

Uruguay 1998-2002: income distribution during the crisis

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Following a period of growth in the 1990s, Uruguay experienced a 17.5% fall in output between 1998 and 2002. This study sets out to analyse the distribution of income in that period of crisis and to ascertain which population groups were worst affected. The results indicate that a tendency towards income concentration which had begun in the mid-1990s became more pronounced. Furthermore, analysis of different population groups by sociodemographic and socio-economic characteristics reveals two other ongoing phenomena: a widening of the income gap between people from households with different levels of education, and between people from households dependent on pensions and allowances on the one hand, and earnings on the other. This was reflected in the age structure of the population: minors were worse affected than older adults, so that the tendency for children to concentrate in the lower income strata was entrenched.

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I

Introduction

In the first half of the 1990s, when income inequality was increasing in several of the region's countries, Uruguay maintained a relatively stable distribution (Vigorito, 1999). For this reason, it was cited as the Latin American country best placed to deal with the adverse social effects of market opening, macroeconomic adjustment and reform (Kaztman, Filgueira and Furtado, 2000).

In the second half of the decade, however, a slight increase in income dispersion began to be perceived. With the deep economic slump that began in 1999, the tendency towards concentration consolidated. Against this background, the present study sets out to analyse how income distribution developed between 1998 and 2002 and, in particular, to describe the changes that occurred in different population groups. The population groups analysed were classified both by sociodemographic criteria and by socio-economic ones (origin of household income), making it possible not only to characterize social structures but to explore the causes of inequality trends as well.

Section II that follows offers a medium-term overview of income distribution, while section III focuses on the five years from 1998 to 2002. The results obtained by analysing inequality in relation to the sociodemographic structure and the socio-economic structure (origin of household income) of the population are given in sections IV and V, respectively. The distribution among individuals of per capita household income was taken for this purpose, using the 1998 and 2002 findings of the Continuous Household Survey (Encuesta Continua de Hogares-ECH) conducted by the National Institute of Statistics (Instituto Nacional de Estadísticas-INE). The income of each individual was deemed to be the per capita income of his or her household, including the value of housing. Certain social benefits were excluded because a change in the ECH questionnaire affected measurements of inequality, as detailed in appendix A. Appendix B presents the methodology used to analyse the population groups.

II

The 1990s: growth with the first signs of greater inequality

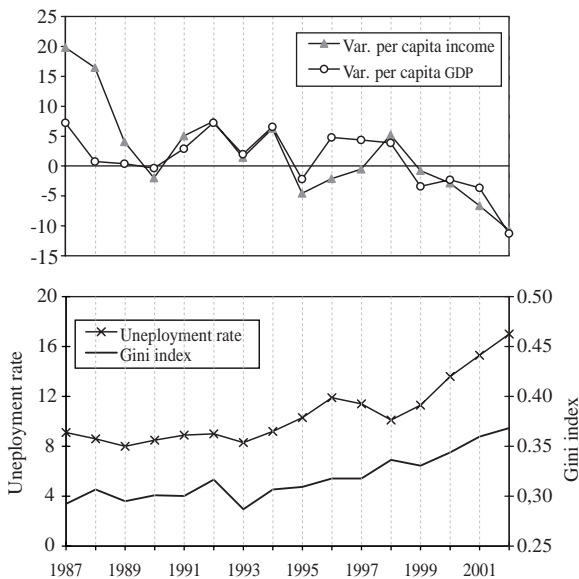
From the mid-1980s until 1998, the country's economy went through a period of growth with only one year of decline (-1.5%), in 1995. Per capita household income, however, showed a rising tendency only up until 1994, after which it grew in only one year, 1998 (figure 1). It is often argued that the evolution of per capita household income was due less to gross domestic product (GDP) growth rates than to changes in the unemployment rate and the behaviour of the labour market in general. Certainly, unemployment rose in 1995 and then more sharply in 1996, despite the economic recovery; and although it then diminished over the course of 1997 and 1998, it remained higher than at the start of the decade.

Income inequality remained stable until the mid-1990s, but from then until 2002 income concentration increased. This was due in some measure to the fact that income from pensions and allowances increased by more than earnings (Bucheli and Rossi, 1994; Machado and Reggio, 1999; Vigorito, 1999; Arim and Furtado, 2000), but the most important role was played by labour market changes in the 1990s. Not only did unemployment increase in the second half of that decade, but so did wage dispersion (Vigorito, 1999; Bucheli and Furtado, 2000a; Kaztman, Filgueira and Furtado, 2000; UNDP, 2001).

Where the dispersion of earnings is concerned, one of the best-documented phenomena was the growth

FIGURE 1

Urban areas of Uruguay: Annual percentage variation in per capita income and GDP, unemployment rate and Gini index, 1987-2002



Source: Prepared by the authors using data from the Central Bank of Uruguay and the National Institute of Statistics (INE).

in returns on education in the latter half of the 1990s. Wage equations calculated for private-sector workers showed that towards the end of the decade the returns on higher levels of education increased, widening the pay differentials between workers with different education levels (Bucheli and Furtado, 2000b).

Arim and Zoppolo (2000) found that the increase in the relative pay of more highly educated workers accounted for about half the increase in dispersion, something that is consistent with growth in the demand for skilled labour outstripping growth in the supply. According to Casacuberta and Vaillant (2002), this shift in demand resulted from the introduction of new technologies that complemented skilled labour, driven by trade liberalization.

The greater dispersion of earnings was not only due to the change in the returns on education. Arim and Zoppolo (2000) highlight the role of a second factor: the new form of pay-setting in the 1990s, when a centralized sector-level system was replaced by decentralized bargaining at the company level.

In the latter half of the 1980s, wages in each sector of activity were set by negotiations between the trade union and the relevant employers' association. Agreements were ratified by the government and were thus binding on all economic units engaged in the activities covered by them. Miles and Rossi (2001) note that the greatest beneficiaries from this centralized bargaining were workers in the lower part of the income distribution, at a time when union membership was high. In 1991, the State withdrew from this wage-setting procedure, leaving businesses and workers to negotiate on a voluntary bipartite basis. As union membership fell and trade liberalization measures were implemented, this change in the role of the State contributed to an increase in wage dispersion between companies in the same sector, with growing differences, for example, by size, by union membership rates, and indeed by education level.

A third factor contributing to greater wage dispersion has been public policy. Miles and Rossi (2001) attribute part of the increase in this dispersion in the 1990s to the rise in public-sector wages and the fall in the national minimum wage.

On the one hand, whereas the public-sector pay index rose by less than the private-sector pay index in the first half of the decade, in 1995 it began to rise by more. Thus, between 1995 and 1999 public-sector pay grew by 11% and private-sector pay by 2%. Using household surveys from the beginning and end of the 1990s, Miles and Rossi found that in each quantile of the public- and private-sector pay distribution, public-sector pay rose by more or fell by less than private-sector pay, resulting in an increase in overall wage dispersion.

Second, during that decade the minimum wage tended to decline in real terms. This development did not affect the capital, where just under half the country's population live, since the bargaining process enabled workers to secure minimum wages higher than the official level. However, it did affect the country's other urban areas (where pay has traditionally been lower than in the capital), because the geographical dispersion of workers made it easier for companies to exercise monopsonic power. Consequently, the fall in the minimum wage led to a sharp decline in real pay among the lower strata in those areas.

III

The years from 1998 to 2002: crisis and deepening inequality

The evolution of the indicators presented in figure 1 reflects the recent crisis: the decline in economic activity resulted in lower household incomes and higher unemployment.

The recession that began in 1999 deepened over the following years, resulting in a cumulative output fall of some 17.5% between 1998 and 2002. The decline in activity was initially associated with a loss of competitiveness vis-à-vis Brazil owing to the latter's currency devaluation, which came on top of the loss of competitiveness that Uruguay was already experiencing in relation to the rest of the world. The effects were compounded by other factors: higher international interest rates and oil prices, falling international prices for certain goods exported by Uruguay (meat, wool and rice, among others), a drought that hit the agricultural and electricity generation sectors particularly hard, and the appearance of foot-and-mouth disease in early 2001, which resulted in a number of external markets being closed to Uruguayan exports. All this was made yet worse by the sudden abandonment of the convertibility system and the outbreak of financial crisis in Argentina, followed by the financial crisis in Uruguay, which culminated in 2002 with a 10.8% fall in GDP.

In these circumstances, the unemployment rate climbed to its highest ever levels, averaging 17% in 2002, while long-term unemployment also rose. At the same time, the average values of pensions and allowances fell in real terms, as did earnings and income from capital.

The drop in income from capital can be put down to the financial crisis which resulted, among other things, in lower interest rates, the closure of financial institutions and lower rents as the volume of real-estate transactions dwindled.

The drop in pensions and allowances was largely related to a change in the personal income tax (*impuesto a las retribuciones personales-IRP*) in 2002. This tax, which applies both to pensions and allowances and to wages, rises progressively up the

income bands. The change increased the number of bands and widened the spread of taxation rates, so that after-tax pensions and allowances fell.

Obviously, this change also affected the after-tax income of formal-sector workers. The decline in earnings, however, had more to do with the crisis and the dynamic of the labour market, while wage dispersion also increased. This ongoing concentration of earnings had characteristics similar to those described for the second half of the 1990s.

First, the public-sector and private-sector pay indices continued to diverge. Having risen by more than private-sector pay up until 1999, public-sector pay now fell by less. Thus, public-sector pay fell by a cumulative 8% in real terms between 1998 and 2000 and private-sector pay by 12%, which indicates that, while public-sector workers were not immune to the crisis, they did have some "protection".

Second, education-linked pay differentials continued to widen (Amarante and Arim, 2003). Furthermore, while unemployment affected all workers, the likelihood of becoming unemployed increased less for those with higher levels of education (Bucheli and Casacuberta, 2003). Where jobs with social security coverage are concerned, the trend cannot be analysed owing to a change in the way information was gathered in 2001. It is likely, however, that the trend towards higher growth in informal working seen among less educated workers in the 1990s continued into 2001 and 2002: given the differentiated impact of unemployment, this may have acted as a survival strategy for workers in response to the crisis. Indeed, between 1998 and 2002 the share of workers doing own-account work without premises increased from 7% of all employment to 10%.

In this general context, average per capita incomes fell by 20% between 1998 and 2002, and the process of income concentration continued. Calculated for the distribution among individuals of per capita household income, the Gini index rose from 0.437 to 0.459, the Theil index from 0.344 to 0.382, and the entropy 0 index from 0.336 to 0.367.

IV

Changes in the sociodemographic structure

The positions of different sociodemographic groups have been extensively studied in Uruguay. Children and adolescents, extended households and households formed by adults with little education have traditionally been over-represented in the lower-income strata. This

is reflected in table 1, which presents the share of the different groups in the individual per capita income distribution quintiles.

Thus, in 2002, 40% of those in quintile 1 were under 14 and only 4% were over 59; in quintile 5, 35%

TABLE 1

Urban areas of Uruguay: Shares of the different sociodemographic groups in the quintiles and the population as a whole, 2002^a
(Percentages)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Age groups						
0 to 13	40	26	18	12	9	21
14 to 20	15	14	11	8	7	11
21 to 59	40	49	50	49	50	48
60 and over	4	12	21	31	35	21
	100	100	100	100	100	100
Sex and age of household head						
Man<60	67	61	53	46	43	54
Man>=60	9	15	23	26	26	20
Woman<60	20	16	13	14	14	15
Woman>=60	4	8	11	14	17	11
	100	100	100	100	100	100
Type of household						
Single-person	0	1	3	8	17	6
Couple without children	1	4	10	18	20	11
Couple with children	56	51	45	38	38	45
Single-parent	8	8	10	9	10	9
Other	35	36	33	27	16	29
	100	100	100	100	100	100
Education of household head						
Primary	61	49	47	38	21	43
Incomplete intermediate	29	35	31	29	23	29
Complete intermediate	7	11	14	17	19	14
Incomplete tertiary	0	2	3	6	11	5
Complete tertiary	0	1	3	8	25	8
N/A	2	2	2	1	0	2
	100	100	100	100	100	100

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

^a Grey highlighting means that the group is more heavily represented in the quintile than in the population as a whole.

were older adults and only 9% were children. While 31% of the population lived in households whose head was over 59, this group represented 13% of quintile 1 and 43% of quintile 5. As regards household type, the proportion of people living alone or with only their partner (a situation associated with older age groups) was higher in the upper strata than in the lower ones: while such people accounted for 17% of the total population, they made up 37% of quintile 5.

Lastly, there is a clear relationship between the educational level of the household head and people's position in the income scale. Overall, 43% of people lived in households headed by someone with only primary education, but the proportion was 61% in quintile 1 and just 21% in quintile 5. At the other extreme, in quintile 1 there were no members of households headed by someone with complete tertiary education, whereas this group accounted for a quarter of the population in quintile 5.

Table 2 provides a breakdown of entropy indices 0 and 1 for 1998 and 2002, revealing the explanatory power of the characteristics presented. The "within" component expresses the contribution of the groups' internal inequality, while the "between" component reflects the contribution of inequality between groups (appendix B). The results indicate that the education level of the household head was the characteristic that produced the classification with the greatest inequality between groups. Furthermore, its explanatory power

increased between 1998 and 2002, which fits with the information presented in table 3.

The share of the different sociodemographic groups in the population has undergone some changes over the long term, such as the increased incidence of higher educational levels, female heads of household and single-parent households. Between 1998 and 2002, though, these changes were small (table 3). At the same time, changes in the inequality indices of each group generally indicate an increase (i.e., greater concentration), meaning that each of the four classifications analysed in the table tended to become less homogeneous.

Concerning changes in average per capita income, the gap between the groups widened. While all groups' average incomes fell for all classifications, they fell by more in some groups (table 3), particularly under-14s, couples with children and households headed by someone with a lower educational level. These are the very groups whose structural positions in the distribution were the worst to begin with. Thus, if the analysis is by age group, income fell by 15% for over-59s, but by 21% and 24% for under-14s and those aged 14 to 20, respectively. Again, if the analysis is related to the educational level of the household head, the greatest drop affected the group where household heads had incomplete intermediate education (-27%), followed by the group whose heads had primary education (-21%). At the other extreme, the least

TABLE 2

Urban areas of Uruguay: Breakdown of entropy indices 0 and 1 into two components: the contribution to overall inequality of inequality within and between sociodemographic groups, 1998 and 2002
(Percentages)

	Entropy 0		Entropy 1	
	1998	2002	1998	2002
Age groups				
Inequality within groups	92	90	92	91
Inequality between groups	8	10	8	9
Sex and age of household head				
Inequality within groups	98	97	98	97
Inequality between groups	2	3	2	3
Type of household				
Inequality within groups	90	88	89	86
Inequality between groups	10	12	11	14
Education of household head				
Inequality within groups	79	77	77	74
Inequality between groups	21	23	23	26

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

TABLE 3

Urban areas of Uruguay: Variation in the population share, average per capita income and inequality of the different sociodemographic groups between 1998 and 2002

	Variation in population share (%)	Variation in average per capita income (%)	Variation in entropy 0 index (percentage points)	Variation in entropy 1 index (percentage points)
Whole population		-20	3.1	3.8
Age groups				
0 to 13	-3	-24	1.8	5.1
14 to 20	-3	-21	3.6	4.8
21 to 59	0	-23	3.2	4.0
60 or over	9	-15	0.4	0.8
Sex and age of household head				
Man<60	-7	-22	3.9	5.6
Man>=60	6	-18	-0.2	0.5
Woman<60	16	-24	1.7	3.5
Woman>=60	12	-14	2.6	1.5
Type of household				
Single-person	19	-12	0.1	1.0
Couple without children	8	-21	-1.3	-0.4
Couple with children	-6	-22	3.9	5.2
Singe-parent	5	-22	-0.9	-0.9
Other	4	-22	1.9	3.0
Education of household head				
Primary	-6	-21	1.3	1.4
Incomplete intermediate	8	-27	2.3	3.3
Complete intermediate	7	-19	1.5	1.0
Incomplete tertiary	-5	-18	2.8	2.4
Complete tertiary	3	-12	2.3	2.3

Fuente: Elaboración propia con datos de la Encuesta Continua de Hogares del Instituto Nacional de Estadísticas (INE).

disadvantaged in the period were members of households whose heads had complete tertiary education, as their income fell by just 12%, followed by those whose heads had incomplete tertiary education (-18%). Consequently, the tendency over those five

years was for average income differentials by the educational level of the household head to widen yet further, something that is reflected in the increasing explanatory power of this classification, as discussed earlier.

V

Changes in the socio-economic structure: the distribution and origin of income

This section analyses inequality from the point of view of the origin of household income. For this purpose, the population is classified by the following criteria: first, the main income source of the household and the educational level of its head and, second, the type of activity engaged in by the income recipients.

In the first case, people are divided into 10 groups: one consists of people living in households that derive more than 65% of their income from one clearly identified source (earnings from work, income from capital, or pensions and allowances), while the remainder are groupings of people whose income

TABLE 4

**Urban areas of Uruguay: Breakdown of entropy indices 0 and 1
into two components: the contribution to overall inequality
of inequality within and between socio-economic groups, 1998 and 2002**
(Percentages)

	Entropy 0		Entropy 1	
	1998	2002	1998	2002
By main household income source and education of the household head				
Inequality within groups	77	77	7	7
Inequality between groups	23	23	2	26
By activity of household income recipients				
Inequality within groups	89	89	89	89
Inequality between groups	11	11	1	11

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

derives from a combination of sources. For those living from work and from pensions and allowances, account is also taken of the educational level of the household head, distinguishing between primary, intermediate and tertiary education.

In the second case, a distinction is made between people living in households composed solely of workers, owners of capital (employers and investors) or the inactive (those living from pensions or allowances). Also covered are combinations of workers and the inactive and, lastly, combinations of owners of capital and workers or retirees. In addition, the presence of unemployed people (other than those seeking work for the first time) is considered within two groups of households: those composed solely of workers and those that combine workers with inactive members.

As table 4 shows, the first of these classifications is the one that goes furthest towards accounting for income inequality.

1. Main household income source and educational level of the household head

Earnings from work were the main source of income throughout the five years covered. In 2002, for example, 54% of people lived in households where more than 65% of income originated in the labour market. By contrast, 13% of people depended on pensions or allowances and just 3% on income from capital. Everyone else depended on a combination of different income sources (table 5).

The situation of the groups reflects the relationship between income and the educational level of the household head. It can also be seen that those

who depended on pensions and allowances were better placed than those who supported themselves from earnings. Thus, people in earnings-dependent households whose head had primary education were over-represented in quintiles 1 and 2, whereas most of those living from pensions and allowances were situated in quintiles 3 and 4. In the case of households whose head had intermediate education, if the main source was work then the group was over-represented in quintiles 2 to 4; conversely, if pensions were the main source, then the over-representation was in quintiles 4 and 5. Lastly, if the head had tertiary education, there was over-representation in quintiles 4 and 5 when income was from work and only in quintile 5 when it was from pensions and allowances.

Meanwhile, people with income from capital were over-represented in quintiles 4 and 5, thus forming the top stratum along with the groups whose household heads had higher education.

Table 6 shows variations in the population share of the socio-economic groups and in their average per capita income and distribution indices. Unlike the sociodemographic classifications of the previous section, this one reveals major changes in structure by population group. In particular, the proportion of people in households with multiple income sources ("other") increased by 70%, rising from 8% of the population to 14% between 1998 and 2002. This happened especially in quintiles 1 and 2, which could reflect the merging of households as a way of coping with the crisis. The proportion of households receiving family assistance and/or public subsidies, especially unemployment insurance, also rose.

As regards variations in the groups' average per capita income, the first thing to note is that the widening

TABLE 5

Urban areas of Uruguay: Shares of socio-economic groups in the quintiles and the population as a whole, 2002^a
(Percentages)

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total
Main household income source and education level of the household head						
Work of head with primary education	33	26	21	13	6	20
Work of head with intermediate education	24	33	31	29	20	27
Work of head with tertiary education	0	2	4	9	21	7
Pension of head with primary education	4	7	11	14	9	9
Pension of head with intermediate education	1	2	3	5	8	3
Pension of head with tertiary education	0	0%	0	1	5	1
Capital	1	1	2	5	8	3
Work and pension	9	15	17	15	10	13
Capital and pension	0	0	0	1	3	1
Other	29	14	10	8	10	14
	100	100	100	100	100	100
Activity of household income recipients						
Work, no unemployed	49	45	44	40	41	44
Work, with unemployed	27	20	13	8	5	15
Employers or investors	0	0	1	2	3	1
Pension or allowance recipients	4	8	13	19	22	13
Work and pensions, no unemployed	8	16	20	22	16	16
Work and pensions, with unemployed	5	7	6	3	1	4
Employers or investors (plus pension or work)	1	1	3	5	10	4
Other	6	3	2	2	2	3
	100	100	100	100	100	100

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

^a Grey highlighting means that the group is more heavily represented in the quintile than in the population as a whole.

of income differentials by education level described in the previous section occurred only in the group whose income came from work. For those who lived from pensions and allowances and were more subject to institutional decisions than to economic fluctuations, the change in incomes was independent of the educational level of the household head, with falls of between 10% and 12% for all three educational levels.

For those living in households that depended on work, average per capita income fell by 10% when the household head had tertiary education and by between 23% and 24% when the head had a low or intermediate level of education. Note should be taken of certain changes in the labour market that may help explain this divergence: first, unemployment affected less educated workers more; second, informal activity increased in these sectors, probably as a refuge strategy. Both factors tended to reduce the income of this population.

Again, inequality increased within each work-dependent group: this suggests that other factors besides the differentiation between education levels tended to concentrate earnings.

Movements in average per capita incomes produced a second major development: for the low and intermediate education levels, the disparity between those depending on work and those depending on pensions and allowances tended to grow. Thus, from their starting positions, the groups tended to diverge by income source.

The third development of interest were the large relative losses experienced by members of households depending on income from capital: their income fell by about 24% between 1998 and 2002, something that can be put down to the financial crisis. Thus, the greatest losses were experienced by groups at the top and bottom of the distribution.

TABLE 6

Urban areas of Uruguay: Variation in the population share, average per capita income and inequality of the different socio-economic groups between 1998 and 2002

	Variation in population share (%)	Variation in average per capita income (%)	Variation in entropy 0 index (percentage points)	Variation in entropy 1 index (percentage points)
Whole population		-20%	3.1	3.8
Main source of household income and education level of household head				
Work of head with primary education	-24	-23	-0.2	1.0
Work of head with intermediate education	-3	-24	1.7	1.9
Work of head with tertiary education	1	-10	4.6	5.0
Pension of head with primary education	12	-10	0.2	0.6
Pension of head with intermediate education	39	-12	2.0	3.4
Pension of head with tertiary education	10	-11	-1.3	-1.7
Capital	-24	-24	0.4	4.4
Work and pension	1	-17	-1.8	-0.8
Capital and pension	-9	-12	0.1	-0.7
Other	70	-41	3.4	8.0
Activity of household income recipients				
Work, no unemployed	-12	-17	4.8	6.4
Work, with unemployed	52	-22	3.0	5.6
Employers or investors	-31	-18	3.8	7.2
Pension or allowance recipients	24	-12	1.1	1.9
Work and pensions, no unemployed	-16	-13	-0.2	0.7
Work and pensions, with unemployed	58	-22	-2.9	-2.7
Employers or investors (plus pension or work)	-17	-23	-0.9	-0.5
Other	57	-38	2.7	4.9

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

2. Activity of household income recipients

The placing of groups by the activity of income recipients is consistent with the results of the previous classification. People in working households were over-represented in the poorer strata, while those living in households with recipients of income from capital and/or pensions and allowances tended to be found in the higher strata.

The new element introduced by this classification is that it takes account of the presence of unemployed people in households: members of households containing unemployed people were more unfavourably placed. Since the definition of unemployment used does not include those seeking work for the first time, this outcome is unsurprising: basically, these are households that lost a breadwinner during the crisis. The average per capita income of people in these households was not just the lowest in this classification but the lowest of any group in any of the classifications. At the same time, the indices of internal inequality among these households were fairly

low compared to the rest. These are households in depressed situations, then, that also display a relative internal homogeneity.

The gap between the incomes of people in households with one or more unemployed members and those of other groups tended to widen. Thus, in households with working members, average per capita income fell by 17% when there were no unemployed and by 22% when there was an unemployed member or members. For people depending on pensions and allowances or living in households that combined inactive members and workers but no unemployed, income fell by between 12% and 13%. Lastly, in households containing inactive and unemployed members, income fell by 22%.

The widening of the gap between the incomes of those living in households with unemployed members and those of other groups could be due to the fact that in 2002 unemployed people occupied an important position as income recipients in the household. Some indicators suggest that this explanation could be important: in 1998, the unemployed member was the

household head in 17% of “workers with unemployed” households; in 2002, this was the case in 22% of such households. Thus, in 2002 households with unemployed members would have been worse affected by the loss of their main breadwinner’s income; furthermore, it is possible that the educational level of households with unemployed members was lower in 2002 than in 1998. Given that unemployment tended to affect less educated people disproportionately, and considering that education levels were homogeneous within households and that incomes had a positive correlation with years of education completed, the larger rise in unemployment among the least skilled may have been reflected in lower per capita income in households with unemployed members in 2002.

Lastly, the crisis led to an increase in the percentage of people living in households that contained workers and one or more unemployed (from 10% in 1998 to 15% in 2002). The small number of cases notwithstanding, the results also suggest a slight increase both in the proportion of people in households with unemployed members combining workers and pension or allowance recipients, and in “others”, where the role of subsidies is important. This is consistent with a fall in private-sector employment over the period of about 80,000 jobs, and with the public-sector recruitment freeze (Amarante and Arim, 2003).

3. Summary of the changes

To analyse the impact of changes related to the origin of income, the variation in total inequality as measured by the entropy 0 index was broken down into the

components that explain it. These components are the changes in groups’ internal inequality, alterations in the population structure between groups, and variations in the groups’ average per capita income differentials (appendix B). The results are given in table 7.

The variation in the entropy 0 index between 1998 and 2002 was 3.1 percentage points. The net impact of the rise in inequality within groups is summed up in term A, where a positive sign indicates a concentrating effect. In the classification by recipient type, this component was essential in accounting for the rise in concentration. Consequently, this classification in itself accounted for a minor share of the changes and, strictly speaking, lost some explanatory power, since some variables not included in it must obviously have gained in importance during the period.

Mention was made in the previous section, however, of the large shift of population into the group living in households with one or more unemployed members, which ought to have increased the proportion of people at the lower end of the distribution. The effects of such shifts are summarized in terms B and C in table 7. Term B has a negative sign because the direction of change in the composition of the population was from high-concentration groups to groups with greater internal equality. It should be recalled that it was the groups containing unemployed people that recorded the lowest indices of inequality, indicative of depressed situations with a relatively high degree of internal homogeneity. In this way, then, the net effect of these shifts was to reduce concentration. By contrast, the route through term C had the effect

TABLE 7

Urban areas of Uruguay: Contribution of different components to the variation in inequality between 1998 and 2002
(Percentage points)

	Main income source and education of household head	Activity of household income recipients
Variation in entropy 0 index	3.1	3.1
Component of inequality within groups		
Term A	1.0	2.7
Term B	1.0	-0.3
Subtotal	2.0	2.4
Component of inequality between groups		
Term C	-0.8	0.3
Term D	2.0	0.3
Subtotal	1.2	0.7

Source: Prepared by the authors using data from the Continuous Household Survey of the National Institute of Statistics (INE).

of increasing concentration, as this is the route reflecting shifts of individuals from the intermediate strata to the high or low ones. Note that while the sign of the term was positive, the net effect of the shifts was zero.

Lastly, term D records the impact of the changes on the average per capita income differentials of the groups. The fact that it is positive in both columns of table 7 indicates a concentrating effect, and its large

value in the second column reflects the major impact of widening income gaps on the increase in overall inequality. In particular, term D reflects what happened to the relationship between pension and allowance income and earnings and, within the latter, to income associated with tertiary education versus intermediate or low levels of education. However, the table also reveals that rising inequality within groups had a concentrating effect.

VI

Conclusions

Uruguay passed through a period of growth with the first signs of increasing inequality in the late 1990s. Rising inequality was largely related to changes in the labour market, where unemployment rose in the second half of the decade, and with an increase in wage dispersion.

Concerning the increase in the dispersion of earnings in the 1990s, the three best-documented developments were: i) the widening of pay differentials between workers with different education levels; ii) the change in wage bargaining arrangements, with a centralized sector-level regime being replaced by a decentralized company-level one, and iii) government involvement in the labour market, in particular the growth of public-sector wages compared to private-sector ones, and the decline in the national minimum wage.

An economic recession began in 1999 and worsened in the following years, resulting in a cumulative output decline of some 17.5% between 1998 and 2002. The unemployment rate rose to an unprecedented high, averaging 17% in 2002; long-term unemployment rose, and average incomes from work, capital and pensions and allowances fell in real terms. Even as earnings diminished, wage dispersion continued to increase, in a context of widening pay gaps between educational levels and higher growth in public-sector than in private-sector pay.

In this period of crisis, incomes fell across the board and inequality worsened.

Analysis of different sociodemographic classifications (by age group, by sex and age of the household head, by household type and by the head's education level) revealed a worsening of the situation

for all groups. Some came off worse than others, however: minors, couples with children and households with less educated heads. It should be noted that the widening of the income differential both between over-59s and children and adolescents, and between households with heads of different educational levels, had been in progress since the mid-1990s, and that the process intensified with the crisis. Furthermore, income concentration increased within the groups, reflecting a greater heterogeneity of situations.

Two criteria were used to analyse socio-economic characteristics: i) the main source of household income and the educational level of the household head, and ii) the type of activity engaged in by income recipients. Between them, these picked up major changes in the share of the socio-economic groups in the population: the percentage of people in households combining workers with one or more unemployed members rose, as did that of people in households combining multiple income sources. These changes are a reflection of employment problems, which had a concentrating effect on inequality, although the net impact of the shifts was fairly low.

Again, while all groups saw their income fall, the gaps between the incomes of the different groups widened, and concentration increased as a result. The analysis of incomes identified four major developments.

First, in the classification by recipient type, the drop in average per capita incomes was more pronounced for working households than for households that depended on pensions and allowances. Second, within the earnings-dependent group, the gaps between households whose heads had different levels

of education widened. There were some changes in the labour market which may help explain this divergence: unemployment affected the less educated most, while wage differences between workers of different skill levels continued to widen. Third, people living in

households that depended on income from capital sustained a major loss in relative terms, attributable to the financial crisis. Last, the income gap between people in households with one or more unemployed members and those in other groups tended to widen.

APPENDIX A

The data used

The data used come from the Continuous Household Survey (Encuesta Continua de Hogares-ECH) conducted by the Uruguayan National Institute of Statistics (Instituto Nacional de Estadística-INE), and relate especially to the years from 1998 to 2002.

The ECH is a weighted urban survey representative of households living in localities with more than 5,000 inhabitants. It gathers information on personal, occupational and income characteristics. It covers the income of all household members, distinguishing between income from work, capital and transfers. In all cases what is reported is the net income received, i.e., after taxes.

In 2001, the INE changed its questionnaire; in particular, it started to collect more detailed information on the different income categories. This change improved the collection of data on the following social benefits: *hogar constituido* (an extra payment for civil servants with dependants), the family allowance and the health-care contribution. As a result, the proportion of people recorded as being in receipt of these benefits rose from 1.5% in 2000 to 21.9% in 2001 and the average real value of benefits per recipient increased by 50%. The improvement also affected measures of inequality, tending to reduce income concentration. To compare the changes between 1998 and 2002, therefore, it was decided to measure income exclusive of social benefits.

APPENDIX B

Breakdowns

a) Breakdown between and within the entropy indices

The indices of entropy of grade 0 (E_0) and 1 (E_1) of per capita income distribution among individuals correspond respectively to:

$$E_0 = (1/n) \sum_i \ln (\mu / y_i) \quad i = 1, \dots, n$$

$$E_1 = \sum_i (x_i) \ln (nx_i) = (1/n) \sum_i (y_i/\mu) \ln (y_i/\mu) \quad i = 1, \dots, n$$

where y_i represents the per capita income corresponding to person i , μ is the average income of the population and x_i is the income share of person i .

One property that has made this family of inequality indices attractive is that they can be broken down additively into two components that express the contribution of inequality within and between population groups to overall inequality. Thus:

$$E_0 = \left\{ \sum_g [(n_g/n)] E_{0g} \right\} + \left\{ (1/n) \sum_g n_g \ln (\mu/\mu_g) \right\}$$

$$E_1 = \left\{ \sum_g [(n_g/n) (\mu_g/\mu)] E_{1g} \right\} + \left\{ (1/n) \sum_g n_g (\mu_g/\mu) \ln (\mu_g/\mu) \right\}$$

Note that the first term is the weighted sum of the entropy indices of each group, so that its value is a measure of the contribution made by the degree of concentration within groups to overall inequality. In the case of E_0 the weighting is by the share of each group in the population,

while in the case of E_1 it is by their share in total income. The second term is the index value calculated for the average incomes of each group. Thus, this component can be interpreted as a measure of inequality whereby all individuals within a group are assumed to have the same per capita income, so that attention is concentrated on the differences between the groups.

This breakdown can be used to measure the explanatory power of a classification, since the higher the percentage contribution of the component is, the more powerful the classification will be in accounting for overall inequality.

b) Breakdown of changes in overall inequality over time

Aggregate inequality can change for three reasons. First, because of changes in distribution within groups: when inequality in a group rises, there is a concentrating effect on the total population. Second, changes in the share of each group also influence overall inequality: a shift of people from the group with the lowest dispersion to the most unequal group has a concentrating effect. Furthermore, changes in the shares of groups affect the relationship between the average income of each group and average income overall; thus shifts of people from the intermediate strata to the high or low strata have a concentrating effect. Third, variations in average income also affect the distribution, since increases in income differentials between groups result in greater inequality.

For the analysis of changes by origin of income, use was made of Mookherjee and Shorrocks' (1982) decomposition, which enables the variation in the entropy 0 index between year t and $t+i$ to be broken down into four components, to ascertain the effect of changes in the origin of income on aggregate inequality. Thus, the authors propose the following approach:

$$\Delta E_0 \approx \sum_g \bar{v}_g \Delta E_{0,g} + \sum_g \bar{E}_{0,g} \Delta v_g + \sum_g (\bar{\lambda}_g - \ln \bar{\lambda}_g) \Delta v_g + \sum_g (\bar{\theta}_g - \bar{v}_g) \Delta \ln \mu_g$$

where v_g is the group's share of the population, λ_g is the ratio between the group's average per capita income and average per capita income overall and θ_g is the group's share of total income.

The first addend (term A) represents pure inequality changes within each group; the next two addends (terms B and C) changes in the structure of the groups and the last (term D) variations in their average incomes. For each term, a positive sign indicates a concentrating effect, as they go to increase the general entropy index.

A more detailed analysis of each of the terms reveals the power of this methodological approach.

Term A is the weighted sum of the variation in the entropy indices of each group. The weights are positive and their sum is identical to one. Consequently, when inequality increases within groups, term A has a concentrating effect and its size will depend on the share of the groups in the population. If the rise in overall inequality is fundamentally due to this term, then the origin of people's income will strictly speaking have lost explanatory power, as other variables not included in the classification will have gained in importance during the period.

Term B is another of the components of the variation in inequality within groups, but it represents changes in the share of individuals and is calculated as the sum of these weighted by the entropy indices of each group. Note that the sum of Δv_g is zero, so that the sign of term B will depend strongly on the value of the weights. For example, if the population were classified into two groups, the term would have a positive sign when there was a shift of individuals from the group with the least internal inequality to the one with the highest concentration. Broadly speaking, then, changes in the composition of groups due to a rise in the share of those with less internal equity will have a concentrating effect on overall inequality.

Term C also expresses changes in the structure of the groups, but in this case the weight for the variation in the shares is a parabolic function of relative average income, whose minimum value is $(\lambda_g, \lambda_g - \ln \lambda_g) = (1, 1)$. Consequently, shifts of individuals from middle-income strata to high and/or low strata will be synthesized in a positive sign for term C. Intuitively, it is easy to accept that a reduction in the number of people with incomes close to the average will tend to increase the explanatory power of the differences between groups and have a concentrating effect on overall inequality.

Lastly, term D is the weighted sum of variations in the groups' average income (in logarithms). Note that the weight $\theta_g - v_g$ is positive when the average income of the group is above the average. In this case, if group income rises, the effect on D is positive. Conversely, if $\theta_g - v_g$ is negative, growth in the income of the group will have a negative impact. Since the sum of the weights is zero, the final result of term D will depend on the extent to which the effects of the different groups offset each other. Consequently, a positive sign for the term indicates that changes in average incomes had the effect of increasing the degree of inequality between individuals as the result of an increase in the average differences between the groups.

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