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RURAL FERTILITY DIFFERENTIALS IN BRAZIL: CLASS AND FEMALE EDUCATION

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SUMARIO

"RURAL FERTILITY DIFFERENTIALS IN BRAZIL: CLASS AND FEMALE EDUCATION"[1]

Eduardo L.G. Rios-Neto*

This paper is in the demand tradition. We take for granted that group behavior, moral values, and societal institutions may bound individual rationality, but they can not make individuals "irrational" or "foolish". It does make sense to discuss demand even in high fertility environments, and cross-section differentials may illuminate some of these demand-related connections. Demand here is defined in a rather broad sense, refering to any factor affecting individual motivation about the desired number of children. Most theoretical aspects that we review below are associated with marital fertility. Some marital choice aspects are indirectly mentioned, because our dependent variable is the wives' number of children ever born--without controlling for age of marriage.

Our purpose is this paper is twofold. First, we want to test the effect of labour classes in Brazilian rural fertility through a cross-section analysis. Second, we suggest a connection between wife's proletarianization and fertility that might partially explain the widely known negative correlation between wife's education and fertility. The second purpose is taken as an alternative explanation to those formulations stressing the negative role of wife's education on fertility solely by the attitudinal argument of shifts from fatalism to individualism.

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We start with a literature review of the proletarianization debate in order to suggest alternatives in the class-fertility linkage. After that we explore the effect of class-related material conditions that may affect differently predicted signs in the neoclassical demand theory. Then we evaluate the connection between fertility and female education in light of neoclassical theory. Finally, we interpret our empirical results based on a cross-section sample of Brazilian agricultural households in 1980.

PROLETARIANIZATION AND FERTILITY

Our starting point for this review is that most Marxist approaches consider fertility a matter of rational individual choice--demand. This demand may be integrated with the economic signs originated by the material basis of production, that are linked to a class structure. This view contrasts with those assuming that fertility is solely regulated by societal restraints of customs that are not class-differentiated. The proletarianization debate may highlight different applications of the class-demand linkage.

The proletarianization hypothesis was first applied to the English case with the aim of explaining the rapid growth of the proletarian population from the 17th to the 19th century. Tilly (1984) suggests that fertility among proletarians responded more positively to economic expansion than among other classes, and the decline in response to economic contraction was more sluggish among proletarians. Levine (1984) sees the second period of growth in English proletarianization, from the 18th century on, as the result of a shift in proletarians' reproductive behavior caused mainly by the proto-industrialization process.

Seccombe develops a reproductive typology by arguing that productive forces and social relations of production affect production/reproduction of labour power, which leads to different fertility regimes for the major classes. Each fertility regime is composed by several steps: marriage,

demand for children in terms of costs and benefits, the role of institutions operating at the community level, and the availability of means of fertility control (Seccombe, 1983, pp. 30-31). She suggests four fertility regimes of ideal household forms associated with different labouring classes: peasant, proto-industrial, early proletarian, and mature proletarian. We use this typology as the basis for contrasting different views about the effect of each labouring class on its fertility regime and demand for children.

The proletarianization debate implies two possible types of class transition leading to fertility differentials. First, between wage labour and peasant households if structural change is thought of in terms of comparing a decline in the share of peasants with respect to proletarians. Second, between different kinds of wage labour arrangements. In the English case, fertility was enhanced by proletarianization due to a class structural change of the first type that removed former barriers to early marriage. English industrial consolidation together with a growing prevalence of the modern factory system explained the second type of transition, leading to lower fertility rates among mature proletarians compared to those of proto-industrial and early proletarian households. Recent discussions about class-related fertility differentials applied to Third World countries are bounded to these two types of predictions. We contrast several authors' view on different labouring classes' fertility regimes in the context of these two possible types of transitions.

If we intend to apply the first type of class transition, then we need a model of peasant households' fertility determinants. Most authors studying the English case indicated that peasants had a controlled fertility regime. Marriage was the basic mechanism regulating peasants' fertility as suggested by Seccombe (1983). Macfarlane (1978) considers that English peasants had controlled fertility (perhaps parity-specific) due to English cultural aspects leading to early possessive individualism. He cites other

societies where peasants had uncontrolled fertility due to some sort of group behavior. Macfarlane argues that the relations of production (cultural aspects) are more important than productive forces in the determination of fertility behavior, since one can find two fertility regimes in the same class. His strong assertion stressing individualism is based on cross-cultural comparisons, failing to predict cross-section class differences in fertility--caused by different economic signs originated by the relations with the means of production. Those class differences may also be important in determining classes' speed of innovation towards adopting modern fertility control techniques. Caldwell (1978) distinguishes familial from capitalist mode of production; peasants are considered the most conspicuous case of family-based mode of production. Among peasants, there is an integration between work and consumption within the same unit (a la Chayanov), and conflict inside the family is vertical with wealth flowing from the young to the older generations. Caldwell's familial mode of production leads to high marital fertility.

The above discussion of peasants' fertility regime may be controlled or uncontrolled. A prediction on the fertility effects of proletarianization under the first type of transition depends on the right specification of peasants' fertility regime. We suggest that peasant's production and consumption characteristics send positive economic signs towards a high demand for children, due to the bundling of production and consumption. The pattern of sharing income for consumption is particularly indicative of a high fertility pattern, because parents would benefit from this sharing process. The land-marriage connection or other institutions that compete with this sharing process may be countervail this pattern. The neoclassical theory also predicts income and price effects that might shift peasants' demand for children upward or downward.

The first type of fertility transition enhances higher fertility in the case of Seccombe's proto-industrial and early proletarian households, because they have a pattern of high, uncontrolled fertility. Proto-industrial households exploited child labour in the domestic unit to produce family income. Early proletarian households relied on the pooling of family income for consumption, the use of child labour outside the home was an additional source of income. High turnover and job instability contributed to this income pooling role as an insurance device. Households under these two labour arrangements are not regulated by the land-marriage connection. Applied to Third World countries, Cain and Mozumder (1980) also stressed the positive effect of competitive labour markets on fertility due to the compensating use of child labour in response to rationing of women in competitive labour markets, minimization of family income losses due to casual employment seasonality and so on. Caldwell (1978) recognizes that transitory forms of wage labour may favour family rather than individual appropriation of earned income, which benefits high fertility families, but he regarded that these arrangements were not likely to last. We conclude that the effect of labour classes on fertility should be appreciated at the consumption level. If individual income is bundled and jointly consumed by the family, then family labour arrangements lead to high fertility (Rios-Neto, 1987).

The discussion above indicates that our first type of fertility transition, from peasants to proletarians, induces high fertility when peasants' fertility is controlled by a marriage control mechanism or a parity-specific fertility control. If peasants' fertility is uncontrolled, then the transition does not alter fertility to a great extent.

Nevertheless this transition would induce lower fertility if proletarians had Seccombe's mature proletarian fertility regulation regime. These labourers are usually found in modern factory systems, but we discussed elsewhere that permanent

wage labourers in Brazil participate of modern contractual arrangements--superior in the occupational ladder to casual labour arrangements. Permanent wage contracts are compatible with profit maximization and mechanized agricultural activities (Rios-Neto, 1987). If permanent labourers can be compared to mature proletarians, then proletarianization increasing this group's share leads to lower fertility.

The second type of fertility transition associated with proletarianization deals with labour market segmentation and with changes in wage-labour market composition itself. Paiva's (1984) historical analysis indicated that Brazilian rural proletarianization leads to a fertility decline rather than the upswing suggested above. The coffee and sugar-cane wage labour arrangements were set at the family level--interlinked with other land contracts. Paiva indicated that these contracts led to a natural fertility regime. The historical shift towards casual contracts, set at the individual level, induced a fertility decline due to both increasing costs of maintaining a large family and the uncertainty of a monetized consumption basket. Cain and Mozumder (1980) discussed this fertility transition in the opposite direction. The constant wage model, based on surplus labour, is in line with natural fertility because wages are set at a subsistence level--covering all individuals' family needs. A competitive labour market deals with individuals rather than families, thus the demand for children becomes responsive to price signals. These authors predict that price signals enhance high fertility among casual wage labourers.

Our review indicated that the types of transition described above provide rationales for both positive and negative effects in the demand for children. An econometrician would say that the final impact is an empirical question. We consider that an informative discussion can be illuminating--though it does not generate unambiguous predictions.

Paiva (1984) pioneered the proletarianization debate in Brazil, predicting a fertility decline with the development of

capitalism in rural Brazil. The Brazilian critical literature connects rural capitalism development with the growth in prevalence of casual workers or "boia-frias".2 Paiva's historical discussion implies that the growth of casual relative to permanent labourers contributed to the historical decline in rural fertility. He does not develop an argument for fertility differentials between peasant and proletarian households. The fertility decline of peasant households would be explained by monetization and the growth in consumption of market goods (commoditization).

Empirical evidence suggests both an increase in the share of wage labourers in the agricultural labour force and a decline in rural total fertility rate. Employees increased their share in agricultural labour force from 25.2% in 1970 to 36.1% in 1980 and peasants declined from 67.8% to 58.3% (Martine and Arias, 1985, p.24). Fernandez and Carvalho (1986) showed that Brazilian rural total fertility rate remained constant between 1960 and 1970 (7.38 and 7.18), while it declined to 5.8 in 1979. This decline was differentiated across regions, so that cross-region variation coefficient increased from 4.37% in 1960 to 13.63% in 1970 and 21.88% in 1980.

The empirical evidence above gives us two partial conclusions. First, the increasing share of rural proletarians in rural Brazil cannot explain alone the sharp fertility decline observed in the seventies. Second, the regional diversity of the fertility decline indicates that there is room for cross-section demand-related studies of socio-economic differentials--compared to the mere reliance on studies of exogenous shifts in cultural norms or the availability of contraceptives.

We predict that permanent wage labour households present lower fertility than casual wage households. Permanent

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2 "Boia-fria" means cold snack or cold ration to indicate the poor work conditions that these individuals are exposed to. See Saint (1981) and Goodman and Redclift (1982) about classes in the Brazilian agriculture.

labourers participate as the upper segment of a two-tiered rural labour market. Permanent labourers sign individual contracts of the sort found among mature (breadwinning) proletarians. On the other hand, casual labour households are poor and face an uncertain environment that may induce a high fertility strategy. If our hypothesis is correct, then the negative impact of rural proletarianization on fertility transition call for a historical study of the evolution of permanent wage contractual arrangements in Brazil, rather than the emphasis on the casual labourers. But peasant labourers corresponded to more than half of the primary agricultural labour force in 1980, so that fertility had to be declining in this group as well. Class predictions on the peasant fertility regime were also ambiguous. We think that neoclassical agricultural household models may illuminate some reasons for parity-specific fertility control in this group.

NEOCLASSICAL INSIGHTS: PEASANTS AND PROLETARIANS

If we apply a simple demand for children neoclassical model to landed and landless households, then we get some differentiated price and income effects. We assume that legislation bars children from being employed in the formal wage labour sector, while parents can employ their children on farm activities. In this case the landless' households shadow wage of the child-service commodity is higher than that of landed households. The difference in children's shadow price comes from their productive role in farm activities and it is equivalent to children's marginal productivity of labour. Thus the simple neoclassical demand framework would predict a price effect inducing higher demand for children in landed as compared to landless households.

In terms of the income effect, landed households present an extended effect caused by the profit effect of farm activities. This extra profit effect will raise income when the final price of goods produced by the landed household increases. On the other hand, changes in the wage rate will

cause an extra income effect with sign depending on the net hiring status of the landed households. The direction of these extra effects on the demand for children of landed households depend on expectations with respect to the net direction of the income effect, as we discuss below.

Becker's well-known formulation of the trade-off between child quantity and child quality indicates that true income elasticities are greater than observed income elasticities, the difference is caused by indirect price effects in observed values. If true income elasticity is greater for child quality than for child quantity, then the observed income elasticity of child quantity will be further reduced by the implicit price effect of the proportional increase in child quality (Becker, 1981). Schultz (1981) suggests that identification problems complicate empirical tests of this model, but the model does provide qualitative rationale for a negative income effect.

We speculate that those labour classes rural households with higher rates of return on human capital present a lower exogenous component in their child quality's shadow price, which fact induces higher child quality true income elasticity. We estimated earnings equations of household heads sorted by class, they indicated an occupational ladder in terms of human capital rate of return. The rate of return on schooling, corrected for selectivity bias and evaluated at two years of education, was 2,35% for casual labourers, 5.76% for permanent wage labourers and 11.39% for peasant heads (Rios-Neto, 1987, p.307). Thus peasant households tend to present higher demand for child quality than landless households, therefore inducing a lower demand for quantity. This indirect price effect of child quality investment may even shift the observed income effect of peasant households to a negative sign. This negative effect may be offset by an indirect price effect in the demand for children, since a reduction in child quantity would raise children's marginal productivity in landed households, thus reducing children's price and inducing

a positive indirect price effect. The net result of negative and positive indirect price effects is an empirical question.

Our human capital estimates of the rates of return indicated to us that the trade-off between quality and quantity can be an important determinant of the controlled fertility pattern among peasant families. Becker (1981) uses this theoretical framework to provide a rationale for the transition from high to low rural fertility, after technological change (modernization through mechanization) takes place in agriculture.

NEOCLASSICAL INSIGHTS: CLASS AND FEMALE'S EDUCATION

The household's sexual division of labour plays a role in the allocation of time to household production of commodities even in the simplest household model, where wives' labour-force participation decisions are ignored. This so because home production technology usually implies that some commodities are more wives' time intensive than others--such is the case in the demand for children. Thus the demand for children is negatively affected by its shadow price, which is mainly determined by the wives' shadow value of time--since children are more time intensive than other goods.

New interactions and predictions can be explored when wives' labour-force participation is included as a choice variable in the model. The price effect prediction of the simplest model is that wife's market wage offer affects negatively fertility of participating wives. The wage offer effect on non-participating wives' shadow value of time is ambiguous--if there is a positive correlation between these two variables, then the effect will be negative on fertility. The neoclassical demand for children literature emphasizes female education as a proxy for the wife's market wage offer value, thus predicting a negative correlation between female education and fertility. This prediction may not hold if wives do not participate in the labour market, when market wage offer and the shadow value of time are not correlated

(Schultz, 1978). In this case female education may even reduce the shadow price of children due to a household's home production technological progress effect.3

One of the most uanambiguous prediction in neoclassical theory is a negative correlation between fertility and wives' shadow value of time or opportunity costs. Female education has been widely used as a proxy for wives' opportunity costs. Nevertheless, classes or women's work activities are said to affect fertility differently. Standing (1983) discussed the role compatibility hypothesis that some work activities such as self-employed agricultural work are more compatible with having and raising children than others such as working for wages outside home. The discussion is not conclusive since evidence is presented in both directions, and the kind of tests presented by the literature may lead to certain confounding effects due to the lack of precision in the definition of settings. Our empirical analysis includes only agricultural households, thus our test of the interaction between female education and wives' occupation may be more precise to test the compatibility hypothesis.

Rationing or gender discrimination in the female labour market may also affect the wives' shadow value of time. Our discussion of agricultural households elsewhere indicated that the shadow value of time for wives allocating labour to both self-employed and wage-labour activities is the same when the separability assumption is valid. If labour market rationing is operating through a factor that causes commuting (distance) or search (discrimination) time, then separability fails. We proved that in such cases the shadow value of wives' time (and their farm marginal productivity of labour) is below the wives' market wage rate. Thus, the shadow price of children is lower when wives are rationed in the labour market and

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3 We are focusing this item on direct price effects of wives' labor force participation, therefore we are not dealing with the important negative indirect price effect on fertility suggested by Willis (1974), originated when husbands' income is raised and wives do not participate in the labour market.

allocate their time both to farm and labour market activities (Rios-Neto, 1987, pp. 156-159).

In a similar vein, Wong (1985) discusses the effect on fertility of wives' fixed costs of labour-market participation. He suggests that fixed costs induce wives to make all-or-nothing decisions with respect to their occupational choice--increasing the probability of occupational specialization. We define fixed costs of participation as a "fee" paid by wives--in terms of time and goods--so that it shifts the opportunity set downward and to the left. The prediction is that labour market activities with such fixed costs induce substitution away from time-intensive commodities such as children.

Our conclusion is that the effect of wives' participation in the labour market on fertility is ambiguous. If wives face a rationing environment in terms of time, then their time tends to be undervalued and the price of children declines. If wives have to pay fixed costs of participation in terms of time and goods (participation fee), then the price of children increases. Finally, wives working near home and non-discriminated in the labour market have their shadow price of time equal to the market wage offer. We are tempted to believe that most peasants' spouses are not likely to participate in the labour market. If they do participate, they face a rationing environment in terms of time--which leads to a positive effect on fertility. Whereas wives in proletarian or landless households may be compelled to work because they have to rely on the goods market to consume, which induces them to pay the "fee" of labour market participation--the consequence being a higher price of children and a negative effect on fertility differentials.

Both the role compatibility hypothesis and our exercises about the effects of rationing on the wives' shadow value of time indicated that fertility tends to be lower among women working outside home than among peasant women. This is our gender-specific proletarianization hypothesis in line with the

neoclassical theory. But semi-proletarian wives--participating in wage labour market in a short period--tend to present high fertility because time is allocated to wage labour activities only in peak season periods.

Our occupational choice estimation applied to agricultural wives, using a multinomial logit model, indicated that wives' education increases the probability of labour-force participation at a significant level. This result is in line with the neoclassical tradition of taking female education as a good proxy for wives' shadow value of time or earnings ability. Another class related important result was that wives' education implied a higher probability of participating wives becoming proletarian (wage labour) compared to peasant (self-employment). Empirical findings in several settings are quite robust, indicating a negative effect of wives' education on fertility. It is plausible that these estimates were obtained not controlling for wives occupation, thus female education might be capturing our gender-specific proletarianization hypothesis. This hypothesis is compatible with both the neoclassical opportunity costs explanation and the role compatibility hypothesis. We test it in the rural Brazilian case.

EMPIRICAL RESULTS: BRAZILIAN AGRICULTURAL HOUSEHOLDS

Our empirical estimations were based on a combination of individual level variables (micro) obtained from a sample of agricultural households in the Brazilian 1980 demographic census and some other "environmental" or "structuralist" macro variables obtained from the published 1980 agricultural census. We merged the macro level variables with individual data after sorting the information by 379 selected geographic areas or, in some variables, the 25 state and territories constituting the Brazilian federation. This gave us a unique data set.

The major thrust of our previous review is an attempt to integrate Marxist perspectives with neoclassical fertility

theory, to find a more careful explanation of institutional and occupational influences on fertility. We treated class determination or occupational "choice" as endogenous in our primary work (Rios-Neto, 1987) and linked it to fertility in a second stage. The determinants of both class/labour market institutions and fertility rely on different bodies of literature. A thorough discussion of the class determinants is presented elsewhere (Rios-Neto, 1987). There we applied an unordered multinomial logit model to estimate the occupational choice process for husbands and wives separately. The results are not presented here, but we use them for the imputation of relative probabilities that are applied in our structural form fertility equations.

In this paper we are particularly interested with the results regarding price effects, income effects, and structural effects of class/occupational structures. Thus we focus on the following variables: CEB (the number of children ever born per wife in a determined age group) is our basic dependent variable. EAR (imputed earnings based on the earnings equation undifferentiated by class) and WIFEEDU (wife's education measured by the number of years of study) are our basic independent variables in fertility equations with the traditional format. In the case of a block recursive analysis of the fertility equation we focus on the following variables: A (predicted natural logarithm of the ratio of a household head becoming a--from now on PLH-- casual worker with respect to the probability of being peasant), B (PLH permanent worker with respect to the probability of being peasant), C (PLH employer with respect to the probability of being peasant), AW (predicted natural logarithm of the ratio between the probability of a household's wife becoming a--from now on PLW--proletarian or wage labourer with respect to the probability of being out of the labour force), BW (PLW peasant or self-employed with respect to the probability of being out of the labour force).

The first fertility equation presented in table 1 ignores class differentiation, it shows that both **EAR** and **WIFEEDU** are significant and affect fertility negatively. The estimated negative sign of **EAR** could be interpreted in two ways. It may be indicating the income-indirect price effect of the trade-off between quality and quantity or the interaction between husbands' income and wives' shadow value of time in the way proposed by Willis (1974). Our working assumption is that the negative impact of wife's education on fertility is explained by the operation of a negative price effect, because education is taken as a proxy for wife's shadow value of time.

If we assume that households are exogenously singled out in different classes, then we can analyze the role of our variables in a class-segmented environment by testing the traditional fertility specification using class stratified sub-samples. Ignoring employers because of their low sample size, we are left with casual workers, permanent employees, and peasant heads.

We observe in table 1 that **EAR** is not statistically significant in the casual and permanent wage labour fertility equations. It seems that income related demand for children predictions of the neoclassical theory are not operating in both institutional arrangements--casual and permanent wage labour-- of the Brazilian rural proletarian case. If this result has some real meaning, then we conclude that intra-group rural proletarians' fertility differentials are not sensitive to income effects. A more robust result is obtained with respect to wife's education. This variable affects fertility negatively at statistically significant levels in both proletarian groups: casual and permanent. This result might indicate that the negative price effect of wife's education on proletarian's fertility is operating in the way predicted by the neoclassical theory.

The peasant's fertility equation estimation observed in table 1 shows a negative and statistically significant income effect. In accordance with neoclassical predictions, this

result may be caused either by the trade-off between quantity and quality or the indirect price effect of the wives' shadow value of time. Both results are likely and further studies should be pursued to disentangle them. On one hand, another study based on a survey of poor Brazilian households indicated that landed households tended to invest more in child quality than did the landless households. That study also indicated that child schooling and the use of modern agricultural technology affected negatively the demand for child quantity (Singh, Schuh, and Kehrberg, 1978). On the other hand, the high proportion of non-participating wives in the sample (84,6%) could not be used as an argument in favor of Willis' indirect price effect, because the other two proletarian occupations also present a high proportion of non-participating wives-- 83.9% for casual and 87.6% for permanent wage labourers. However, that differential price effect may appear because 12.2% of the remaining peasants' wives participate in the labour force as self-employed, and they are expected to present the same kind of non-participating indirect negative price interaction (Rios-Neto, 1987).

The wife's education estimated coefficient obtained in the peasants' fertility equation is not statistically significant. This result is just the opposite of that found among wage labour classes: peasants' income effect is statistically significant and wife's education is not. The **WIFEEDU** result may support both the role compatibility hypothesis and the wives' opportunity costs. It is suggestive that only 3.1% of peasants' wives in the sample participate as proletarians; this share is 9.1% among permanent husbands and 11.8% among casual labour husbands.

The fertility equation obtained from table 2, controlling for husbands' and wives' occupational choice, gives clearer results about the wife's education role. **WIFEEDU** looses significance in some specifications and becomes positive in others. Wives' proletarian status measured by the estimated coefficient of **AW** affects fertility negatively and

wives' self-employment status affects fertility positively, when indicated by the estimated coefficient of BW-- both at statistically significant levels. A gender-specific proletarianization mechanism seems to be inducing lower fertility. This result is consistent with both the neoclassical opportunity costs formulation and the role compatibility hypothesis.

This last fertility equation also indicates a direct effect of husbands' occupational status on fertility. The results indicate a positive effect of A (PLH of casual worker with respect to peasant) and a negative effect of B (PLH of permanent worker with respect to peasant) on fertility-- both statistically significant. If fertility of households with peasant heads is lower than in the case of casual heads and higher than permanent heads, then it appears that peasant fertility is not uncontrolled. This finding is in line with our negative income effect results obtained in table 1.

The results also indicate that labour market institutional arrangements affect the proletarianization debate results. Our theoretical discussion linked casual wage labour arrangements with the English debate, predicting higher fertility to casual than peasant households. We also linked permanent wage labour arrangements with the mature proletarian model, predicting lower fertility to permanent than casual households. These predictions are confirmed by the estimated coefficients. Two other empirical studies found a positive effect of proletarianization on fertility: Wood (1987) found a positive and significant result on rural fertility for a wage workers' dummy in 1980 southern Brazil and Merrick and Berquo (1983) also raised some doubts about the relevance of proletarianization for the explanation of the decline in Brazilian rural fertility. Another study, based on a sample of poor rural households, found that purely labour households had fewer children (Singh, Schuh, and Kehrberg, 1978).

CONCLUSION

We conclude that the neoclassical demand theory assumption that wife's education is a proxy for their shadow value of time is reasonable, and this partially explains why female education is so robust as a negative predictor of fertility. Nevertheless, the role of female education on wife's opportunity costs is stronger in the case of wage labour activities in comparison to the case of self-employed and non-participating wives. This is our gender-specific proletarianization result. The direct role of female education on fertility is less conclusive after we control for wives' class status. If female education affects household production efficiency, then children's shadow price would decline generating a positive effect on fertility. In the case of a supply-demand framework, female education may affect fertility positively if demand is rationed and some of the natural fertility constraints are relaxed for instance postpartum abstinence, breastfeeding and so on. If the wife's age of marriage is not controlled for, as in our study, then female education may present a negative effect on fertility.

Our findings are less conclusive with respect to the proletarianization debate. The European prediction that proletarianization enhances high rural fertility is confirmed by the case of casual wage labourers. This prediction is refuted in the case of permanent wage labourers; households with permanent wage heads follow a pattern of controlled fertility. This finding is in line with our occupational choice analysis. We predicted that permanent wage arrangements are contracts superior to casual ones in the occupational ladder (Rios-Neto, 1987). We are tempted to conclude that there is a connection between permanent wage households and the mature proletarian regime.

A word of caution: we recognize that the direct theoretical predictions from class and fertility may be cloudy, because the findings have a high component of **ex post facto** rationalization-- these kinds of rationalizations are an

important component of social sciences compared to the mere generating of unambiguous predictions from reduced form models. We apply econometrics with an informative aim, so that we have to test consistency of these results with other regressions and complementary historical analysis.

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TABLE 1

FERTILITY EQUATIONS- DEPENDENT VARIABLE= CHILDREN EVER BORN (CEB)

	ALL HEADS WIVES-35-49 N=1790 ESTIMATION (ST.ER.)	MEAN (ST.DV)	CASUAL HEADS WIVES 30-49 N=258 ESTIMATION (ST.ER.)	MEAN (ST.DV)	PERMANENT HEADS WIVES 30-49 N=516 ESTIMATION (ST.ER.)	MEAN (ST.DV)	PEASANT HEADS WIVES 30-49 N=1692 ESTIMATION (ST.ER.)	MEAN (ST.DV)
CEB	-	5.862	-	5.873	-	5.395	-	5.388
	-	(3.2573)	-	(3.3266)	-	(3.1914)	-	(3.1158)
INTERC	-23.5*	-	-17.7***	-	-8.8951	-	-7.50***	-
	(8.0359)	-	(10.2915)	-	(7.4031)	-	(4.0043)	-
EAR	-0.6320*	8.155	-0.6039	8.[illegible]4	0.205	8.235	-0.6575*	8.103
	(0.2030)	(0.5693)	(0.4751)	(0.58[illegible]1)	(0.3812)	(0.578)	(0.2017)	(0.5354)
HUSBEDU	0.0199	1.235	0.0308	0.6[illegible]8	-0.0778	0.941	-0.0143	1.288
	(0.0600)	(1.8315)	(0.1868)	(1.259[illegible])	(0.1102)	(1.533)	(0.0619)	(1.7544)
WIFEEDU	-0.1342*	1.264	-0.2604***	0.71[illegible]	-0.2798*	1.091	-0.0375	1.375
	(0.0460)	(1.9625)	(0.1438)	(1.431[illegible])	(0.0889)	(1.615)	(0.0449)	(1.9533)
OWNER	-0.1987	0.698	-0.2037	0.54[illegible]	0.6624**	0.3	-0.3922**	0.818
	(0.1706)	(0.4593)	(0.3947)	(0.498[illegible])	(0.2978)	(0.459)	(0.1893)	(0.3861)
IDLELAN	0.2782	0.318	1.8565	0.2[illegible]9	0.0301	0.225	0.5487	0.373
	(0.4231)	(0.2188)	(1.2984)	(0.184[illegible])	(1.0915)	(0.162)	(0.3880)	(0.2273)
VILELET	-0.7647***	0.237	0.8040	0.[illegible]4	-1.4065**	0.321	-0.8798***	0.184
	(0.4118)	(0.2571)	(1.0692)	(0.2561)	(0.7134)	(0.285)	(0.4495)	(0.2183)
AGEWIFE	1.5663*	41.29	1.3188**	38.509	0.5468	38.127	0.8169*	38.391
	(0.3796)	(4.2166)	(0.5127)	(5.779[illegible])	(0.3483)	(5.658)	(0.1895)	(5.651)
AGEWIFE2	-0.0173*	1722.663	-0.0150**	1516.2[illegible]9	-0.0051	1485.61	-0.0085*	1505.795
	(0.0045)	(352.4234)	(0.0066)	(450.4[illegible]64)	(0.0045)	(441.16)	(0.0024)	(441.022)
R-SQUARED	0.0718		0.1187		0.1269		0.1155	
F VALUE	17.224*		4.342*		9.228*		27.486*	

standard error and deviation between parenthesis
* reject Ho at 1% significance level- two tailed ** reject Ho at 5% significance level two tailed
*** reject Ho at 5% significance level- one tailed
SOURCE: Rios-Neto (1987), pp. 308-320

TABLE 2
FERTILITY EQUATIONS WITH CLASSES DEP.VAR- CEB

	WIVES 30-49 N=2583			WIVES 35-49 N=1789		
	ESTIMAT. (ST.ER.)	ESTIMAT. (ST.ER.)	MEAN (ST.DV.)	ESTIMAT. (ST.ER.)	ESTIMAT. (ST.ER.)	MEAN (ST.DV.)
CEB	-	-	5.409	-	-	5.862
	-	-	(3.150)	-	-	(3.257)
INTERC	-14.7713*	-10.3*	-	-36.3597*	-27.4094*	-
	(3.5627)	(3.01753)	-	(8.3153)	(7.8683)	-
A	0.9182**	-0.1255	-1.955	1.8129*	-0.2267	-1.978
	(0.4639)	(0.1441)	(1.225)	(0.6370)	(0.1859)	(1.221)
B	-0.2523*	-0.231*	-1.602	-0.1985**	-0.156***	-1.629
	(0.0661)	(0.0651)	(2.191)	(0.0862)	(0.0855)	(2.115)
C	0.5121*	0.4443*	-3.466	0.5557*	0.4452*	-3.334
	(0.1108)	(0.0950)	(1.532)	(0.1393)	(0.1200)	(1.518)
AW	-1.2513**	-	-2.922	-2.3622*	-	-2.851
	(0.5313)	-	(0.818)	(0.7328)	-	(0.814)
BW	0.1184***	-	-2.665	0.2087**	-	-2.578
	(0.0681)	-	(1.786)	(0.0933)	-	(1.706)
HUSBEDU	-0.0046	-0.3066*	1.220	0.3003	-0.2898*	1.235
	(0.1494)	(0.0754)	(1.816)	(0.2033)	(0.0965)	(1.832)
WIFEEDU	0.1892	-0.1155*	1.317	0.4546**	-0.1215*	1.264
	(0.3496)	(0.0355)	(1.978)	(0.1840)	(0.0459)	(1.963)
OWNER	-0.0272	-0.6376*	0.683	0.6358	-0.5910**	0.698
	(0.3496)	(0.2210)	(0.465)	(0.4698)	(0.2876)	(0.459)
IDLELAN	3.1599*	0.7226	0.325	5.3527*	0.3733	0.318
	(1.1246)	(0.4546)	(0.220)	(1.5322)	(0.6511)	(0.219)
VILELET	-0.7211**	-0.9540*	0.224	-0.765***	-1.0571*	0.237
	(0.3521)	(0.3085)	(0.247)	(0.3964)	(0.4015)	(0.257)
AGEWIFE	0.8206*	0.7898*	38.398	1.6714*	1.5895*	41.290
	(0.1551)	(0.1547)	(5.639)	(0.3793)	(0.3794)	(4.217)
AGEWIFE2	-0.0084*	-0.0085*	1506.19	-0.0179*	-0.0178*	1722.66
	(0.0020)	(0.0020)	(440.652)	(0.0045)	(0.0045)	(352.423)
REGIONAL	-	-	-	-	0.2207	0.565
	-	-	-	-	(0.2257)	(0.496)
R-SQUARED	0.121	0.1191		0.0809	0.0757	
F VALUE	29.504*	34.734*		13.028*	13.244*	

SOURCE: Rios-Neto (1987), pp.321-322.