

THE POLITICAL ECONOMY OF RURAL CREDIT: THE CASE OF BRAZIL*

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Abstract: *The rural credit default rate in Brazil increased 140% from July 1994, when stabilization Real Plan took place, to September 1997, when the rate reached 55%. As a result of the price stabilization, most of the agricultural production process changed from rent seeking to profit seeking. Since almost all credit comes from public banks, this high rate increase represents a considerable cost to the society. Compared to a developed country, like The U.S., where the default rate ranges from 4% to 5% either in the private or public credit system, the Brazilian rate is definitely too high. Yet, this is aggravated by the fact that a significant part of the total debt ends up being waived or easily renegotiated by monetary authorities. Based upon theoretical grounds, the default rate in agribusiness is determined by: prices received and paid by farmers, financial market interest rate and renegotiation. Quarterly and monthly data from public credit institutions in the period 1991-1997 were applied to limited dependent variable and simultaneous equations econometric models to explain the structure of the defaulting growth rate, by considering: 1) States, regions and Brazil; 2) Size of farms; 3) Types of crops. Based on robust estimates, the results demonstrated that the rural credit default is heavily dependent on both the renegotiations agreements and financial market interest rate. Although the price effect is relevant, the interest rate effect overlay it, as measured by elasticity coefficients. The reliable estimates of the probabilistic models match with theoretical expectations and the predictions made indicate that for the next future period: a) the probability that there will be defaulting by rice growers is twice as higher as that by coffee ones, with chances of 74.4% and 30.7%, respectively; b) Southeast and Northeast present the lowest probability of defaulting with 57%, whereas the highest chance goes to South with 68%, and Brazil shows a probability of 61%; c) The larger the size of the farm, the higher the chance for defaulting; d) Political power is of considerable importance to dictate rural defaulting of public funds.*

Keywords: *Rural Credit Defaulting; Renegotiation; Interest; Agricultural Prices.*

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Introduction

The rural credit default rate in Brazil increased 140% from July 1994, when stabilization Real Plan took place, to September 1997, when the rate reached 55%. For a better understanding of this fact, it is worthwhile pointing out some insights on the historical background of the rural credit facilities in Brazil.

The process of dependence on agriculture in Brazil on the credit policy has its genesis in 1965, with the creation of the National System of Rural Credit (SNCR) and the reformulation of the price support system for some farm products, which intended to modernize and expand the rural sector. These mechanisms aimed to develop the national industry with modern inputs needed in the growing domestic market and to generate agricultural surpluses of those exporting products, so that the scale effect would make them more competitive in the international market (Fürstenau, 1987). The results of such policies brought about, in the 60's and 70's decades, increases of 5,2% and 4,6% a year in production and cultivated area, respectively, while the productivity grew at a low rate of 1,27%. Those policies, which also had as purpose the expansion of the agriculture border, were strongly extended in the 80's by relying on subsidies to the rural credit, as long as the real interest rate reached -38,8% (Coelho, 1997, p.17).

In order to diversify the financing sources and enhance the supply of funds for the primary sector, SNCR incorporated to the system of concession of rural credit, previously supported almost exclusively by Banco do Brasil, the regional banks, the National Bank of Cooperative Credit, the state banks, the private banks, the credit societies and the cooperatives. Afterwards, the monetary authorities dictated that a compulsory rate of 15% of the total of deposits of such institutions should be driven to rural credit. An ex-post evaluation showed that this policy was totally ineffective to provide additional amount of credit. Consequently, Banco do Brasil kept supplying almost all necessary funds for the sector, regardless the amount of total deposits in the private credit institutions. The source of funding was basically money supply fostered by the monetary government authorities. As a result, this policy brought a significant contribution to strengthen the high inflation in the country in the 80's.

The stabilization Real Plan controlled severely the monetary base by reducing money supply in order to bring inflation and hold down. Consequently, the rural loans were suddenly reduced drastically, and the agriculture default rate went up substantially, as a result of financial deficits on the borrowers side. So, this paper aims to explain the path of the default growth rate in the agribusiness of Brazil before and after the Real Plan, as well as to forecast into the future the trend of that rate by considering: a) Regions and States; b) size of farms; c) types of crops. Next, the theoretical background and other main findings in the literature that will support the empirical results are presented, followed by our results and conclusions.

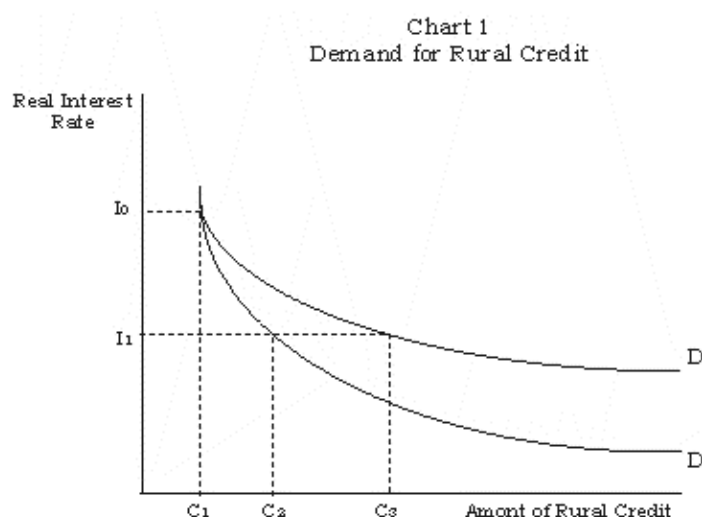
2. Theoretical Foundations

It is a supposition usually accepted in this area of study that the profitability in agriculture, on average, is lower than that of any other sector. That problem elapses mainly from the instability of the production conditions that depend on many exogenous high risk factors, besides the endogenous variations of prices. In that sense, the policy of rural credit has as main objective to

compensate that lower profitability by offering more advantageous interest rates than the one of the financial market. This is certainly done to motivate the demand for rural investment.

It seems to be evident that abrupt alterations in the production conditions or in the levels of prices, which alter the level of farmer's profitability, favor to increase the level of credit defaulting. However, the nature of the market of rural credit leads to two additional analysis to understand the problem in more depth, that is, the possibility of malpractice of the rural credit by the taker and favorable concessions for renegotiation of the debt.

The application of the rural credit for purposes other than agriculture and its effect on the credit demand is approached properly by Ladman and Tinnemeier (1981), and it is frequently applied to analyze the Brazilian credit market [e.g., Brandt et. al. (1984) and Rezende (1982)]. In this regard, since the profitability of the rural activity is inferior to other activities, and that the credit supplied include a subsidy which makes the rural credit interest rate be inferior to the one of the market, it can be concluded that the demand curve for rural credit tends to shift, once it is quite profitable to demand an additional amount of rural credit in order to invest it elsewhere. This is illustrated by chart 1.

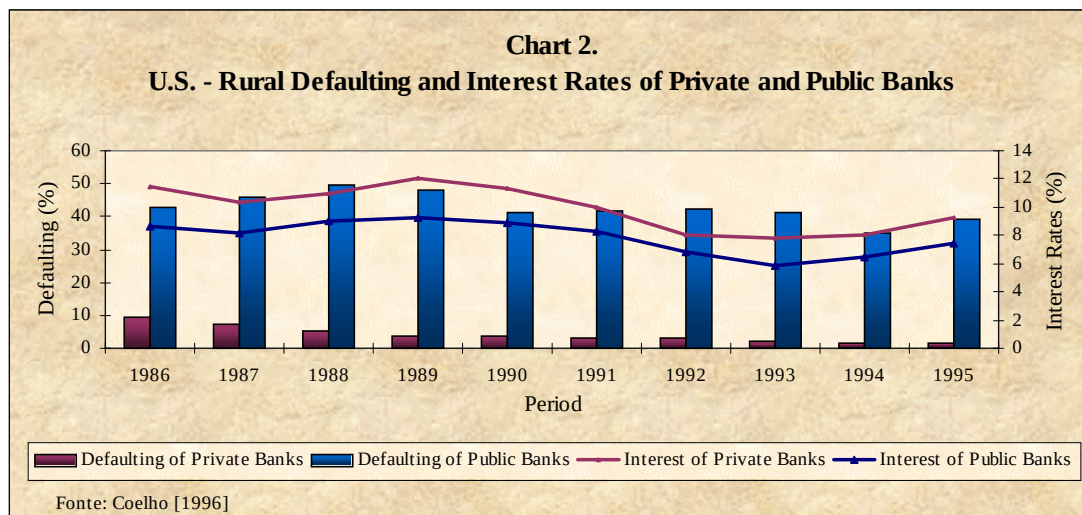


Curve D represents the demand for rural credit in the absence of a segmentation of the financial market. In this schedule, if the interest rate of the economy drops from I_0 to I_1 , the demand for agricultural credit increases from C_1 to C_2 . By assuming that the interest rate of the economy stays at I_0 , but the interest rate charged by the rural credit remains at I_1 , the demand for rural credit would increase from C_1 to C_3 , so that a larger amount of credit would be demanded so as to be applied in the financial market, and the demand curve D would move until settling down at D' .

Starting from a situation where the demand for rural credit assumes the form of the curve D' , if the interest rate charged to the farmer goes up this makes the demand curve shift down to D , then, the non-agricultural income generated by the rural credit is diminished. At this point, without such an extra income, the probability of defaulting raises due to the loss of the extraordinary profit given by the credit subsidy.

Concurrent to the above analysis, defaulting should also be understood as the break of a withdrawal contract by the credit taker. This also happens whenever the debtor either does not possess means to quit his obligations or decides not to pay by taking advantage of a favorable renegotiation. Thus, defaulting might happen before the concession facilities of renegotiation offered by the lender.

Under the theoretical standpoint, Ladman and Tinnemeier (1981) analyze the behavior of the credit market when the government provides funds to agriculture as a development agent. They point out that when government agencies allow defaulting to the producer for some period of time, the debtor acquires, during the defaulting period a net income from interests corresponding to that period. Therefore, in case the debt is waived, that income mechanism is transferred permanently for the loan taker, and when there is high inflation, the magnitude of that transfer is much larger. Those authors also infer about the possibility of formation of a political bias during the process of contracts renegotiation, where the referring advantages from the transfers are sufficiently attractive as lenders' policy in order to establish a patronage by the takers.



The renegotiation of debt contracts has also been investigated thoroughly in the literature, for example, Huberman and Kahn (1988), Hart and Moore (1988), Fudenberg and Tirole (1990) and Vogel (1981). This last author points out that the performance of rural credit policies depends largely on the strategies of obtaining key-informations concerning potential loan takers and of the contractual incentives in order to avoid the process of voluntary defaulting. By the same token, Jorge-Neto (1997) approaches this theme by focusing the objective of maximization by the creditor with respect to the debtor's incentive in paying. According to him, it is considered a normal behavior of a creditor to waive part of the debt, regardless the borrower's financial situation.

For a better understanding about what happens in Brazil, it is quite worth comparing defaulting with a stable economy. Chart 2 depicts the time path of the rural credit default in a developed country, The U.S., where is distinguished the credit supplied by public and private

institutions. It is noticed, along the focused period, two conclusive points. Firstly, the interest rate charged by private banks has been higher than that of the public ones. Secondly, the defaulting rates verified in the public credit institutions have been maintained at high levels and substantially larger than the one of the private institutions. These results, seemingly paradoxical, demonstrate clearly that interest rate is not the decisive factor to dictate any standard of defaulting, conjugated with the fact that the private system is usually more effective and efficient than the public system. Those results, besides serving as parameter in the reversion process now in progress in Brazil, confront with some theoretical arguments exposed in the literature where the effectiveness of the private sector with respect to defaulting is neglected, regardless the volume of credit. (Ray, 1998, ch.14)

According to the analyzed theoretical presuppositions, several works contemplate and test some hypotheses involved in the theory by means of econometric models. Two of them will suffice to illustrate the findings in the literature. Brandt et. al. (1984) specified a single equation model to explain the behavior of the demand for agricultural credit in the period 1960-1980, when the real interest rate charged to farmers averaged -11,17%. They argue that if this interest rate were established at the market, the demand for rural credit would decrease by around 25%. Based on these results and on the theoretical model presented previously, it could be inferred that at least 25% of the credit demanded in the period 1960-1980 was allocated to non-agricultural purposes. Another prominent result found by those authors was the negative relationship between inflation and the agricultural indebted credit balance. Although they do not mention, it can be put that whenever inflationary control is not a priority concern there is higher probability for renegotiation of the debt, once money supply was a primary source of agricultural credit, and therefore, a decrease of the indebted credit balance should be expected.

Similarly, Arraes and Teles (1999) formulated four econometric models to investigate rural defaulting, being two for Northeast Brazil and two for Brazil. Two single equation models were estimated with monthly data for the Northeast and for Brazil, where was found a large elasticity for the price effect in the period post Real Plan, indicating strong evidence that the farmer's profitability is of extreme relevance to explain the behavior of defaulting, specially when economic stabilization is promoted and interest subsidies are removed. By comparing both set of estimates, they verified that the marginal effect of prices in Brazil during the period of economic stabilization is reduced compared to the Northeast. Besides, the estimates of the interest rate elasticity in Brazil present larger magnitude. Given these results, it can be concluded that the larger the accessibility in the financial market, the larger the impact on the rural credit slip.

Those authors also made up two other econometric models in simultaneous equations for the Northeast and for Brazil in an attempt to prove the theoretical expectations that the price effect is stronger in the post Real Plan period, while the interest rate shows negative effect before that period – when there is facilities for renegotiation of the debt promoted money supply – and positive effect after that period – when the gains of the financial market is drastically reduced and the renegotiation facilities are extinguished. For the underdeveloped northeastern region it was confirmed the expected result that exogenous effects, like climatic adversities, tend to increase defaulting.

3. Empirical Analysis

3.1. Methodology

Econometric models will support the empirical investigation on defaulting pattern based upon the theoretical background and the empirical findings in the literature exposed previously. It was struggled to exhaust all the informations contained in the available data set, which allowed to build, initially, a model of simultaneous equations by using quarterly observations in the period 1991-1997 for Brazil which is specified as:

$$\begin{aligned} I_t &= f(J_t; P_t; JR_t; PR_t) \\ P_t &= f(Q_{t-r}; M_{t-r}) \\ Q_t &= f(P_{t-r}; Q_{t-r}) \end{aligned} \quad (1)$$

where,

I = Rural default rate;

J = Ratio rural credit interest rate / market interest rate;

P = Ratio price index paid by farmers / price index received by farmers;

$$JR = \begin{cases} 1, & \text{if variable } J \text{ occurs in the post Real Plan period,} \\ 0, & \text{otherwise,} \end{cases}$$

$$PR = \begin{cases} 1, & \text{if variable } P \text{ occurs in the post Real Plan period} \\ 0, & \text{otherwise,} \end{cases}$$

Q = Total of rural production;

M = Total of imports;

$r = 1, \dots, 4$.

Once investigated the determinant factors of rural defaulting as a whole given by model (1), a prediction analysis that discriminate the effects of the explanatory variables on the defaulting variables by considering types of crops, size of farms and regions and states of Brazil, will provide additional information about the conditions for which defaulting might take place. This will be done in a more detailed analysis by forecasting into the future the probability of occurring defaulting. So, in the second model, given the available information it was opted for the formulation of a limited dependent variable model under Probit hypothesis with monthly data covering the post Real Plan period (1994-1997), that is:

$$Y_t = f(P_{t-k}, J_{t-k}) \quad (2)$$

where,

$$Y_t = \begin{cases} 1, & \text{whenever } I_t - I_{t-1} > 0 \\ 0, & \text{otherwise} \end{cases}$$

$k = 0, 1, 2, \dots, 12$.

I_t, J_t, P_t are defined as in model (1) above.

For the identification of model (1), given the unavailability of some original variables, it was used lagged endogenous variables as the second best alternative in view of their high explanatory power. Thus, the lagged price variable was specified in the quantity equation and the lagged quantity variable in the price equation, so that the simultaneity between price and quantity in this system of equations is identified as supply. The size of the gap, however, cannot be determined priorly, leaving its determination ex-post by empirical testing.

It is believed that the current effect on defaulting must have been caused by changes in the variables occurred in the past. This fact is inherent to the primary sector, since farmer's decisions on how much to produce are taken as a function of the behavior of some variables from the past. The magnitude of the lagged period k , displayed in model (2), is also defined ex-post through a pre-testing procedure, because it seems to be plausible assuming that different crops present distinct gap extensions. This argument is also valid to the other two branches of analysis, that is, size of farms and regions and states of the country. Furthermore, stability in the positive coefficient of the variables for any value of k is expected, as long as estimations account for only non-inflationary periods.

The variables of models (1) and (2) with their respective data sources are rural credit default rate (Official Public Banks), market interest rate, price indices paid and received by farmers (Fundação Getúlio Vargas), total product of rural sector (IBGE), and rural credit interest rate (Banco Central do Brasil).

3.2. Results

The reliable estimates of model (1), shown in table 1, match with theoretical expectations. Then, it could be concluded that during periods of high inflation, the ratio rural credit interest rate and market interest rate is negatively related to defaulting. This happens due to political and nonpolitical incentives received by the potential defaulting takers to do so, even if they had enough funds to pay off their debts, once the inflationary process attenuates the possibility for renegotiating. The reason for this is that the lender may bypass a possible situation of defaulting through inflation income, which is not affected by the rural credit interest rate, but by the market interest rate. Therefore, when the market interest rate increases (J reduces), the lender impounds more resources, increases his profit and attenuates the possibility of defaulting by a potential taker. There happen, then, a natural incentive to the process of renegotiation, consequently, to maintain defaulting.

As low inflation economies are considered, the process is reversed because variable J , in the post Real Plan period, relates positively with rural defaulting. If the market interest rate is

significantly larger than the one charged by rural credit, the taker is led to invest all the loan in the financial market where he acquires extra profit and, therefore, all his debt is easily quit. This is what makes the rural economy changes from profit seeking to rent seeking.

Table 1

Brazil – Estimates of Model 1			
Variables	Equations		
	I	P	Q
C	-0.84 (2.53)	3.60* (0.53)	1.20* (0.69)
J	-0.83* (0.20)	---	---
P	0.22 (0.43)	---	---
JR	1.10* (0.18)	---	---
PR	0.68* (0.14)	---	---
Q_{t-4}	---	0.17* (0.09)	0.92* (0.10)
M_{t-1}	---	0.21* (0.08)	---
P_{t-1}	---	---	-0.17* (0.09)
R²	0.94	0.82	0.82

Notes: 1. * significant up to 10%.

2. The values in parentheses are standard errors.

Regarding the price effect in a stabilized economy, the loan taker has to invest all the credit funds in the rural business and then affecting the relation between prices paid and received by farmers. This explains the positive effect of the price on the dependent variable (defaulting rate), as well as the larger magnitude of its coefficient compared to interests and the statistical significance of the parameter in the post Real Plan period.

The estimates of model (2) by types of crops, size of farmers and regions and states of the country are shown in tables 2, 3, 4 and 5, respectively. It is worthwhile noting that most of parameters in all equations are statistically significant up to 10%, and the overall significance in each equation (χ^2) is also testified. From the estimates referring to crops it is noticed no standard behavior by the defaulting farmers, where some of them are influenced by exogenous factors.

Table 2

Estimates for Types of Crops					
Types of Crops	Estimates			P (Y _i =1) ¹ (%)	χ^2
	Const.	J	P		
Cotton	0.0473 (0.26)	0.4295* (0.23)	3.6084* (2.10)	64.06	48.53*
Rice	-0.6753 (0.48)	0.5185* (0.22)	6.7406* (2.51)	74.22	38.99*
Coffee	-1.0723 (0.66)	0.0877 (0.18)	1.8651 (1.51)	36.69	50.92*
Sugar Cane	0.2787 (0.23)	0.5113* (0.22)	5.3877* (2.05)	70.19	40.99*
Bean	-0.0583 (0.36)	0.3480* (0.20)	1.9859 (1.45)	63.31	49.60*
Corn	0.1817 (0.26)	0.4030* (0.23)	5.5147* (1.68)	72.57	33.30*
Soybean	0.1331 (0.26)	-0.2281 (0.23)	1.8824 (1.44)	65.54	49.83*
Wheat	0.2150 (0.22)	0.0017 (0.22)	4.8623* (1.97)	62.93	45.96*

Notes: (1) Calculated at the average of explanatory variables, where $P(Y_i=1) = F(\hat{\beta}_0 + \hat{\beta}_1 \bar{P}_{t-k} + \hat{\beta}_2 \bar{J}_{t-k})$ and F is the cumulative density function of the normal distribution.
(*) Significant up to 10 %
The values in parentheses are standard errors
-2 (likelihood ratio) $\sim \chi^2_3$ since sample size is large

In the case of wheat, whose production does not present any comparative advantages and is supported by credit subsidies, and in the case of the cotton, whose production was affected negatively by the economic opening, presented an expressive fall in the production in the recent period, what influenced negatively the trend toward defaulting. The defaulting probability of these products averaged around 63%. In the case of coffee, one of the leading export crop, the production reduction in the period was fully compensated by the fact that Brazil is a price maker, consequently, there have been a rise in the international prices. The non-significance of the parameters is a result of the weak dependence of coffee rural credit on domestic economic variables, i.e., price and interest rates. The latter argument also goes to soybean plantation.

Given that rice, bean and corn are characterized by low income elasticity, the increase of purchasing power of the population promoted by Real Plan did not affect significantly the prices of such products. Moreover, the farmers of these crops were deeply in debt already and heavily affected by the elevation of the real interests rates and by changes of the economic structure from rent-seeking to profit-seeking. These effects are widely extended since staple food production is also characterized by low level of technology in most small farmers, which means lower profitability and sensitivity to fluctuation of price linked to stabilization of interest rate. As a consequence higher probabilities of defaulting should be expected.

Table 3

Estimates for Size of Farms					
Size of Farms	Estimates			P (Y _i =1) ¹ (%)	χ^2
	Const.	J	P		
Small	-63.0659* (23.92)	0.5938* (0.23)	13.2606* (5.00)	67.36	42.46*
Medium	-53.0301* (23.75)	0.4255* (0.22)	11.1972* (4.96)	73.89	40.17*
Large	-110.0373* (46.01)	1.0363* (0.44)	23.3056* (9.69)	88.88	28.17*

Notes: (1) Calculated at the average of explanatory variables, where $P(Y_i=1) = F(\hat{\beta}_0 + \hat{\beta}_1 \bar{P}_{t-k} + \hat{\beta}_2 \bar{J}_{t-k})$ and

F is the cumulative density function of the normal distribution.

(*) Significant up to 10 %

The values in parentheses are standard errors

-2 (likelihood ratio) $\sim \chi^2_3$ since sample size is large

Table 4

Estimates for Regions					
Regions	Estimates			P (Y _i =1) ¹ (%)	χ^2
	Const.	J	P		
Brazil	0.2552* (0.04)	-0.0159 (0.04)	0.5569* (0.24)	61.03	1001.79*
North	0.4259* (0.10)	-0.0749 (0.09)	0.5174 (0.40)	64.43	261.43*
Northeast	0.1607* (0.08)	-0.0676 (0.08)	0.2717 (0.81)	56.75	355.73*
Southeast	-0.2608 (0.20)	0.2414* (0.14)	2.5874* (0.91)	57.93	149.69*
South	-0.2038 (0.24)	0.1686 (0.15)	5.3023* (1.70)	68.08	100.28*
Mid-West	-0.3308 (0.28)	0.2936* (0.19)	3.8331* (1.41)	65.17	105.51*

Notes: (1) Calculated at the average of explanatory variables, where $P(Y_i=1) = F(\hat{\beta}_0 + \hat{\beta}_1 \bar{P}_{t-k} + \hat{\beta}_2 \bar{J}_{t-k})$ and

F is the cumulative density function of the normal distribution.

(*) Significant up to 10 %

The values in parentheses are standard errors

-2 (likelihood ratio) $\sim \chi^2_3$ since sample size is large

Table 5

Estimates for States					
States	Estimates			P (Y _i =1) ¹ (%)	χ ²
	Const.	J	P		
Southeast					
Minas Gerais	-1.5317* (0.63)	1.0585* (0.41)	10.0295* (3.62)	62.55	29.56*
Espírito Santo	-0.4882 (0.67)	0.4049 (0.43)	3.0235 (2.20)	62.55	36.06*
Rio de Janeiro	-0.5551* (0.32)	0.3435* (0.18)	3.6677* (1.67)	45.62	52.78*
São Paulo	-0.1167 (0.26)	0.4752* (0.23)	2.9802* (1.39)	59.10	60.20*
South					
Paraná	-0.8020 (0.66)	0.4227* (0.19)	5.4717* (3.10)	72.57	30.98*
Santa Catarina	-1.2961* (0.66)	2.0417* (0.76)	10.7515* (4.33)	73.57	26.16*
Rio Grande do Sul	-0.8282 (0.59)	0.9345* (0.46)	8.2038* (3.85)	68.79	32.84*
Mid-West					
Mato Grosso do Sul	-0.6243 (0.53)	0.5732* (0.37)	4.4185* (2.48)	58.32	37.30*
Mato Grosso	-0.6919 (0.52)	0.5777* (2.84)	7.0821* (2.84)	74.86	28.46*
Goiás	-5.8365* (6.83)	1.7868* (0.68)	20.2661* (6.83)	73.89	21.68*

Notes: (1) Calculated at the average of explanatory variables, where $P(Y_i=1) = F(\hat{\beta}_0 + \hat{\beta}_1 \bar{P}_{t-k} + \hat{\beta}_2 \bar{J}_{t-k})$ and F is the cumulative density function of the normal distribution.

(*) Significant up to 10 %

The values in parentheses are standard errors

-2 (likelihood ratio) $\sim \chi^2_3$ since sample size is large

Regarding the uncleared loans for the sugar-cane production, it should be considered the effects of anti-inflationary policies on the prices of alcohol and sugar cane itself. The Federal Government, as a monopsonist distributor of alcohol, has taken actions to lower the fuel prices, which limits the profitability of that crop and promotes a favorable situation for defaulting. Furthermore, the crisis in the sugar cane international market created a bottle neck in the sector from low price and high world production, which contributed greatly to sharpen the defaulting problem.

The figures in tables 3 and 4 indicate, as overall results, that the larger the accessibility to the finance market and/or to the renegotiations (richer producers), the larger the use of non-agricultural means for the rural credit and, consequently, the larger the effect of the interests on defaulting, as foreseen by the theoretical framework outlined in section 2.

Concerning size of farms (table 3), the estimates carry significant statistical results on the coefficients, besides matching with expectations. It is expected that the larger the farm, the larger are the alternative for allocating investments from rural credit, and higher is the chance that the farmer become a debtor in the future. Large farms exceed the defaulting probability of small farms by 20%.

The predictions for regions of Brazil (table 4) follow a similar pattern as those for size of farms, that is, the loan takers from developed regions – Southeast, South and Mid-West – present a higher chance to become debtors, despite the poor statistical results for the less developed regions. The figures in table 4 reveal that both explanatory variables are very relevant to forecast defaulting in the developed regions and the price effect is larger than the interest rate effect, as measured by the marginal contribution at the average of the variables, on the probability of defaulting, given by the magnitude of the estimated coefficients. These findings are according to the theoretical bases outlined in the previous section, where stabilization of the economy reduces the interest rate effect.

Since the developed regions gather a great deal of the bulk of rural credit supplied country wise, it is relevant to point out that the spatial distribution of the defaulting probabilities among states within each region (table 5). In the Southeast, the probability distribution is at lower grounds compared to the other regions, where distinction goes to Rio de Janeiro with lowest probability of 45.6%, whereas the South is distributed at upper grounds and the Mid-West is at the intermediate position. A concluding remark from this table is the scattered distribution with no defined pattern relating volume of rural credit and defaulting probability among leading states, which might indicate the influence of political forces to explain such a relationship.

Conclusions

The main motivation for this paper was the fact that the rural credit default in Brazil rose 140% from July 1994, when stabilization Real Plan took place, to September 1997, when the rate reached 55%. Since most of credit comes from public banks, this high rate increase has represented a considerable cost to the society. Compared to a developed country, like The U.S., where the default rate ranges around 4% in the private credit system, the Brazilian rate is definitely too high. Yet, this is aggravated by the fact that a significant part of the total debt ends up being extended, renegotiated or waived by the monetary authorities. With respect to that, waiving rural debts was a common practice in the recent past up until early 90's. In 1999, rural defaulting accounted for around 10 billion dollars. This huge due amount of public money was regulated by Banco Central do Brasil through the resolution 2634 of 08/24/1999, which states that 30% of the debt of small loan takers is waived, and interests are subsidized and the debt term is extended for large loan takers. Since public institutions provide the credit, this renegotiation burdened over two billion dollars in the government budget.

As a result of the price stabilization, most of the agriculture production process changed from rent seeking to profit seeking. Based upon theoretical grounds, the default rate in agribusiness is determined by: prices received and paid by farmers, financial market interest rate and renegotiation cost. Thus, the specifications of the econometric models for empirical testing must take those relevant variables into account

Based upon robust estimates from suitable econometric models applied to quarterly data which are from public credit institutions in the period 1991-1997, the results demonstrated that the rural credit default is heavily dependent on both the renegotiations agreements and financial market interest rate. Although the price effect is relevant, the interest rate effect overlay it in periods of high inflation prior to 1994, as measured by elasticity coefficients. The reliable estimates of the implemented probabilistic models match with theoretical expectations and the predictions made on the average of explanatory variables indicate that for the next future period: a) the probability that there will be defaulting by rice growers is twice as higher as that by coffee ones, with chances of 74.4% and 30.7%, respectively; b) Southeast presents the lowest probability of defaulting with 57%, whereas the highest chance goes to South with 68%, and Brazil shows a probability of 61%; c) The richer the farmer or state, the higher the chances for defaulting; d) Political power is of considerable importance to dictate rural defaulting of public funds. This last concluding remark, together with the american credit scenario of chart 2, addresses to a final message: public banks must act privately.

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