COSTS AND BENEFITS OF AN INCOME GUARANTY PROGRAM APPLIED TO PRONAF[1]

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ABSTRACT - This work proposes and analyzes the Income Guaranty Program (IGP) as a potential adjunct to the Brazilian National Family Farm Enhancement Program (PRONAF), created in 1995. The IGP is intended to minimize one of the risks of family farming: loss of income. The effect IGP would have had between 1990 and 1997 on the supply and prices of black beans and cassava and on the family farm income will be determined by creating and comparing two scenarios: PRONAF with and without IGP. The data are analyzed using methodology developed by Newbery and Stiglitz and the welfare theory. The results suggest that PRONAF with IGP would increase the yearly income of family farm owners by more than 60%, increase received producer prices an average of 30%, reduce consumer prices an average of more than 32%, and increase black bean and cassava production 12% and 4%, respectively. The total cost of IGP if added to PRONAF in 1997 would be less than R$ 500 million and its social cost would be less than R$ 20 million.

Key words: Family farm, risk, income guaranty.

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INTRODUCTION

Between 1960 and 1992, a surge in Brazilian industrialization caused an excessive income transfer, about 40%, from agricultural activity to other sectors of the economy (Lopes, 1993). This transfer worsened the lives of the country's farm population, lowering agricultural per capita income to just a quarter of non-agricultural sector incomes (Teixeira, 1994). In an attempt to compensate for this unfavorable situation, the government offered subsidized rural credit; unfortunately, this has done little to benefit those who had suffered the most from the income transfer: the family farmers. Overwhelmed by the paperwork and often lacking sufficient real collateral, many small rural producers were unable to access these funds.

The impoverishment of family agriculture caused a reduction in their demand for farm inputs, which led to decreased food production and a reduced supply of agricultural raw materials. Besides, agricultural wages decreased, production facilities went idle, average costs increased, and the problems of underemployment, unemployment, and rural emigration were exacerbated

Family farms need to be capitalized in view of the above mentioned problems that arise from a reduction in their income. Family farmers were once responsible for more than 50% of Brazil's food production (Teixeira, 1994) and represented 80.59% of agricultural labor use (IBGE, 1996). The fact that the market cannot offer ways to capitalize these farmers makes it imperative that the government itself intervenes to improve production levels, the employment outlook, and income distribution.

With that in mind, the Brazilian Government set up the Family Farm Enhancement National Program (PRONAF) in 1995 to assist family farmers (OCB, 1998). The Program offered low interest family farm credit, helped create new infrastructure and services in municipal districts, provided assistance to agricultural institutions, and organized specialized educational programs for family farmers (see Abramovay and Veiga (1998) and, Carvalho and Kuhn (1998), for more detail on PRONAF activities).

However, this program hasn't solved problems brought on the family farmer by loss of income due to commodity price changes. PRONAF, designed around the Rural Credit Program, has the same problems the earlier credit assistance program had: an overly restrictive and complex credit policy, an absence of commodity price guaranties, a lack of available resources, and high bank transactions costs (about 7% of the average value of the contract, according to VEIGA and Abramovay (1998); PRONAF needed to be restructured and improved.

One attempt to improve PRONAF led to the creation of Special PRONAF, a program to benefit small farmers that didn't have enough real collateral to merit regular PRONAF loan assistance. However, the new maximum credit line provided by Special PRONAF is abysmally small, only R$ 1,500 per beneficiary (MARA, 1998).

In this context, an income guaranty program would meet PRONAF's goal of capitalizing small farmers and act as an instrument to increase input demand, technology adoption, and job creation. An income guaranty program, being directly linked with commodity prices, would also be more efficient generator of production and producer income increases than a subsidy to reduce input prices (Josling, 1974).

The objective of this work is to determine the impacts on price, supply, and family farm income of the Income Guarantee Program organized as a PRONAF adjunct. (acting as a Credit to Expenditures). In this paper, family farmers are considered those farmers farming properties of up to 100 hectares[5].

The next section of this paper describes the study's theoretical basis. This is followed by a discussion of the analytical scheme, which details the variables and the methodology employed, an analyses of the obtained results, and conclusions and suggestions.

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[5] Although PRONAF establishes a family farm as a farm of up to 4 fiscal modules, the fact that those module size varies in each municipal district led us to adopted this approach, which embraces most of the family farms and allows the use of Agricultural Census' data, organized by area and not by fiscal modules (Franco, 1998).

METHODOLOGY

Agricultural producers face the unexpected: market prices gyrate, nature is unpredictable, and international competitors continue to advance from unforeseen directions. For those family farmers who seek just a basic, stable income, all of these problems, and more, generate risks and confuse decision making regarding profit maximization (Cruz, 1984, mentioned by Moreira, 1998). In this context, the Income Guaranty Program (IGP) appears to be an option to lessen these risk as it would guarantee a minimum income to family farmers.

The Income Guaranty Program (IGP)

Through this program the government would set a target price (P1) above the competitive equilibrium price (P0) or the minimum price (Pm), whichever is higher. The program would operate to stimulate production by adjusting the production level, as shown in Figure 1, to quantity Q1 on the supply curve. Consumers would then pay a price (P2) consistent with the demand at this new level of production, and the government would pay the difference between the target price and the consumer price (Kam-Chings and Teixeira, 1995). In this paper, consumers are all agents that acquire the farm product: distributors, wholesalers, retailers, or final consumers.

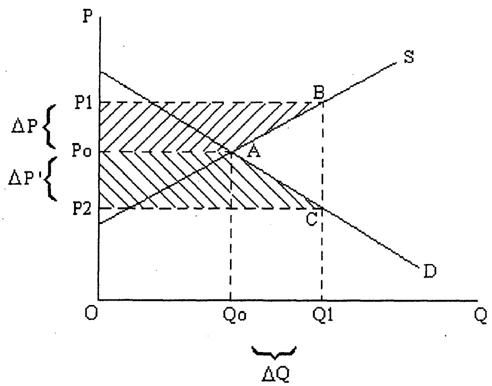

Figure 1- Effects of the Incomu Guaranty Program (IGP)

The target price used in this research, as suggested by Kam-Chings and Teixeira (1995) and by Teixeira (1994), would be calculated as the average price over the last sixty months of black beans and cassava cultivated on farms with maximum area of 100 hectares while excluding the years of highest and lowest average real received prices.

Economic Benefit

The calculation of economic benefit from the Marshallian demand doesn't consider the income effect of price changes. This appears reasonable as the price change doesn't generate larger implications since it is assumed that the consumer's expense on the product represents a small share of income (Ferreira, 1993).

With that in mind, the change in producer surplus (EP) from a given price increase above the equilibrium price is shown in Figure 1, and given by the expression (Wallace, 1962):

Area of the trapeze P1P0AB = EP

$$EP = \left(Q_1 + Q_0\right)\frac{\Delta P}{2} \tag{1}$$

The change in consumer surplus (EC) caused by a price reduction can be seen in Figure 1, and is the area of the trapeze PoP2CA; its expression is:

$$EC = \left(Q_1 + Q_0\right)\frac{\Delta P'}{2} \tag{2}$$

As the government pays the difference between market price and target price, this policy has a budgetary cost (Total Cost of the policy - CT) that is defined in the following way:

$$CT = Q_1\left(P_1 - P_2\right) \tag{3}$$

Deducing economic benefits (surpluses) from the Income Guaranty program (IGP) costs, we have the program's net social cost (area ABC = CS = CT - EP - EC) (Wallace, 1962), which is the cost imputed to all the society.

$$CS = Area\,ABC = \Delta Q \frac{(\Delta P + \Delta P')}{2} \quad (4)$$

It is seen that consumers would be paying price P2, and producers would receive P1, at the level of production Q1. The IGP would, in such way, generate a benefit for both consumers and producers.

The difference between total policy cost (CT) and the net social cost (CS) is the social benefit (BS) of the income guaranty program (BS = CT - CS). Having obtained the Guaranty program's social benefit, an easier way to express the change in consumer surplus (EC) is:

$$EC = BS - EP = CT - CS - EP \quad (5)$$

Newbery and Stiglitz (1985) show that it is not totally correct to estimate the producer surplus subject to risk using the area between the price line and the supply curve. In the same way, the Marshallian consumer surplus estimate, the area between the line of prices and the demand curve, wouldn't be a good measure under risk conditions.

In the risk model presented by Newbery and Stiglitz (1985), the producer is seen facing fluctuations in net income as a result of fluctuations in the agricultural market. Their model predicts the performance of agricultural policies intended to provide safety to the rural producer in a risk environment.

Benefit to the Risk Averse Producer

Suppose a producer faces income "expected with risk," Y0, and "guaranteed or certain" income, Y1, knowing that by choosing "guaranteed" income (Y1) the producer would gain some profit. The producer must be willing to forgo a potential monetary amount, "B," to obtain the benefit of a secure "guaranteed" income: the risk premium. This being the case, the utility of the difference between the guaranteed income and the risk premium shall be the same as the expected income utility with risk, admitting the existence of the utility function by which economic agents understand the lack of certainty due to risk and reflect this situation in their attitudes.

$$E[U(\tilde{Y}_0)] = E[U(\tilde{Y}_1 - B)], \tag{6}$$

where U is the utility function, E is the expectation, and B is the difference between the expectation of the utility generated by the "guaranteed" income $(\tilde{Y}_1)$ and the income "expected with risk" $(\tilde{Y}_0)$.

Once this utility function is constructed, the individual's behavior when facing the risk can be described by the following:

$$Maximize\, E[U(\tilde{Y})]$$

Producer behavior facing the risk will be to maximize the expected utility of an expected result $\tilde{Y}$. The individual's satisfaction can then be generated by the "expected" income.

From expression (6), expanding both sides in Taylor series, we have the risk premium (B) as a fraction of average income:

$$B/\bar{Y}_0 = \Delta\bar{Y}/\bar{Y}_0 - ½\ R\ .\ \Delta CV_Y^2, \tag{7}$$

where $\Delta\bar{Y}$ is the difference between average income after intervention, $\bar{Y}_1$, and average income before intervention, $\bar{Y}_0$; R is the Arrow-Pratt Relative Risk Aversion measure, mentioned by Newbery and Stiglitz (1985),

$$R(Y) = -Y\frac{U''(\bar{Y})}{U'(\bar{Y})};$$

and ΔCV_Y^2 is the difference of the squares of the incomes' coefficients of variation.

The first term on the right side of (7) is the Transfer Benefit (BT) generated by the income guaranty, indicating the gain due to the change in average income. This benefit doesn't depend on producer behavior related to risk. The second term is the Efficiency or Risk Benefit (BE), and will depend on the range of risk reduction (ΔCV_Y^2) and on the range of risk aversion (R); that is, it represents the gains emerging from the increment of the economy's efficiency as a result of the risk reducing guaranty program.

Moreira (1998), when summarizing Binswanger's (1981) empirical experience regarding the value of the risk aversion measure, reached the conclusion that it typically increases, from approximately 0.5 for small income fluctuations to approximately 1.2 for great income fluctuations. Newbery and Stiglitz, mentioned by Braverman et al. (1992) decided that the value R=1 would be a reasonable figure for the risk aversion value.

Operationalizing the variables

In this work, we opted to analyze the Brazilian black bean and cassava markets from 1990 to 1997 by creating two scenarios: "PRONAF without IGP" and "PRONAF with IGP." According to 1996 IBGE data, family agriculture contributed a very high percentile of Brazil's total black bean and cassava production, 69.25% and 86.28% respectively. Our analysis will be developed presupposing a closed economy. The use of this assumption doesn't cause a greatly affect the analysis, as black beans and cassava are produced mainly for domestic consumption.

The total amount of each culture actually produced (Qo) was obtained from IBGE's Agricultural Censuses of 1985 and 1996 taken of farms up to 100 hectares in size and linearly interpolated to find the series' annual traded production values. The number of farms considered was the number of producers cultivating on up to 100 hectares and was taken from the same IBGE census data. The amount of cassava and black beans produced after the inclusion of IGP (Q_1) was obtained using their price elasticity and the variations in their prices caused by IGP.

Nominal prices were obtained over the Internet from the Getúlio Vargas Foundation's (FGV) ARIES database system, and the real values were obtained using the general price index (IGP-DI) from May 1998.

The analysis used a 5.75% annual rate of interest as predicted by the Brazilian Ministry of Agriculture and Provisioning 1998/1999 Crop Plan. The chosen value, the hypothetical amount obtained through PRONAF before the program's creation, was R$2,500.00 per individual farmer, which was near to the average R$ 2,290.04 value of a PRONAF contract in 1997 (Veiga and Abramovay, 1998).

PRONAF with IGP income will then be defined as

$$Y_1 = P_1 \times Q_1 - CAP_A, \tag{8}$$

where Y_1 = value of PRONAF with IGP income; Q_1 = traded amount after IGP implementation; CAP_L = R$2,500.00 capital or given value for each farmer once their contract is made official; $CAP_A = 0.0575 \times CAP_L \times n$ = muffled capital, integrally, in the expiration of the debt, with n=2,017,050 black bean farmers or n=1,092,195 cassava farmers; and P_1 = target price.

The income obtained through PRONAF resources without IGP will be defined as

$$Y_0 = (P_0 \times Q_0) - CAP_A, \tag{9}$$

where Y_0 = income obtained through PRONAF financing without IGP; P_0 = annual average market price for the products (black bean or cassava); Q_0 = traded amount (equal to produced), without IGP implementation; CAP_A as previously.

RESULTS AND DISCUSSION

First, results derived from use of the Newbery and Stiglitz methodology will be shown (Tables 1 to 5), then the results from analysis of changes in economic benefits (Tables 6 and 7).

Evaluating the results shown in Tables 1 and 2, it can be seen that the Income Guaranty Program (IGP) would cause an increment on average income received by producers of black beans and cassava except in 1994 for black bean and in 1995 and 1996 for cassava. These exceptions indicate that in 1994, 1995, and 1996 market prices were higher than the target prices for these products; therefore, government expenditures on IGP would be nil, since the market is guarantying producer incomes.

Table 1 - Summary of black bean production results, 1990 to 1997

		% Changes , PRONAF w/oIGP to PRONAF w/IGP		
YEAR	Producer Income	Producer Prices	Consumer Prices	Production
1990	74.03	37.15	-41.52	14.12
1991	61.44	31.02	-34.67	11.79
1992	112.69	51.32	-57.36	19.50
1993	14.85	8.48	-9.48	3.22
1994	-	-	-	-
1995	97.59	44.05	-49.23	16.74
1996	41.43	20.77	-23.21	7.89
1997	48.30	22.94	-25.64	8.72
Average	64.33	30.82	-34.44	11.71

Source: Research's data.

Table 1 shows that IGP would generate an income increase of about 64.33% each year to the owners of small black bean farms (less than 100 hectares) averaged over the years from 1990 to 1997. For the owners of small cassava farms, that increase would be about 50.95% each year averaged over the period from 1990 to 1997 (Table 2). Those gains would be distributed among producers according their production share. The value of these producer gains are shown in Table A of the Appendix. The annual consumer price variation after the implementation of the IGP were all negative, with substantial decreases in every year in which IGP was in effect. The annual average price reduction was 34.44% for black beans and 31.81% for cassava over the period analyzed.

Table 2 - Summary of cassava production results, 1990 to 1997

		% Changes , PRONAF w/oIGP to PRONAF w/IGP		
YEAR	Producer Income	Producer Prices	Consumer Prices	Production
1990	135.65	74.95	-81.20	9.74
1991	67.12	41.03	-44.45	5.33
1992	17.98	11.83	-12.81	1.54
1993	13.64	8.98	-9.73	1.17
1994	68.45	37.49	-40.61	4.87
1995	-	-	-	-
1996	-	-	-	-
1997	2.87	1.88	-2.04	0.24
Average	50.95	29.36	-31.81	3.82

Source: Research's data.

Production variations caused by IGP were calculated for black beans and cassava using the price-elasticities of supply calculated by Gomes et al. (1998). The data from Tables 1 and 2 indicate an average production increase of 11.71% and 3.82% for black bean and cassava, respectively. It is observed that the increments in production are much smaller than the increments in prices because both products are price-inelastic (e = 0.13 for cassava, e = 0.38 for black bean).

From 1990 to 1997, IGP generated an average annual black bean price increment of R$ 0.23 per kilo, about a 30.82% price increase, as shown in Table 3. For cassava, IGP generated an annual producer price increment of R$19.37 per ton on average, about a 29.36% price increment. In years which saw market prices above the target price, producers would receive the market price.

Table 3 –Black bean and cassava producer price variation, 1990 to 1997, R$ of May 1998

YEAR	Black Bean (R$/Kg)			Cassava (R$/ton)		
	Market Price (1)	Target Price (2)	Variation (2-1)	Market Price (3)	Target Price (4)	Variation (4-3)
1990	0.91	1.25	0.34	62.27	108.94	46.67
1991	0.90	1.18	0.28	72.51	102.26	29.75
1992	0.69	1.04	0.35	81.65	91.31	9.66
1993	0.87	0.94	0.07	81.02	88.30	7.28
1994	1.05	0.89	-	57.02	78.40	21.38
1995	0.62	0.89	0.27	82.09	71.93	-
1996	0.68	0.82	0.14	85.97	78.40	-
1997	0.61	0.75	0.14	80.08	81.59	1.51
Average	0.79	0.97	0.23	75.33	87.64	19.37
Variation /	(Market Price)[1]		30.82%			29.36%

Source: Research's data.

1. Calculated as the average of percentile variations.

Table 4 exhibits a null transfer benefit result verified for black beans in 1994. In 1995 and 1996, increased cassava producer efficiency, due to market price stability, would be the only benefit. It can be seen that in the years of greater government price support, the producer benefit would be largely due to the transfer of the resources from government, which translates to reduced efficiency benefits.

Table 5 shows that the total benefits generated by the for the production of black beans with medium degree of risk aversion (R=0.85) would be between R$ 82,851,929.04, in 1994, and R$ 885,589,674.88, in 1992. In 1994, the total benefit generated by the program would be a result of producer efficiency since the producer's compensation only comes from the market. For a neutral risk producer (R=0), risk rewards would always be less than risk penalties, in conformity with the theory.

Table 4 – Producer benefits from black bean and cassava cultivation between 1990 and 1997.

	Black Bean			Cassava		
YEAR	B/Yo [1]	BT [2]	BE [3]	B/Yo [1]	BT [2]	BE [3]
1990	0.758	0.740	0.018	1.386	1.356	0.029
1991	0.657	0.614	0.042	0.677	0.671	0.006
1992	1.159	1.127	0.032	0.185	0.180	0.005
1993	0.160	0.148	0.012	0.150	0.136	0.014
1994	0.065	0.000	0.065	0.725	0.684	0.040
1995	0.995	0.976	0.019	0.001	0.000	0.001
1996	0.416	0.414	0.002	0.002	0.000	0.002
1997	0.486	0.483	0.003	0.031	0.029	0.002

Source: Research's data.
1 Risk premium as a fraction of average income;
2 Transfer Benefit;
3 Efficiency Benefit.

Table 5 – Total value of producer benefits from black bean and cassava cultivation between 1990 and 1997 (in May 1998 R$)

YEAR	Black Bean		Cassava	
	(R=0.85) [1]	(R=0) [2]	(R=0.85) [1]	(R=0) [2]
1990	858,527,775.92	838,367,693.43	544,620,770.77	533,073,159.52
1991	720,199,610.13	673,966,815.57	321,244,191.11	318,345,941.17
1992	885,589,674.88	861,266,192.94	99,944,228.64	97,191,146.90
1993	164,895,527.29	152,671,381.11	77,988,555.87	70,785,231.76
1994	82,851,929.04	-	220,438,050.75	208,208,034.24
1995	629,872,455.07	617,835,293.42	447,321.84	-
1996	295,992,764.44	294,904,041.32	769,995.57	-
1997	292,375,998.38	290,836,030.08	13,840,246.73	12,807,546.95

Source: Research calculations.
1 Coefficient of risk aversion = 0.85.
2 Coefficient of risk aversion = 0, producer neutral to risk.

The occurrence of small efficiency benefit values indicates the low risk associated with the production of these crop cultures and allows the calculation of producer surplus and consumer surplus, as suggested in expressions (1) and (5). The total costs and the social costs of PRONAF with IGP were calculated using expressions (3) and (4), shown for black beans in Table 6 and cassava in Table 7. The price elasticity of demand is 0.34 for black beans and –0.12 for cassava (Gomes et al., 1998).

Table 6 - Changes in Producer Surplus (EP), Consumer Surplus (EC), Social Cost (CS), and Total Cost (CT) arising from the Income Guaranty Program for black beans between 1990 and 1997 (in May 1998 R$)

YEAR	EP	EC	CS	CT
1990	587,934,662.64	657,103,446.48	82,083,149.26	1,327,121,258.39
1991	472,477,280.24	528,062,842.62	55,691,124.13	1,056,231,246.98
1992	610,763,720.23	682,618,275.55	114,907,518.13	1,408,289,513.91
1993	115,883,159.86	129,516,472.79	3,892,896.32	249,292,528.96
1994	-	-	-	-
1995	441,596,747.40	493,549,305.91	72,215,948.43	1,007,362,001.74
1996	215,155,264.19	240,467,648.22	17,295,547.01	472,918,459.42
1997	210,179,712.26	234,906,737.23	18,589,282.56	463,675,732.05

Source: Research's data.

Comparing Table 5's results with changes in the producer surplus (Tables 6 and 7), it is verified that changes in the producer surplus and the total benefits to the producer are not directly comparable. The theory proposed by Newbery and Stiglitz assumes that total benefits would be a combination of transfer and efficiency benefits. Therefore, there is relationship between changes in producer surplus and transfer benefits: they both vary in the same direction.

Table 7 – Changes in Producer Surplus (EP), Consumer Surplus (EC), Social Cost (CS), and Total Cost (CT) arising from the Income Guaranty Program for cassava between 1990 and 1997 (in May 1998 R$)

YEAR	EP	EC	CS	CT
1990	455,437,206.21	493,390,306.72	44,077,380.32	992,904,893.25
1991	276,238,124.77	299,257,968.50	14,949,401.45	590,445,494.71
1992	85,481,159.45	92,604,589.41	1,358,846.03	179,444,594.89
1993	62,374,215.88	67,572,067.21	754,236.28	130,700,519.36
1994	180,878,588.97	195,951,804.72	8,963,885.26	385,794,278.94
1995	-	-	-	-
1996	-	-	-	-
1997	11,280,926.19	12,221,003.37	28,709.92	23,530,639.47

Source: Research's data.

The social costs of the Income Guaranty Program's support of black bean prices oscillated between R$ 3,892,896.32, in 1993, and R$ 114,907,518.13, in 1992. The social costs of the Program's cassava price support oscillated between R$ 28,709.92, in 1997, and R$ 44,077,380.00, in 1990. Over the time period analyzed, social cost's average share of the programs total cost was 5.14% for black beans and 1.79% for cassava.

The total cost of the Income Guaranty Program to support the price of black beans was between R$ 249,292,528.96, in 1993, and R$ 1,408,289,513.91, in 1992. The total cost of the Program to support the price of cassava was between R$ 23,530,639.47, in 1997, and R$ 992,904,893.25, in 1990.

CONCLUSION

Adoption of the Income Guaranty Program (IGP), as a complement to the existing Family Farm Enhancement National Program (PRONAF), would generate substantial increases in the cassava and black bean family farmer's income, improve the level of prices they receive, and positively affect production.

The research showed that risk averse producers, in conformity with the theory, paid an income premium to avoid price fluctuations. The benefits obtained through implementation of the IGP would be generated, in the most part, by transfers from other economic sectors. This indicates that those gains realized through the IGP would be more a result of changes in the black bean and cassava farmers' average income than from increases in economic efficiency. Even in the years when the market price determined producer income, IGP, acting as a guarantor of producer income, was shown to be efficient.

Addressing the total costs calculated to guarantee the income of black bean and cassava farmers, it was found that the resources destined to PRONAF from the 1998/1999 Crop Plan, on the order of R$ 2.05 billion, are enough to finance these cultures but not enough to finance IGP price support for other crops. However, IGP's implementation would result in benefits that are not captured by our research escape. These benefits are related to employment generation and increased input demand.

The implementation of IGP would strengthen the competitive position of small black bean and cassava farmers in relation to larger commercial black bean and cassava growers; this impact can be addressed by other policy instruments. Also, large commercial growers can reallocate their resources to the cultivation of other cultures and not cause a large loss to the Brazilian economy, as they are responsible for less than 30% of the country's black bean production and 15% of its cassava production.

Brazil's low income population, who consume most of Brazil's black bean and cassava production, together with the country's family farmers would be the great beneficiaries of the implementation of the Income Guaranty Program in combination with PRONAF.

This article was somewhat limited due to the difficulty in obtaining a reliable series of annual data, the Brazilian Agricultural Census is infrequently taken, and due to the Newbery and Stiglitz methodology, which doesn't explicitly delineate how to calculate program costs in the presence of risk.

Although the Income Guaranty Program was shown to be one useful ancillary instrument to improve PRONAF, more changes need to be made, especially in the access to PRONAF lines of credit.

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APPENDIX

Table A - Average Income for black bean and cassava: PRONAF without and with Income Guaranty Program, in the period 1990-1997 (in R$ of may/98)

YEAR	Black Bean		Cassava	
	PRONAF without IGP	PRONAF with IGP	PRONAF without IGP	PRONAF with IGP
1990	1,132,398,915.69	1,970,766,609.12	392,981,934.05	926,055,093.57
1991	1,096,925,316.04	1,770,892,131.60	474,311,110.07	792,657,051.24
1992	764,246,007.82	1,625,512,200.77	540,496,773.01	637,687,919.92
1993	1,028,321,693.22	1,180,993,074.33	518,764,365.63	589,549,597.39
1994	1,282,353,920.95	-	304,181,902.00	512,389,936.23
1995	633,116,208.32	1,250,951,501.74	494,758,799.81	-
1996	711,892,792.74	1,006,796,834.07	508,280,251.15	-
1997	602,192,532.74	893,028,562.82	446,653,459.24	459,461,006.19
Average	906,430,923.44	1,385,562,987.78	460,053,574.37	652,966,767.43

Source: Research's data.