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The socio-economic consequences of a reduction in fertility

Application of the ILO-IBGE[1] national model (BACHUE-Brazil)

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1. Introduction

One of the major concerns of the present day is to identify social, economic or demographic policies which hold out the promise of alleviating, if not solving, the problems associated with the underemployment of vast sections of the population in developing countries. In many academic and even political circles discussion has focused on the rate of growth of the populations in question and its effects on underemployment; in some cases this has led to programmes that have sought to act directly on the birth rate. However, the results of these programmes have rarely come up to expectations even when, as in India, enormous resources have been devoted to them. Accordingly, attempts to slow the rate of population increase are now coming to rely increasingly on less direct measures of a social and economic nature.

The aim of this article is to contribute to the debate on the implications of demographic change for underemployment, the well-being of the population and income distribution by attempting to assess, in the case of Brazil, the probable effects of a reduction in fertility achieved by measures acting directly on the behaviour of the population and not by bringing about changes in socio-economic conditions. The analytical tool we shall use is the BACHUE-Brazil simulation model. Developed jointly by the ILO and the IBGE, this model seeks to provide a dynamic representation of the principal relationships between the economic and demographic subsystems. It makes it possible to estimate the effects of various socio-economic development strategies on the system as a whole and on one or other of its individual elements.[2]

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In order to estimate the consequences of an abrupt and instantaneous reduction in the age-specific fertility rates, we have replaced the fertility rates calculated in the model with exogenous values in such a way as to bring the net reproduction rate down to unity. Obviously this is only a working hypothesis and is highly improbable in real life. A reduction in the birth rate, however rapid it may be, is never instantaneous as we have assumed. Moreover, even with a high-pressure birth control policy, such a pronounced reduction would be out of the question. Finally, the reduction would normally be characterised by a change in the distribution of age-specific fertility rates. Nevertheless, this simplification does not invalidate the results of the exercise. An instantaneous reduction makes the consequences more obvious than if the decline occurred gradually and its very scale, by exaggerating the system's reaction, makes it possible to identify the effects more clearly. The change in the distribution of fertility rates would only have marginal effects, many of which are in any case not taken into account in the model's specification.

The results of the hypothesis are dictated by the structure of the model, which gives a quantitative, formalised representation of the system analysed; for this reason we feel it necessary to give a brief description of the model, laying particular stress on the aspects directly related to the concepts of overpopulation and employment.[3]

2. A brief description of the BACHUE-Brazil model

The model comprises a demographic subsystem and an economic one, each composed of four blocks. In the economic subsystem these are final demand and production; the labour market; wages and other income; and income distribution. The four blocks in the demographic subsystem are mortality; fertility; migration; and education.

The structure of BACHUE-Brazil is such that final demand has precedence over supply. Given the present organisation of the Brazilian production system and its associated distribution of income, it is the level and composition of this demand that determine the way in which human resources and the other factors of production are distributed.

The main components of final demand are private consumption and investment. The first of these, which amounts to approximately two-thirds of the national product, evolves in line with the level and distribution of household income and the average number of children and adults per household. Investment is divided into public and private investment. Public investment is exogenous but it may be limited by the financing capacity of the economy as a whole. In regard to private investment—which is the first to suffer from any possible financing difficulties—the model differentiates between desired and actual investment. The first depends on the increase in demand, utilisation of production capacity and the amortisation rate, the

second on the desired level of investment and the financing capacity, which in turn depends on the level of domestic saving and foreign resource availability.

Investment has two contradictory effects on employment. As a component of final demand it leads to an increase in production and, consequently, in employment, whereas, as a factor of production which can be substituted for manpower, it tends to reduce the increase in employment. The extent to which capital and labour can be replaced by each other depends on the elasticity of substitution. In the modern sectors this elasticity is low since the predominant technology is imported, hence predetermined, and is not easily adaptable to the current state of the labour market; the level of employment in these sectors will depend, therefore, mainly on the technology used and, if this remains unchanged, will rise and fall with the demand for the goods and services they produce. In the traditional sectors the elasticity of substitution is high and the replacement of labour by capital depends on the financing capacity and the relationship between profits and wages. For example, a trend towards higher wages will entail an increase in investment if the financing capacity permits and thus reduce the demand for labour. In this way the share of profits is protected.

In the traditional sectors a distinction is made between wage earners and the self-employed. The data on incomes showed that the average income of the self-employed was generally higher than that of wage earners so that the percentage of the self-employed in the traditional sectors cannot be used as a valid indicator of the level of underemployment. On the contrary, some workers may prefer this type of activity to wage employment.

To sum up, in BACHUE-Brazil the level and composition of final demand determine the manner in which the economically active population is distributed between the sectors. This distribution assumes a spatial mobility (migration), a horizontal mobility (between sectors or groups of the economically active population) and a vertical mobility (according to the level of education) in the various categories of workers attempting to adjust to the needs of production. The result is not, however, equilibrium between job supply and demand since the composition of the economically active population changes slowly and above all because the Brazilian labour market is characterised by a structural surplus of manpower.

The mechanisms of the labour market make it possible to define the notion of overpopulation, which is equated in BACHUE-Brazil with that of underemployment. The level of underemployment is measured by the percentage of families with an income which is insufficient to meet their basic needs. Consequently, if we ignore visible unemployment—which affects only 2 to 3 per cent of the economically active population anyway—underemployment depends on the formation of family income. The equations which determine this follow the neo-classical theory: wages

change in accordance with disequilibria between manpower supply and demand, although they are also influenced by the level of education and official wages policy. Profits, consisting of the value added not passed on to wage earners, vary in inverse relationship to the wage bill. A part of these profits, in inverse proportion to the level of modernisation in the traditional sectors, forms the income of the self-employed.

At each stage in the development of the production system, corresponding to the utilisation of a specific technology, overpopulation depends, at a given level of final demand, on the size and composition of the economically active population. Since, in the present version of the model, participation rates are exogenous, overpopulation is determined entirely by the evolution of the demographic subsystem. Its volume depends on the level of mortality and fertility while its composition is determined in addition by migratory movements and the access of different sections of the population to education. It could be concluded, then, that a reduction in the population growth rate ought to result in a drop in the manpower surplus and in underemployment. It is this hypothesis which is tested here with the aid of the BACHUE-Brazil model.

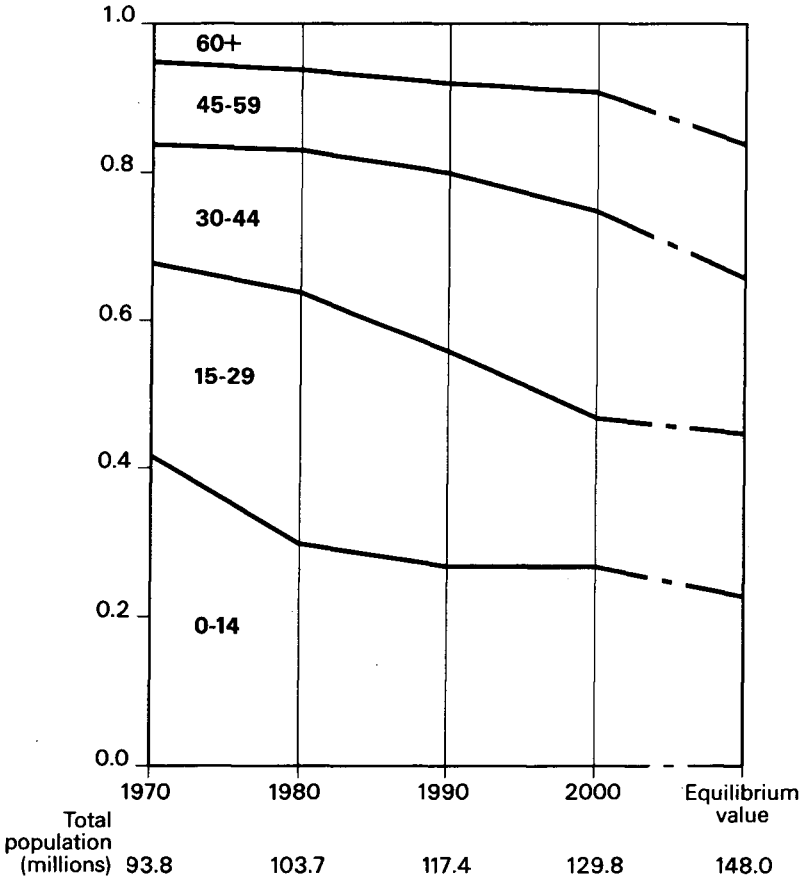
3. Some demographic considerations

The net reproduction rate (NRR) of a population reflects the combined effects of mortality and fertility. It can be defined as the average number of girls who survive to the average age of their mothers at the time of their confinement. When its value is close to unity this means that the present cohort of fertile women will be replaced by a cohort of the same size.[4]

The demographic consequences of a sudden reduction in fertility are varied. Some, such as ageing of the population, are obvious (Frejka). The continuation of population growth long after the level of fertility assures only its bare replacement (which corresponds to a zero population growth) and the evolution of the age structure are less predictable. With the assumption of a NRR equal to unity starting in 1970, the projection obtained using the components method shows that the Brazilian population would continue to increase for a further hundred years. At the end of this period the population would be 57 per cent higher than in 1970 (148 million as against 94 million).

Population growth during the simulated period is not regular because of the inertia which results from the original age structure. Between 1970 and 1975 there is a sharp drop in the rate of increase, which is a corollary of the fall in the NRR. The average annual increase, which was around 3 per cent in the observed period, falls to less than 1 per cent. In the period 1975-90 it picks up again and eventually reaches 1.24 per cent. This can be explained by the fact that the cohorts aged under 15 in 1970, who were born when demographic growth was rapid, reach the age of procreation

Changes in the age pyramid



during this period. After 1990 the rate starts to decline again but nevertheless remains positive for more than 80 years.

Taking into account the hypotheses made about the changes in fertility, the age pyramid goes through a series of phases as shown in the accompanying diagram. By comparison with 1970 the population share of the 60-and-over age group has trebled by the end of the period; the 45-59 group has doubled while the 0-14 group only reaches half its initial share.

Such pronounced changes in the size and structure of the population are bound to have major social and economic consequences. We shall discuss some of these in the following section, fixing the horizon of the simulation at the year 2000, which is approximately the limit of the model's validity under various hypotheses of changes in the economic and demographic variables.

4. Socio-economic consequences

The following comments are based on a comparison of the results of a BACHUE-Brazil simulation assuming a drop in fertility produced exogenously with the results of a reference simulation. The latter is based on the assumption that the trends and policies characterising the period 1970-75 will continue unchanged until the year 2000.

The model, which is characterised by a high degree of endogeneity and disaggregation, generates a large number of results, the most significant of which for our purposes are reproduced in tables 1 and 2 in the appendix to this article.

The reduction in fertility produces a more marked and more rapid decrease in the rural population than in the urban one. The reason for this is that, because rural fertility is higher to start with, the assumption of a NRR equal to unity causes a proportionally greater reduction in the rural population. This exogenous effect is compounded by the endogenous effect of an increase in rural-urban migration. But how is this trend to be explained when agricultural wages rise more than all other incomes? The reduction in fertility produces, in the medium and long term, a relative decrease in the supply of agricultural manpower for any given rate of labour force participation. This decrease leads to a rise in agricultural wages, which pushes agriculture towards more capital-intensive forms of production. The resulting drop in demand for wage labour brings about changes in the structure of the rural population. The proportion of self-employed peasants rises and this depresses their average income. The increase in migratory movements results therefore to a large extent from the deterioration in the position of the self-employed who, faced with the modernisation of farming techniques, find migration to the towns the only possible solution. It should be noted that in the year 2000 there is a drop in the migration rate as well as a rise in the wages of workers with primary or more advanced education. The intensity of past migratory movements, combined with the drop in fertility and the modernisation of agricultural production, results in any event in a reduction in the surplus of manpower with this level of education.

In the urban areas the sudden reduction in fertility does not affect the level of employment in the modern sectors since the technology used offers, as we said above, only minimal possibilities for labour-capital substitution. The level of employment is therefore determined by the level of final demand and, possibly, labour shortages. Assuming a drop in fertility, final demand differs little from the demand in the reference simulation; on the other hand, the modern sectors, thanks to technological progress, are able to increase their productivity, which leaves them unaffected by the reduction in the manpower supply and means they can keep wages at more or less the same level as in the reference run.

The position is quite different in the traditional sectors: the drop in manpower supply forces wages up, resulting in the use of more modern technology which makes it possible to economise on manpower and increase labour productivity. This trend benefits manpower with a middle or higher level of education, whose wages and incomes increase substantially. On the other hand, the situation of groups with little or no education deteriorates since modernisation, by altering the structure of employment in favour of the most highly skilled, deprives a section of the less skilled labour force of work. This deterioration is also the outcome of an increase in migratory movements and in the percentage of illiterates, a point to which we shall return later. Hence, while the reduction in fertility leads to a drop in the total supply of labour, it also modifies the structure of the labour force and the size of the relative surpluses and shortages of labour with different levels of education. It only benefits the better educated classes who are also the least numerous.

From the macro-economic standpoint, despite the obvious increase in average per capita income, the exercise shows that the effects of a reduction in fertility on the rate of economic growth are almost negligible. Up to about 1990 the decline in the economically active population is minimal. Family incomes rise significantly but the increase does not modify final demand. This is because the direct effects of the increase in incomes are offset by the effects of the drop in the average number of persons per family. Furthermore, the acceleration of migratory movements ensures a reasonable supply of manpower on the urban labour market so that an increase in capital investment is not justified.

More marked effects are felt during the period 1990-2000. Investment increases since the drop in manpower supply encourages the modernisation of traditional undertakings. Private consumption changes little and even shows a slight tendency to decline compared with the reference simulation; this can be explained first of all by the reasons already given as well as by the drop in the number of households and, above all, by changes in the income distribution. The over-all distribution, measured by the Gini coefficient, shows a very decided improvement during this period. However, examination of the data broken down by level of education shows that the variations in this coefficient, especially in the urban areas, only reflect a better distribution of income among the middle and wealthy classes and not a redistribution in favour of the poorest.

The changes in private consumption result both from the mathematical formulation of the consumption functions (whose specification in BACHUE-Brazil is linear, consumption being determined by the average income and the number of adults and children in each income class) and from the marginal propensity to consume of each income class. Since the increase in incomes mainly favours those whose marginal propensity to consume is fairly low, it tends to result in an increase in private saving, which is only partially utilised for direct productive investment.

Finally, attention should be drawn to the rise in the percentage of illiterates—caused by the ageing of the population—which contributes to the worsening position of this group despite a reduced over-all supply of manpower. At the same time, since public consumption tends to rise and expenditure on education represents a constant fraction of it, the result is a considerable increase in the cost of education per pupil.

5. Conclusions

The results obtained from our simulation lead then to the conclusion that a sudden reduction in fertility would not have a significant effect on the Brazilian economy and would not tend to improve the income distribution except among the middle and wealthy classes.

The medium-term effects are negligible, as can be seen from tables 1 and 2. The only variables which are significantly different from the reference simulation are the economically active agricultural population, which is already falling, and the rate of rural-urban migration, which is on the increase. Since the model is not specifically conceived for studying the medium term it does not describe the main effect these trends would have, i.e. more expensive agricultural products (Bacha). Per capita output increases during the period, but this does not affect the development of the economic subsystem since it is only an arithmetical effect without feedbacks.

In the longer term the drop in the total supply of workers would lead to the modernisation of the traditional sectors, especially agriculture; but this would aggravate the economic difficulties of the groups which are already the least privileged.

It should be remembered, however, that these conclusions are based on a number of hypotheses which have little chance of being observed in practice. They assume the existence of a birth control policy that reduces the growth of the Brazilian population to its bare replacement rate, but no account is taken of the cost of this policy or of whether it is really practicable. These two points are by no means negligible in the case of Brazil since, if a birth control policy were to encounter cultural and religious opposition, its viability would be seriously compromised and its cost would increase. A part of the resources freed by a reduction in population growth and devoted in our simulation to modernisation of the traditional sectors might instead have to be used to finance such a policy.

The female participation rates are kept constant in the simulation. It is more than probable, however, that a sharp reduction in fertility would lead to a rise in the supply of female labour, as has been seen to occur in other countries as well as in the urban areas of Brazil (Rato). The reduction in the economically active population brought about by the fall in fertility would then be offset, in the medium term at least, by the entry of more women into the labour market, which would slow down the simulated trends. Finally, it is also possible that slower population growth could have deflationary effects on the economy (Singer).

To sum up, even if we simulate such an abrupt reduction in fertility as to be barely within the bounds of possibility and neglect many of the compensating mechanisms that would tend to reduce its effects, the results achieved on the socio-economic plane fall far short of the expectations generally aroused by a birth control policy in the developing countries. In our view a favourable conclusion about the possible benefits of such a policy hardly seems justified, but in any case we hope to have contributed to research in this field, if only by stimulating criticism and discussion.

Notes

[1] IBGE is the Portuguese acronym for the Brazilian Institute of Geography and Statistics.

[2] A report on this simulation exercise was presented by J. B. Figueiredo, Head of the Subdirectorate of Geographical and Economic Studies of the IBGE, at a seminar on "The challenges of the eighties" organised by the Brazilian National Economic Development Bank (BNDE), the *Jornal do Brasil* and the Club of Rome (Rio de Janeiro, 2-5 July 1979). Readers may recall that the *Review* published an article by Richard Blandy and René Wéry on the first in the series of BACHUE models, entitled "Population and employment growth: BACHUE-1" (May 1973), and another by M. J. D. Hopkins, G. B. Rodgers and R. Wéry on the application of BACHUE to the Philippines, entitled "Evaluating a basic-needs strategy and population policies: the BACHUE approach" (Nov.-Dec. 1976).

[3] Readers needing more detailed information are referred to Bragança, Burle de Figueiredo and Rato (see the following short bibliography).

[4] Using a method borrowed from Keyfitz we can obtain indirectly the age-specific fertility rates corresponding to a given NRR. The method consists in estimating the NRR and the age-specific fertility rates using data supplied by the model and dividing each fertility rate by the estimated NRR. Its justification lies in the specification of the NRR:

$$\text{NRR} = \int_a^b f(x)\, l(x)\, dx,$$

where $f(x)$ = fertility rate of the age group x to $x + 5$
$l(x)$ = women surviving to the age x
a, b = limits of the fertile age group.

It is not possible with this formula to take account of changes in the reproduction pattern but it is valid for estimating the growth of a population solely on the basis of the age structure.

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Appendix

Table 1. Over-all results

Variable		Unit	Reference simulation		Fertility reduction simulation	Percentage variation[1] compared with the reference simulation (%)		
			1975	2000	2000	1980	1990	2000
Total population		Millions	107.00	205.00	132.00	−15.00	−24.50	−35.61
Urban population		"	61.00	129.00	95.00	−8.50	−15.50	−26.34
Rural population		"	46.00	76.00	37.00	−19.60	−37.10	−51.32
Literate over 19 years	Urban	%	73.77	82.70	80.90	−0.11	−0.84	−2.18
	Rural	"	39.90	57.30	53.70	−0.34	−3.20	−6.28
Average number of persons per family	Urban	Units	4.48	3.91	3.39	−9.86	−12.59	−13.30
	Rural	"	5.41	4.59	3.35	−17.92	−24.70	−27.02
Male life expectancy	Urban	Years	62.85	63.65	63.65	0.00	−0.08	0.00
	Rural	"	50.57	52.47	52.69	−0.02	0.22	0.42
Urban labour force	Non-agricultural	Millions	18.00	41.70	34.90	0.00	−3.30	−16.31
	Agricultural	"	1.50	2.30	1.90	−0.20	−4.80	−17.39
Rural labour force	Non-agricultural	"	1.30	1.20	1.10	−3.80	−6.10	−8.33
	Agricultural	"	13.00	22.50	14.00	−4.30	−23.30	−37.78
Urban wage earners	Modern sectors	"	8.00	17.00	17.00	0.40	0.90	0.00
	Traditional sectors	"	7.00	11.00	8.00	2.10	−8.70	−27.27
Urban self-employed	Traditional sectors	"	3.00	12.00	9.00	0.90	−2.80	−25.00
Rural wage earners	Agricultural	"	4.50	12.60	5.60	−2.80	−20.20	−55.56
Rural self-employed	Agricultural	"	7.00	8.40	8.00	0.50	−1.40	−4.76
Average family income	Urban	Cruzeiros[2]	1 000	2 950	3 390	−0.70	3.62	14.91
	Rural	"	356	750	1 050	−0.07	15.11	40.00
Gini coefficient	Urban	%	59.91	63.70	61.80	0.20	−1.30	−2.98
	Rural	"	65.53	71.20	67.20	−0.30	−5.10	−5.62

Profits distributed to employers	Urban	Thousand million cruzeiros[2]	8.66	84.16	76.86	0.53	−0.93	−8.67
	Rural		2.19	9.93	8.99	−4.85	−11.32	−9.46
Average urban wage	Modern sectors	Cruzeiros[2]	636.42	1 313.63	1 642.43	0.10	3.50	25.03
	Traditional sectors	"	235.84	558.78	725.89	−2.10	7.20	29.91
Average income, urban self-employed	Traditional sectors	"	384.44	450.07	598.07	−0.80	2.21	32.74
Average wage, rural	Agricultural	"	113.74	104.13	314.45	2.20	48.10	201.98
Average income, rural self-employed	Agricultural	"	102.32	370.99	342.20	−4.43	−9.90	−7.76
Private consumption		Thousand million cruzeiros[2]	208.66	1 266.84	1 251.51	0.00	−0.70	−1.21
Household saving		"	6.56	207.08	210.56	0.00	0.90	1.68
Public consumption		"	33.65	222.41	229.01	0.00	0.90	2.97
Public investment		"	14.64	91.49	92.73	0.00	0.00	1.35
Private investment		"	80.31	743.31	755.61	0.00	0.03	1.65
Value added		"	317.69	2 224.80	2 230.90	0.02	−0.10	0.27
Value added per head		Cruzeiros[2]	2 970	10 860	16 800	15.80	32.50	54.60

[1] These variations are obtained by using the formula $\frac{v_e - v_r}{v_r}$, where v_e is the value obtained during the exercise and v_r that of the reference simulation. [2] The values in cruzeiros are at constant prices of 1970.

Table 2. Labour market: results broken down by level of education

Variable	Level of education[1]		Reference simulation		Fertility reduction simulation	Percentage variation[2] compared with reference simulation (%)		
			1975	2000	2000	1980	1990	2000
Urban population, all age groups (000's)	E_1		25 269	44 976	29 307	2.07	−23.40	−34.84
	E_2		28 165	62 946	48 208	−3.74	−11.73	−23.41
	E_3		4 140	11 052	8 875	−0.27	−14.50	−19.70
	E_4		3 171	10 347	8 968	0.17	2.97	−13.33
Rural population, all age groups (000's)	E_1		34 426	42 231	19 542	−23.25	−41.24	−53.73
	E_2		11 058	31 343	16 709	−12.30	−34.87	−46.69
	E_3		542	1 270	782	−4.19	−21.53	−38.43
	E_4		287	561	417	−0.33	−11.31	−25.67
Rural-urban migration probabilities, men, by age group (%)	E_1	19-24 years	1.2	1.4	2.2	37.0	54.0	57.14
		25-29 years	1.0	1.2	1.8	40.0	55.0	50.00
		30-34 years	0.9	1.0	1.5	36.0	56.0	50.00
	E_2	19-24 years	7.5	8.3	1.1	37.0	56.0	−86.75
		25-29 years	6.5	7.2	0.9	41.0	81.0	−87.50
		30-34 years	5.7	6.3	0.8	40.0	86.0	−87.30
	E_3	19-24 years	9.9	9.9	9.9	0.0	0.0	0.0
		25-29 years	9.9	9.9	9.9	0.0	0.0	0.0
		30-34 years	9.9	9.9	9.9	0.0	0.0	0.0
	E_4	19-24 years	9.9	9.9	9.9	0.0	0.0	0.0
		25-29 years	9.9	9.9	9.9	0.0	0.0	0.0
		30-34 years	9.9	9.9	9.9	0.0	0.0	0.0
Wage earners, urban modern sectors (000's)	E_1		.	.	.	.	.	.
	E_2		4 483	8 067	8 071	0.30	0.14	0.05
	E_3		1 802	4 446	4 430	0.45	0.76	−0.36
	E_4		1 242	4 796	4 815	0.04	0.36	0.40
Wage earners, urban traditional sectors (000's)	E_1		2 183	1 822	2 287	3.33	8.76	25.52
	E_2		3 854	7 112	5 484	2.07	8.87	−22.89
	E_3		335	1 056	270	0.92	45.93	−74.43
	E_4		246	1 203	402	0.05	28.74	−66.58

Self-employed, urban traditional sectors (000's)	E_1	1 256	3 284	2 409	1.50	−2.55	−26.64
	E_2	1 546	8 119	6 194	0.55	−2.16	−23.71
	E_3	130	568	384	−0.52	−9.99	−32.39
	E_4	61	226	118	−0.93	−11.50	−47.79
Rural agricultural wage earners (000's)	E_1	3 006	4 986	2 091	−2.71	−10.80	−58.06
	E_2	1 035	7 262	3 332	−2.70	−31.58	−54.12
	E_3	69	240	107	−8.57	−36.98	−55.42
	E_4	25	60	45	0.00	−15.79	−25.00
Rural agricultural self-employed (000's)	E_1	3 614	4 445	4 352	0.68	−0.39	−2.09
	E_2	2 403	3 833	3 682	0.30	−1.67	−3.94
	E_3	40	87	85	0.00	−1.56	−2.30
	E_4	12	29	29	0.00	0.00	0.00
Average wage, urban modern sectors (cruzeiros[3])	E_1	.	.	.	.	.	.
	E_2	244	234	245	0.56	0.37	4.56
	E_3	626	1 268	1 430	0.63	0.91	12.80
	E_4	2 169	3 274	4 287	0.56	4.71	30.93
Average wage, urban traditional sectors (cruzeiros[3])	E_1	82	244	194	−2.89	−7.97	−20.45
	E_2	201	294	368	−2.53	10.24	25.21
	E_3	624	1 351	4 665	0.79	80.72	245.20
	E_4	1 616	2 054	5 577	0.72	32.19	171.55
Average income, self-employed, urban traditional sectors (cruzeiros[3])	E_1	158.75	156.50	83.77	−1.23	−22.43	−46.47
	E_2	512.94	432.63	335.76	−0.92	−7.10	−22.39
	E_3	1 702.73	2 049.41	5 352.69	−3.44	52.05	161.18
	E_4	4 299.75	3 492.35	5 450.16	2.47	11.22	56.06
Average wage, rural agricultural wage earners (cruzeiros[3])	E_1	54.51	18.81	55.79	−0.73	51.46	196.60
	E_2	196.69	96.41	369.31	9.00	107.93	283.06
	E_3	892.80	1 545.56	3 296.03	7.19	53.10	113.26
	E_4	1 734.93	4 129.91	5 806.76	−1.33	13.63	40.60
Average income, rural agricultural self-employed (cruzeiros[3])	E_1	57.07	200.67	185.80	−3.71	−11.00	−7.41
	E_2	156.71	537.88	497.34	−4.75	−9.27	−7.54
	E_3	599.51	1 342.19	1 240.89	−9.40	−5.75	−7.55
	E_4	709.66	1 500.75	1 349.77	−8.94	−7.06	−10.06

[1] E_1 = illiterate; E_2 = primary level, whether completed or not; E_3 = secondary level not completed; E_4 = secondary level completed or higher level. [2] See note 1 to table 1.
[3] The values in cruzeiros are at constant prices of 1970, when the minimum wage was 159 cruzeiros.