

MARKET-BASED LAND REFORM AND QUALITY OF LIFE OF THE BENEFICIARIES IN THE STATE OF CEARÁ, BRAZIL

*Ahmad Saeed Khan¹,
Ana Tereza Bittencourt Passos²*

Abstract

In October 1996, the government of the State of Ceará, Brazil, instituted the Market-based Land Reform Program (PRAS) in partnership with the World Bank. Quantitative evaluation of the Program has indicated success; but due to the lack of appropriate methodology, no qualitative evaluation of the Program has been made. Our research seeks to rectify that lack. This analysis employed a research sample of 77 farmers distributed throughout the state's 7 counties. The results show that the Program contributed substantially to improve the quality of life of the target population. After the Program's implementation, the Quality of Life Index (IQV) increased 70%. Indicators representing housing, durable goods, and sanitation made the largest contribution to this increase, while health and education indicators contributed much less.

Key-words: Market-based land reform, social development, Ceará.

1. Introduction

The agriculture sector plays an important role in the economic development process, contributing food and raw materials, providing a labor pool for urban industries, generating savings, creating markets for manufactured products, and bringing in foreign exchange through

¹ Professor of Department of Agricultural Economics, Federal University of Ceará.

² Assistant Professor, Department of Social Sciences – College of Agriculture of Mossoró.

exportation and new technologies and products through importation (Johnston & Mellor, 1961). Agricultural development is directly linked with the solution to the problems of poverty and income distribution in countries that have not yet been able to provide a desirable level of well being for the greater part of their populations. It is observed that recent Brazilian economic growth has not contributed to improve the rural population's quality of life in the country's northeast.

According to the World Bank (1999), the state of Ceará presented an average annual GDP growth rate of 5.8% between 1970 and 1997. However, the state's per capita income is only 48% of the national average, US\$ 1,710. In spite of economic growth, poverty in Ceará has continued to be a serious problem. Considering a poverty line of about R\$ 65 per month per capita, 77% of Ceará's rural population are living in poverty.

The World Bank (1999) attributed extremely low agricultural productivity as the root cause of poverty in Ceará, as agriculture is responsible for 46% of total labor employment in the state. In order to increase the economic opportunities of Ceará's poor, more investment in human capital, infrastructure, and services for poor farmers is needed.

Leite, quoted by Idace (1998), considers that the concentration of land and power is the main historical cause of the crisis in the field. The Brazilian population's increase and the existing landholding structure, worsened by climatic variation, caused a negatively selected migratory flow that had great repercussions on an already unbalanced process of economic development. In addition, small farmers have had difficulties commercializing their products, acquiring inputs, transporting and storing any increased production, obtaining social services, and qualifying for collateralized credit.

While land reform can do little to alleviate many of the problems that small, poor farms face, it can be an important strategy to promote agricultural development by opening fallow land to cultivation. This would improve the well being of farm families, generate income, create employment, and could lead to political stability by reducing conflicts in the field.

In order to promote rural development, the government of Ceará, with the financial support of the World Bank, reformulated the Program

of Supporting Small Farmers (PAPP) in 1995 and created the São José Project. Working in conjunction with local communities, the Project was intended to support sustainable development while providing job and income opportunities, improving local infrastructure, and making basic social services available to the rural poor.

The Land Tenure Initiative (Ação Fundiária), one of the São José Project's components, originated with the establishment of the Rotating Land Fund in 1996. The Initiative is supported through a partnership between the Government of Ceará and the World Bank. This initiative enabled the creation of a pilot land reform program called the Market-based Land Reform Program (PRAS), a program that helps small farmers or landless laborers buy land through associations that negotiate directly with landowners. Using the São José Project's resources, properties are transformed into productive units at no cost to the farmer. Through the Market-based Land Reform Program, 694 families were benefited by the negotiated transfer of 44 properties comprising 24 thousand hectares between July 1996 and September 1997 (Ceará, 1998).

Evaluation of this Program may provide planners and policy makers with information needed to reformulate existing policies to better meet desired socioeconomic goals.

2. Methodology

2.1- Data Source

For the realization of this study, primary data were obtained by interviewing farmers in 1999 during the months of October, November, and December in the counties of Iguatú, Cedro, Quixada, Baturité, Trairi São Gonçalo do Amarante, and Acaraú. Data were then used to evaluate the quality of life of this portion of the population benefited by the Market-based Land Reform Program (PRAS).

2.2- Conceptual Model

According to Buarque (1993), there is no unique concept of quality

of life due to the concept's complexity and its range of application. In practice, quality of life is identified with the satisfaction of basic human needs that assure a certain standard of living for given population (Nahas & Martins, 1995). Although no clear and universal understanding of life quality exists, there is worldwide concern about it. The concept's importance is linked with its use to assist public policy formulation and planning decisions.

In the past, the well being of a population was defined by their per-capita income; however, economic indicators are not enough to measure quality of life. For this reason, there is a continuous effort to include fundamental socioeconomic variables in quality of life calculations. For Sliwiany (1997), "life level should always be understood as an actual situation of existing life conditions and never as a desired or expected situation." According to the author, this delimitation is necessary because it will permit understand of the main theoretical and practical questions related to measurement of a given population's quality of life.

Since 1960, researchers from the United Nation's Program for Development (PNUD) have calculating the Human Development Index (IDH) to evaluate the quality of life in the United Nations' 174 member countries. The IDH ranks countries from between zero and one, depending on the level of development that these countries have achieved in education, income, and life expectancy.

According to Libânio (1998) mentioned by Gomes (1998), the advantage of the IDH is that it is not limited to economic variables, such as the increase in GDP, but also measures the increase of human potentialities summarized by the three previously mentioned indicators. With these indicators, it is possible to verify the subjective and intangible benefits of development, such as access to information, cultural creativity, and political stability. Despite criticism of the IDH, it has served to alert the world that many possible indexes can be used to calculate an IDH or any other quality of life index.

One of the main objectives of an IDH is to allow the comparison of certain variables over a specific time interval. However, though it is better to have an index comprised of a large number of variables, constantly increasing the number of variables may contribute little in increasing the

synthetic index, as the variables tend to overlap. Therefore, care need be taken to not overwhelm the analysis.

The Brazilian Institute of Economic and Applied Research (IPEA) created two indices to measure the quality of life in Brazil for the years 1970, 1980 and 1988: the Relative Development Index (IDR) and the Index of Life Level (INV). With some modifications, the IDR is calculated in basically the same way as the IDH. The variable per capita Gross Domestic Product was substituted for by per capita home income and minimum and maximum empirically observed values for any one of the these years (Albuquerque *et al.*, 1993). The INV was calculated using a combination of the methods used to calculate IDH and those applied by Drewnowski (Streeten *et al.*, Guillaumont, cited by Monte (1999)). The INV has five components (health, education, housing, income, leisure, and information), each of which corresponds to certain type of a basic need.

In 1991, Rodrigues (1993) constructed the Index of Social Development (IDS) utilizing the concept of IDH. In its first version, IDS consisted of three indicators with equal weightings: life expectancy, adult literacy, and a measure the income concentration in the economically active population: the Gini coefficient. In his second version, Rodrigues (1993) constructed his IDS to take into account a population's material condition relative to the social reality found in developing countries. The newer IDS included a health index, developed from life expectancy and child mortality figures, an education index, an income index, and housing, food, and transportation indices.

In 1996, Brazil's João Pinheiro Foundation developed two new indicators: the Index of Human and Municipal Development (IDHM) and the Index of Life Conditions (ICV). The ICV is calculated by using the methodology of IDH and incorporating a large number of socioeconomic and environmental variables to capture the largest number of aspects of sustainable human development.

Schwartzman (1997) gives emphasis to the fact that most efforts to measure quality of life are restricted to measuring the effect of negative variables, such as nutritional deficiency, lack of services, infant mortality, and sub-standard living conditions. According to the author, this restriction

may create distortions when measuring the quality of life should the highest value of a given indicator be achieved. Once this value has been reached, it is not possible to consider the growth of that indicator, as a predefined “ideal” situation has been reached. He asserts that in the formation of an index of the quality of life, the level of satisfaction of the investigated population must be considered.

Applying the life quality concept, Schwartzman & Fernandes (1997) developed the Quality of Life Index (IQV) to study the effects of the Cajari region’s transformation to mineral extraction on the life of the local population. Our research is based on Fernandez’s (1997) methodology, which incorporates a large number of variables and overweighs the population’s level of satisfaction in the formation of the Quality of Life Index.

Construction of the Quality of Life Index

To verify the influence of the Market-based Land Reform Program (PRAS) on the affected population’s quality of life, information regarding the local situation was gathered from before and after the effects of the Project were felt. The quality of life level is then estimated using an aggregated index of the following indicators: housing conditions, sanitary conditions, durable goods availability, education facilities, and access to media. These indicators will suggest if the quality of life of the community has altered as a result of the São José Project.

As mentioned earlier, Fernandez developed the method we used to calculate our Quality of Life Index. First, the indicators that will compose the Quality Of Life Index are established. Scores and weights are then attributed to the variables that form each indicator. The satisfaction values range from 0 to 3 and are determined by the farmer. The weightings are also determined by the farmer and indicate the importance of each variable to that farmer. Measurement of the satisfaction level was accomplished as follows:

Low satisfaction.	1
Medium satisfaction	2
High satisfaction	3

The Index of Quality of Life may be expressed in the following form:

$$IQV = \frac{1}{n} \sum_{j=1}^n \left(\frac{\sum_{i=1}^m E_{ij} P_{ij}}{\sum_{i=1}^m E_{max_i} P_{max_i}} \right)$$

The contribution of each indicator to Life Quality Index is obtained as:

$$C_i = \frac{\sum_{j=1}^n E_{ij} P_{ij}}{\sum_{j=1}^n \sum_{i=1}^m E_{max_i} P_{max_i}}$$

Where:

IQV = Index of Quality of Life of the population, measured for each period (before and after implantation of PRAS);

E_{ij} = score of the i th indicator, obtained by j th farmer;

P_{ij} = weight of the i th indicator, defined by j th farmer,

$i = 1, 2, \dots, m$, number of indicators;

$j = 1, 2, \dots, n$, number of farmers.

P_{max_i} = maximum obtainable weight of i th indicator;

E_{max_i} = maximum score of i th indicator;

C_i = contribution of indicator i to IQV.

The difference (Δ) observed between two values of IQV define the change in the quality of life of the population. This alteration was evaluated as follows:

decrease in life quality: $\Delta < 0$;

maintenance of level of life quality: $\Delta = 0$;

increase in life quality: $\Delta > 0$.

Definition of Variables

The variables and scoring method used in this study are delineated below.

a) Durable Goods

This variable is a measure of the quantity of durable goods possessed by the farmer, and is measured both before and after the Project's implementation. The goods are organized in three groups of equivalent value goods.

1st group: radio, iron, blender, work tools, etc.

2nd group: sewing machine, stove, sound system, etc.

3rd group: refrigerator, television, agricultural machines, etc

The variable is measured as follows:

- a) does not possess any of the above mentioned goods..... 0
- b) possesses at least one Group 1 good and has no goods from Groups 2 & 3.....1
- c) has at least one good from groups 1 & 2 and no Group 3 good.....2
- d) possesses at least one good from each of the three groups.....3

b) Health

This variable was measured by considering the structure and availability of health services to the population benefited by PRAS and is measured as follows:

- i) non-existence of health services.....0
- ii) assisted by health agent.....1
- iii) availability of basic services.....2
- iv) availability of basic services and medical consultation.....3

c) Education

To determine this indicator, the farmer and his family's access to educational services were considered as follows:

- i) non-existence of educational services.....0

ii) existence of adult literacy course.....	1
iii) existence of primary school.....	2
iv) existence of secondary school.....	3

d) Living Conditions

This variable is measured by taking into consideration the living conditions of the farmer as represented by type of home construction and source of energy/lighting.

I - Type of home construction

i) earthen walls.....	0
ii) brick walls.....	1
iii) brick and plaster walls.....	2

II – Source of energy/lighting

i) kerosene or gas lamp.....	0
ii) electricity.....	1

The sum of the scores from these two items represents the score of the living condition variable.

e) Sanitary Aspects

These points were considered when determining this variable: human dejection [sewage], disposal of domestic garbage, use of treated water for human consumption.

I – Disposal of human sewage

i) open or buried.....	0
ii) fossa [cesspool].....	1

II – Disposal of domestic garbage

i) open.....	0
ii) buried or burnt.....	1

III – Water for human consumption

i) not treated.....	0
ii) treated.....	1

Test for the Difference of Means

The panel test suggested by Levin (1978) was applied to verify the existence of difference between two mean values for the same group's quality of life in different periods.

3. Results and Discussion

To study the impact of the Market-based Land Reform Program (PRAS) on the quality of life of the population before and after its implementation, the Quality of Life Index was calculated for each county and for all samples. It is important to know that the values obtained reflect the scores as well as the satisfaction of each family head in relation to those variables considered in this research.

3.1- Considerations About the Indicators that Form Index of Quality of Life

Sanitation

This indicator includes three variables: water for human consumption, disposal of domestic garbage, and the destination of human waste.

Wells, springs, and lakes are the normal sources of drinking water for a large majority of the sample. After PRAS implementation, an increase in the number of families consuming treated water is observed (Table 1).

It is noted that 1/3 of the families use untreated water for human consumption. It is hoped that in the near future, with the assistance of public health workers, all the interviewed families will use filtered, treated water.

An improvement in relation to the disposal of domestic garbage is observed. Before PRAS, 50.65% of the interviewed families disposed of garbage in the open air, while after PRAS implementation, this number fell to 29.87%, reducing the problems caused by improper garbage

handling, such as water and soil pollution and the transmission of disease.

Table 1 – Absolute and relative frequency of families, in relation to sanitation, before and after implementation of the Market-based Land Reform Program (PRAS).

Specification	Before		After	
	Number	%	Number	%
Destination of human sewage	77	100.00	77	100.00
Open space	44	57.14	9	11.69
Cesspool	33	42.86	68	88.31
Disposal of domestic garbage	77	100.00	77	100.00
Open space	39	50.65	23	29.87
Buried or burnt	38	49.35	54	70.13
Water for consumption	77	100.00	77	100.00
Non-treated water	31	40.26	22	28.57
Treated water	46	59.74	55	71.43

Source: Research data.

In relation to the destination of human sewage, the use of cesspools increased 45.45%, from 42.86% before PRAS to 88.31% at the time of data collection. The São José Project's Housing Program may have affected these results, as it also benefited majority of the families participating in PRAS.

In general, it is noted that there is a significant improvement in the interviewed families' sanitation and hygiene, which consequently contributed to improve their quality of life; although, the population under study considered that the use of cesspools, appropriate disposal of domestic garbage, or use of treated water as unimportant. The families were more concerned with the possession of consumption goods, which demonstrates the power of advertising. It is also observed that the purchase of soap, toothpaste, towels, and toilet paper, which represents a small portion of the family budget, is sometimes sacrificed in order to buy other products considered as important to the family's social status, such as CDs and satellite transmission receivers.

Housing

According to Frankenberg (2000), the ownership of one's first house gives a sensation of pleasure. In the opinion of Miranda quoted by Freyre (1979), "the house as the place starting from which existence is configured and expanded, ...(the) starting point and reference for descendants...."

After the implementation of PRAS, the results indicate that there was an improvement in all variables that form the Housing indicator. The percentage of farmers owning their own home increased 35.06%, to 88.31%; the percentage of homes built of bricks and cement increased 46.76%, to 83.12%; and the number of families using electricity for lighting increased 24.66%, to 80.52% (Table 2).

Table 2 – Absolute and relative frequency of families, according to home ownership, home construction type, and illumination source, before and after implementation of the Market-based Land Reform Program (PRAS).

Specification	Before		After	
	Number	%	Number	%
Home Status	77	100.00	77	100.00
Rented	9	11.69	7	9.09
Free	27	35.06	2	2.60
Owned	41	53.25	68	88.31
Type of construction	77	100.00	77	100.00
Wall of mud	33	42.86	7	9.09
Brick	16	20.78	6	7.79
Brick/cement	28	36.36	64	83.12
Type of illumination	77	100.00	77	100.00
Kerosene or gas lamp	34	44.16	15	19.48
Electric energy	43	55.86	62	80.52

Source: Research data.

Access to Educational Services

After PRAS implementation, there was no significant change in access to the full range of educational facilities, though there was a small

improvement in educational services up to the 4th grade (Table 3). After PRAS, the number of families having a primary school [grade school] within 4km increased 13.29%, from 67.53% to 81.82%. These results, however, represent a common situation prevailing in Brazil's northeast—secondary schools [high schools] do not exist. This small improvement in educational service may be partly due to the short time that has passed since the implementation of PRAS, as change in an education variable is generally noticed over the medium to long term.

Table 3 – Absolute and relative frequency of families in relation to the Access to Educational Services measure before and after implementation of the Market-based Land Reform Program (PRAS).

Access to Educational Services	Before		After	
	Number	%	Number	%
Non-existence	25	32.47	14	18.18
Literacy course	-	-	-	-
1st degree course	52	67.53	63	81.82
2nd degree course	-	-	-	-
Total	77	100.00	77	100.00

Source: Research data.

It is observed that a large number of the families in this population segment are not stimulated or do not have the resources needed to matriculate in normal studies. It is also noted that there are no courses specifically tailored for this group.

The benefits of education are well known and extend into the sphere of social development. Education fosters more knowledgeable political participants that, according to Fongança and quoted by Monte (1999), will result in a more equitable capital – labor ratio. Thus, education insures that socioeconomic development will not be entirely based on the process of wealth accumulation but also on a knowledgeable population generating its own improved conditions. This does not mean that education alone will solve all the problems of a poor population; however, it may be the principal factor stimulating a qualitative jump in the population's quality of life.

Silva & Khan (1995), analyzing the importance of the farmers'

education level on farm income, concluded that education has a positive influence on production value by increasing the technical efficiency of the production factors. In 1997, the President of World Bank, James D. Wolfensohn, said that knowledge is an important factor for development. During the next century, the application and accumulation of knowledge will lead to development, creating opportunities for growth and the reduction of poverty.

Access to Health Services

The results indicate an improvement in the availability of health care after implementation of PRAS. The number of families having access to health units providing basic health services tripled; though, the number of the families assisted by a healthcare agent did not change (Table 4). It was concluded that the government's health care program does not attend to all rural populations; specifically, the Family Medical Program does not benefit farmers and their families.

Table 4 – Absolute and relative frequency of families in relation to the Access to Health Services indicator before and after implementation of the Market-based Land Reform Program (PRAS).

Specification	Before		After	
	Number	%	Number	%
Non-existent	28	36.36	2	2.60
Health agent	38	49.35	39	50.56
Health unit with basic services	11	14.29	33	42.86
Health unit with medical consultation	-	-	3	3.89
Total	77	100.00	77	100.00

Source: Research data.

Cohn & Elias (1998) pointed out, “The access to health services is a minimum right of a citizen and should be available to every person.” This is especially important in a differentiated society such as Ceará's. There is a need to revise the health services situation in Ceará, a situation in which public health services plays the role of a black hole and

everything received, disappears.

Access to Durable Goods

During two years of PRAS, it is observed that the benefited farmers bought new appliances or replaced old ones. These appliances include televisions, refrigerators, stoves, and sound systems. This increase is partially due to the expansion of a rural electrification program but mainly the result of an increase in income experienced by 97.4% of the interviewed families.

Analysis of the Quality of Life Index

The results presented in Tables 5 and 6 indicate the absolute and relative contribution of each indicator making up the Quality of Life Index (IQV) for the whole sample and for each county before and after implementation of the Market-based Land Reform Program (PRAS). For the total sample, it is observed that the indicators Access to Durable Goods, Housing, and Sanitation are more heavily weighted in the IQV. It is important to note the study population is not satisfied with government's health services.

The IQV calculated before PRAS was 0.342, increasing to .583 after PRAS implementation, an improvement of 0.241 in IQV. The "t" test suggests the quality of life improved significantly due to PRAS.

The Housing indicator contributed 35.27% of the increase in IQV, while the Sanitation indicator contributed 21.16 to this increase. The improvement in these indicators results from the government of Ceará's Rural Housing Project.

The participation of the Access to Educational Services indicator to increase IQV was 5.81%, reflecting that a large number of people benefited by PRAS are still illiterate. The distance between the benefited population and the nearest primary school and the short time between the implementation of PRAS and our interviews may have contributed to this variable's small improvement.

The Health Services indicator itself increased by 129.41% after

implementation of PRAS; though, this indicator's contribution to increase IQV was a more modest 18.26%. Both before and after PRAS, the relative value of this indicator in IQV was small, 0.034 and 0.078, respectively (Table 5).

Table 5 – Individual and joint participation of the indicators in the Quality of Life Index before and after implementation of the Market-based Land Reform Program (PRAS) in the state of Ceará, 1999.

Indicator	Participation of Indicators to IQV " Before"		Participation of Indicators to IQV "After"		Difference		Increase in Indicators (%)
	Absolutes Value	Relatives Value	Absolutes Value	Relatives Value	Absolutes Value	Relatives Value	
	%	%	%	%	%	%	
Health Services	0.034	9.94	0.078	13.38	0.044	18.26	129.41
Education	0.059	17.25	0.073	12.52	0.014	5.81	23.73
Housing	0.071	20.76	0.156	26.76	0.085	35.27	119.72
Sanitation	0.071	20.76	0.122	20.93	0.051	21.16	71.83
Durable goods	0.107	31.29	0.154	26.41	0.047	19.50	43.93
IQV	0.342	100.00	0.583	100.00	0.241	100.00	70.47

Source: Results of research

217

Table 6 - Quality of Life Index of families benefited by the Market-based Land Reform (PRAS) the counties of the state of Ceará, 1999.

County	IQV "Before"	IQV "After"	Difference	Increase in IQV (%)
Iguatu	0.330	0.585	0.255	77.27
Cedro	0.163	0.333	0.170	104.29
Quixadá	0.219	0.552	0.333	152.05
Baturité	0.313	0.524	0.211	67.41
Acaraú	0.424	0.673	0.249	58.73
Trairi	0.492	0.686	0.194	39.43
São G. do Amarante	0.449	0.625	0.176	39.20
Total sample	0.342	0.583	0.241	70.47

Source: Results of research

Information given in Table 6 suggests a great variation in IQV among counties. Before PRAS, IQV varied from 0.136 (for Cedro) to 0.492 (for Trairi); after PRAS it varied from 0.333 (Cedro) to 0.686 (Trairi). The county of Quixadá showed the largest increase in IQV, 152.05%, more than double the average increase of 70.47%. These results are similar to those obtained by Fernandes (1997) in his study of the effect of the transformation of the Cariri region's economy to mineral extraction on the quality of life of local population. The author calculated an IQV increase of 86.95%.

Though there was a verified increase in the quality of life of the population under investigation after implementation of PRAS, IQV for these counties remains low, 0.583 out of a maximum value of 1.0 (Table 6). It is observed that a lot still needs to be done to improve the studied families quality of life, particularly to improve their access to education and health services.

4. Conclusions and Suggestions

Based on the results obtained from data collected in seven counties in the state of Ceará, the quality of life of the farmers benefited by the Market-based Land Reform Program (PRAS) improved 70%. The indicators that most contributed to our Quality of Life Index [IQV] are: Housing, Access to Durable Goods, and Sanitation. The participation of the indicators Access to Health Services and Access to Educational Services to improve IQV is very small.

Despite the unquestionable importance of education, the participation of the Access to Educational Services indicator in IQV is inadequate, possibly due to the short time between the Program's implementation and our interviews. The effect of this type of rural assistance program on educational services is generally felt in the medium and long term.

In summary, it is observed that the Market-based Land Reform Program contributed substantially to the development of the state of Ceará's rural sector by improving the population's quality of life.

Responsible institutions should take measures to increase the

education and health indicators contribution to the Quality of Life Index. The offer of fundamental education, especially of adult literacy courses, in or close to settled areas should make the impacted population more efficient and less dependent on and vulnerable to government actions. It is suggested that in the future another study should be undertaken to re-measure the indicators that have made only small contributions to the formation of the IQV.

Considering the model of rural development adopted by Ceará's government, maintaining the continuity of the Market-based Land Reform Program is much more than a necessity. The Program provides one of the most efficient adjuncts to help insure the survival of small farmers and rural workers by providing them access to land. To improve efficiency, the Program's coordinators must be more rigorous when creating associations and executing subprojects.

References

- ALBUQUERQUE, R.C. de. et al. **O Brasil social: realidades, desafios, opções**. Rio de Janeiro: IPEA, 1993. 544p.
- BUARQUE, C. **A Desordem do progresso**. Rio de Janeiro: Paz e Terra. 1993. 186p.
- CEARÁ, Secretaria de desenvolvimento rural. **Desempenho 1995-1998**. Fortaleza, 1998. 76p.
- COHN, A. & ELIAS, P.E. **Saúde no Brasil – Políticas e organização de serviços**. São Paulo: Cortez/CEDEC, 1998. 117p.
- FERNANDES, A.V. **Qualidade de vida rural com sustentabilidade na Amazônia: o caso da reserva extrativista no Estado do Amapá** - Fortaleza, UFC/DEA, 1997. 93p. (Dissertação de Mestrado em Economia Rural).
- FRANKENBERG, L. Imóveis são sólidos? **Exame**, São Paulo. Ed. 707, V. 34, n. 3/9, p. 133, fev. 2000.
- FREYER, G. **Oh de casa!** Recife: Instituto Joaquim Nabuco de Pesquisas Sociais, 1979. 169p.
- GOMES, L. O Mais difícil foi feito. **VEJA**, São Paulo, V. 31, 16 de Set. p. 114-117, 1998.

- IDACE NOTÍCIAS. Fortaleza: *IDACE*. V. 2. N. 1, abr./jun. 1998.
- JOHNSTON, B.F. e MELLOR, J.W. The Role of agriculture in economic development. *American Economic Review*, Nashville, v. 51, n. 4, p. 556-593, Sept. 1961.
- LEITE, P.S. Desenvolvimento econômico e combate à pobreza rural no nordeste do Brasil. In: LEITE, P.S. et al. **Estratégia e planejamento do desenvolvimento rural regional integrado**. Fortaleza, UFC/BNB, 1994. 349p.
- LEVIN, J. **Estatística aplicada a ciências humanas**. São Paulo. Harper e Row Brasil, 1978. 310p.
- MONTE, F.S.S. **Efeito da implantação do complexo industrial e portuário do Pecém-CE na qualidade de vida das famílias rurais da Região: o caso do reassentamento Cambeba**. Fortaleza, UFC/DEA, 1999. 144p. (Dissertação em Economia Rural).
- NAHAS, M. I. P.; MARTINS, V. L. A. B. O Índice de qualidade de vida urbano – IQVU/BH: a elaboração de um novo instrumento de gestão municipal. In: Encontro Anual dos Programas de Pós-Graduação em Administração, 18, 1995. João Pessoa. *Anais...* p. 125-219, 1996.
- RODRIGUES, M.C.P. O Índice de desenvolvimento social (IDS). **Conjuntura Econômica**. Rio de Janeiro, p. 45-51. Fev. de 1993.
- SCHWARTZMAN, Simon. Desenvolvimento social e qualidade de vida: algumas perspectivas de pesquisa. **Revista de Ciências Sociais**. Fortaleza, v. 5, n. 2, p. 101-111. 1974.
- SILVA, L.M.R. & KHAN, A.S. Educação, eficiência técnica e produtividade diferencial na região semi-árida do Nordeste. **Revista de Economia e Sociologia Rural**. Brasília, v. 33, n. 1, p. 57-71, 1995.
- SLIWANY, R.M. **Sociometria** – como avaliar a qualidade de vida e projetos sociais. Petrópolis: Vozes, 1997. 182p.
- WORLD BANK - Brazil. **Poverty reduction, growth, and fiscal stability in the State of Ceará**. [S.I.], [s.n.], 1999. v. 1. (Policy Report). Document of the World Bank (mimeo).