. And, above all, it is the state where cattle raising has expanded the most in relation to other parts of the Amazon – an ideal place, therefore, to study the intensification of this activity. Furthermore, there are regions in the State characterized by medium/large sized properties, in which colonization projects favored rural companies, and regions where agrarian reform projects left a land structure much more based on small and medium properties. Other important references dealing with the national system of rural credit and rural credit applied in the Amazon, in addition to the theoretical foundation of the regional development policy for the Amazon and environmental sustainability for the Amazon region, can be consulted at BACEN [17], Antao and Campanholo [18], Pizaia et al [19], Oliveira; Trindade and Fernandes [20], Chalala and Chalala [21], Serra and Fernández [22], Cavalcante [23], Becker [24], Ferreira and Alves [25], Brito [26], Boiser [27], Sachs [28], Barbosa [29], Letter from Ottawa [30], Veiga [31], Opschoor and Straaten [32], Abramovay [33], Feil and Screiber [34].

#### IV. FINAL CONSIDERATIONS

Based on the data analyzed and based on the concept that the cost is linked to the maintenance of what already exists and the investment is expansion, it can be said that there were, in general, investments aimed at strengthening the livestock activity in the microregion, proving the hypothesis of the development of livestock in the microregion of Vilhena.

It is also worth noting that all municipalities had a greater tendency to invest in cattle raising. There was a strong increase in rural credit resources in 2010 for investments in the municipalities of Primavera de Rondônia and São Felipe D'Oeste. These two municipalities in comparative terms with the other municipalities invested significantly in cattle raising also in 2010.

It is observed that the municipality of Chupinguaia received a higher amount of resources than other municipalities in the form of credit for funding, understanding that the activity was already strongly supported and promoted in this municipality by the rural credit policy of the Federal government. The municipality



received an excellent incentive for investment in the sector, this being in the amount of R\$ 5,310,921.43. Thus, in relation to the municipality of Chupinguaia, the livestock activity shows that, in 2010, cost resources were used to maintain the livestock development process, which can be reinforced in the analysis of investment data, which indicates that such activity continued to grow.

It was also observed that the municipalities of Parecis, Pimenta Bueno and Vilhena obtained very significant resources in the credit subsidized by the federal government to maintain the livestock activity, as well as an appreciable increase in investments in new areas, characterizing the expansion and continuation of the livestock activity.

From what was studied in this research, it is believed that there was, indeed, a livestock development process in the Vilhena microregion in the analyzed period. It was observed that all six municipalities in the Microregion of Vilhena started to receive many tax incentives for livestock projects, not only for their maintenance, but also for the expansion of livestock activities. A fact that draws attention is that the municipalities of Pimenta Bueno, São Felipe D'oeste and Vilhena reduced the number of contracts from 2000 to 2010, however, they increased the resources available for investment in the livestock activity. This allows for evidence of a clear livestock development process in the micro-region.

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