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Uruguay's Income Inequality and Political Regimes during 1981–2010

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Abstract

This study assesses the evolution of inequality in Uruguay during 1981-2010, considered as subperiods built on the basis of the main policy regimes observed: extreme right (1981-84), centre-right (1985-89), right (1990-2004), and centre-left (2005-10). Income inequality diminished during the restoration of democracy, but started to grow steadily in the mid-1990s and despite recent redistributive reforms, continued to grow, albeit modestly, until 2007. In 2008 inequality lessened, continuing this trend through 2009 and 2010.Trade liberalization, suppression of centralized wage-setting mechanisms, the drop in minimum wages and the lack of a social protection system oriented to the most deprived households explain the rise in inequality during the last decade. In a context of a stable macroeconomic system, the recent fall in inequality resulted from a reduction in labour income inequality and the introduction of noncontributory public transfers schemes.   …/.

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We also analyse the margins for sustaining the reduction in inequality, assessing the potential impact of expanding the present transfer schemes and the income tax.The combined effect of these simulations should allow for a reduction of 1 to 3 points of the Gini index.

Acronyms

Given at the end of the document

1   Introduction

Over the last seven years Uruguay has been governed by a centre-left coalition, *Frente Amplio*, which took power soon after a deep economic crisis that severely eroded household wellbeing. Soon after recovery from the crisis, and in the context of macroeconomic stability and rapid economic growth fostered by an increase in the international demand for commodities, several macroeconomic and redistributive reforms were introduced. The salient characteristics of this package of policies are consistent with what has been labelledin Cornia (2010) as open economy redistribution with growth.

These interventions were aimed at reducing inequality and alleviating poverty in the context of economic growth. They included an expansion and substantial increase of noncontributory public transfer programmes; systematic increases in the real value of minimum wages; restoration of centralized wage-setting mechanisms; the inception of an income tax for the first time since 1974; a health reform; and substantial increases in public expenditure.

When this new government took power, post-tax household income inequality had been growing steadily since the mid-1990s and despite the reforms, continued to grow, albeit modestly, until 2007. This increase in inequality raised questions on the progressiveness of the recent reforms and led to a hot political debate. In 2008 inequality lessened and continued decreasing through 2009 and 2010, although it is too early to claim that this implies a new trend.

To understand the development of inequality in recent years and its potential causes and limits, we need to broaden the timespan we are considering. For this purpose, we first present an overview of the main political regimes and the evolution of inequality between 1981 and 2010 (section 2).We also assess how growth and inequality affected the evolution of poverty. Next, we examine the forces driving this evolution and focus on the effects of two recent policy reforms carried out by the centre-left government: income tax and expansion of public transfers in cash (section 3). Given that inequality at present is still above its pre-crisis level, we simulate possible expansions of these two reforms and assess their potential effect on inequality reduction (section 4).Finally, section 5 gathers our main conclusions.[1]

2   Policy regimes in 1980-2010 and the evolution of income inequality

During the last 30 years Uruguay has experienced significant variations in the prevailing policy regimes as well as in its income distribution, although inequality levels were low throughout the whole period in comparison to other Latin American countries (ECLAC 2010; SEDLAC 2011).

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[1] The analysis presented in this article is based on the Uruguayan household surveys, *Encuestas Continuas de Hogares* (ECH) which gather information on socioeconomic variables and post-tax income. In order to yield to comparable estimations for the whole period we restrict our sample to urban areas of 5000 or more inhabitants, which represent around 85 per cent of total population. Details on the ECH are gathered in Annex 1.

Due to data availability, our analysis starts with the last years of the *de facto regime* and finishes with an examination of the reforms carried out by the centre-left government in 2005-10. Four main policy regimes can be identified throughout these years:

1973-84	–	Extreme right regime (dictatorship)
1985-89	–	Centre-right
1990-2004	–	Right
2005-10	–	Centre-left

The main features of each period in terms of economic and redistributive policies, GDP growth and the evolution of inequality are given in Table 1.

Table 1
Main features of the policy regimes identified during 1981-2010

Political identification	Main policy measures	%Public Social expenditure on GDP	Redistributive policies	GDP growth	Factor income distribution: labour share	Household income Inequality change*
			1981-84			
Extreme right (*de facto regime*)	Trade and financial liberalization	Steady	Suppression of wage councils; fall in real wages & minimum wages	- Economic crisis in 1982-83	-	Decrease
			1985-90			
Centre-right	Export promotion	Steady	Wage councils;increases in real wages	+	+	Steady
			1990-2004			
Right	Trade liberalization; privatizations	+ 1990-2002 – 2002-04	Wage councils removal	+: 1990-1998 –: 1990-2003 +: 2004 crisis in 2002	-	Steady: 1990-96; +: 1997-2004
			2005-10			
Centre-left	Export promotion; flexible exchange rates; fiscal equilibrium	+	Wage councils, increases in real wages; income tax; social protection reform	+	-	Increase: 2005-07; Mod. decrease: 2008-10

Note: *   See Appendix Table A1.
Source: Own elaboration based on ECH

2.1 The regime during 1981-84

The first four years of our analysis (1981-84) correspond to the last years of the *de facto* regime that started with the 1973 military coup d'état. The military regime had promoted economic and particularly financial liberalization since 1978. These reforms were undertaken many years earlier than in other Latin American countries (LA). A fixed exchange regime, which was part of a stabilization package, *la tablita* set in 1980 collapsed in September 1982 during the external debt crisis. This resulted in a significant devaluation of the local currency and a severe economic recession. Unemployment rates rose to 16 per cent and real wages dropped. The salient features of this period were an active policy towards financial liberalization, and the debt crisis. During the *de facto* government, the income tax that had been introduced in 1961 was suppressed, real wages decreased significantly and income inequality apparently rose, although no micro data are available to rigorously analyse inequality. Inequality can only be analysed for the last four years of the dictatorship (1981-84), and the figures indicate that it decreased during this period.

2.2 The regime during 1985-89

There was a restricted call for elections in November 1984, and the right-wing *Partido Colorado* was the winner. The new government took power in March 1985, under the leadership of Julio María Sanguinetti. Being the first democratic government in 12 years, a package of policy measures was negotiated withthe left -wing coalition (*Frente Amplio*) and *Partido Nacional*, at the centre of the political spectrum in those years. The period 1985-89 was one of economic recovery, unemployment reduction and redistribution through the restoration of wage councils and generous increases in wages. Export promotion and interventions aimed at coping with the debt and bank crises were the key policy measures of this period. Two important trade agreements with Argentina and Brazil (CAUCE and PEC) significantly fostered trade, particularly exports oriented to the region. Inequality showed a fluctuating trendduring this period.

2.3 The regime during 1990-2004

In 1990-94 Luis Alberto Lacalle, right-wing leader of the *Partido Nacional,* won the elections and shifted the government to the right, promoting policy measures that emerged from the Washington consensus. A period of trade liberalization followed at the same time as the country entered the MERCOSUR, relative prices experienced strong modifications and the manufacturing sector was significantly reduced. The government promoted privatization of the main public enterprises and ended centralized wage-setting mechanisms. The rest of the political parties and some direct democracy initiatives (referendums) succeeded in considerably limiting privatizations. This was a period of significant economic growth and poverty reduction, but inequality remained steady.

Partido Colorado won the elections again in the next period (1995-99) and Julio María Sanguinetti was re-elected. The adopted package of policies was not significantly modified but poverty rose and household income inequality started to increase, as did labour income inequality. In 1999 *Partido Colorado* was re-elected in the context of a fragile economic situation. The new president was Jorge Batlle. The lack of reaction

tothe region's circumstances, and the maintenance of an orthodox economic policy scheme and an overvalued exchange rate after the 1999 Brazilian devaluation, led to a recession that peaked in 2002 when the country experienced the most severe crisis of its modern history. In 2003 household income fell 15 per cent, poverty incidence was twice its 1998 level and unemployment rose to 17 per cent. Although Uruguay had had a generous social security system since the first decades of the twentieth century, no new policy interventions were crafted to counteract the income fall during this period. One of the responses to this economic crisis was emigration: the second population outflow of the twentiethcentury took place in this period.[2] The severe economic crisis led to an important fall in the share of labour income in national income and income inequality rose for the first time since 1994. In the last quarter of 2003 the economy started to recover but household wellbeing indicators did not ameliorate till the end of 2005.

The salient policy features of this period were liberalization, attempts at privatization, export promotion and resolution of the debt and bank crisis.

2.4 The regime during2005–10

The effect of the crisis increased the support for the centre-left coalition, *Frente Amplio*.In 2004 it won the national elections and Tabaré Vázquez became the first left-wing president in Uruguay. In 2009, the centre-left coalition won again and José Mujica was elected president.

Significant increases in the international demand for and prices of primary goods created the conditions for extraordinary economic growth that constituted an excellent basis to carry out important reforms. The new government announced an ambitious package of interventions that included the creation of a temporary emergency plan, PANES, introduction of an income tax scheme for the first time since 1974, reform of the national health system, re-establishment of centralized wage-setting mechanisms and a significant increase in wages. After the end of PANES in December 2007, the government designed a new package of redistributive interventions, *Plan de Equidad*, which embodied the previous elements, and included a reform of the social protection system through the redesign and expansion of a 1942 child allowances regime, *Asignaciones Familiares* (AFAM). Poverty incidence started to decline in 2006 but the rise in inequality continued till 2007. In 2008 inequality started to decline. In spite of this, the share of labour income in national income was lower in 2010 than in 2005. Rapid economic growth is probably a part of the explanation. In any case, in this scenario, the margins for redistribution seem to be more difficult to establish.

The whole period combined episodes of economic growth and recession and variations in inequality as household income did not evolve along with the income distribution (Figure 1 and Appendix Table A1).

Growth incidence curves (GICs), developed by Ravallion and Chen (2003), allow to assess this relation by showing the rate of income growth by percentile along the income distribution, comparing the first and last years of a certain period. This exercise

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2 The earlier, larger population outflow took place in 1972-76, triggered by the political situation.

Figure 1
Economic growth and income inequality*
Uruguay, 1981-2010
Urban areas
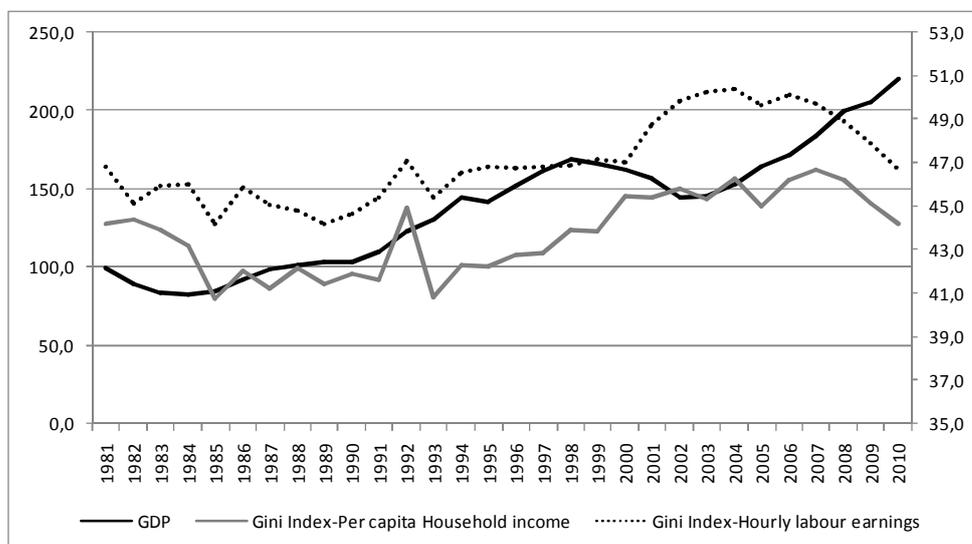
Note: * Gini indexes are estimated for urban areas.
Source: Own elaboration based on ECH and Banco Central del Uruguay.

can be done from 1981 on, as this is the first year that micro-data are available. To analyse variations in income corresponding to each period, we considered the first year of a new regime as constituting of both the beginning of the new regime and as the last year of the previous one (Figure 2 and Table 2).

During the last years of the *de facto* regime (1981-85), household income decreased at an average annual rate of 12.5 per cent (Figure 2). This fall was more acute for the poorerthanricher households, and as a result of these movements, inequality slightly decreased in this period (Table 2).[3] Under the moderate right regime (1985-90), household income increased significantly, and major recovery took place among the poorer households and, to a lesser extent, also among the richer ones. During the right-wing regime, the GIC had an upward sloping, reflecting the deteriorating performance of the poorer households. Whereas household income decreased at an average annual rate of 1.7 per cent, the fall for the first decile was 10.7 per cent. Income inequality increased almost 3 percentage points. Finally, the centre-left regime period presented a downward sloping GIC, indicating that the income growth rate was decreasing along the income strata. Poorer households experienced higher increases in their income, and, as a result, income inequality decreased.

The period characterized as the right regime, between 1990 and 2004, comprises three different presidential periods that continued with similar policies. A separate analysis of each of these subperiods indicates that household income growth decreased to an average of 2.7 per cent in the first subperiod (1990-95) and 0.25 in the second period (1995-2000) (Appendix Figure A1). In both subperiods, performance was worse for households in the lower tail of the distribution. During 1990-95, the GIC was upward

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3 The 1985 household survey covered only Montevideo, the capital of the country. Thus, GICs for the two first regimes were estimated only for the capital, and the Gini indexes in Table 2 for these periods correspond to Montevideo.

sloping, showing that poorer households gained less from income growth than richer ones. As a result, income inequality increased. During the years 1995-2000, the GIC has an upward slope as well, but in this case, poorer households' income decreased, whereas the rate of growth turned positive around the 85th percentile. The third presidential period, covering 2000-05, included the 2002 economic crisis. Household income decreased 6.7 per cent on average, and this rate was not differentiated along the income distribution. Inequality exhibited a small decrease between 2000 and 2005, although it fluctuated within the period.

Meanwhile, absolute income poverty revealed different trends in the period under study, due to the interaction of inequality and growth. This link can be assessed by decomposing the change in poverty incidence into its growth and inequality components. The poverty line used in these calculations is the last official one, based on expenditure data for 2006 (INE 2009). This absolute poverty line is available from 1990 onward, as it would not be advisable to use it for previous years, because consumption patterns may have changed considerably over such long periods. A long-run analysis of the evolution of poverty incidence shows that it oscillated between 1990 and 2010. It increased from 26 per cent in 1990 to 37 per cent of the total population in 2004, during the right regime (Figure 3). In contrast, the centre-left regime was characterized by an

Figure 2
Growth incidence curves, 1981-2010
Urban areas

Source: Own elaboration based on ECH.

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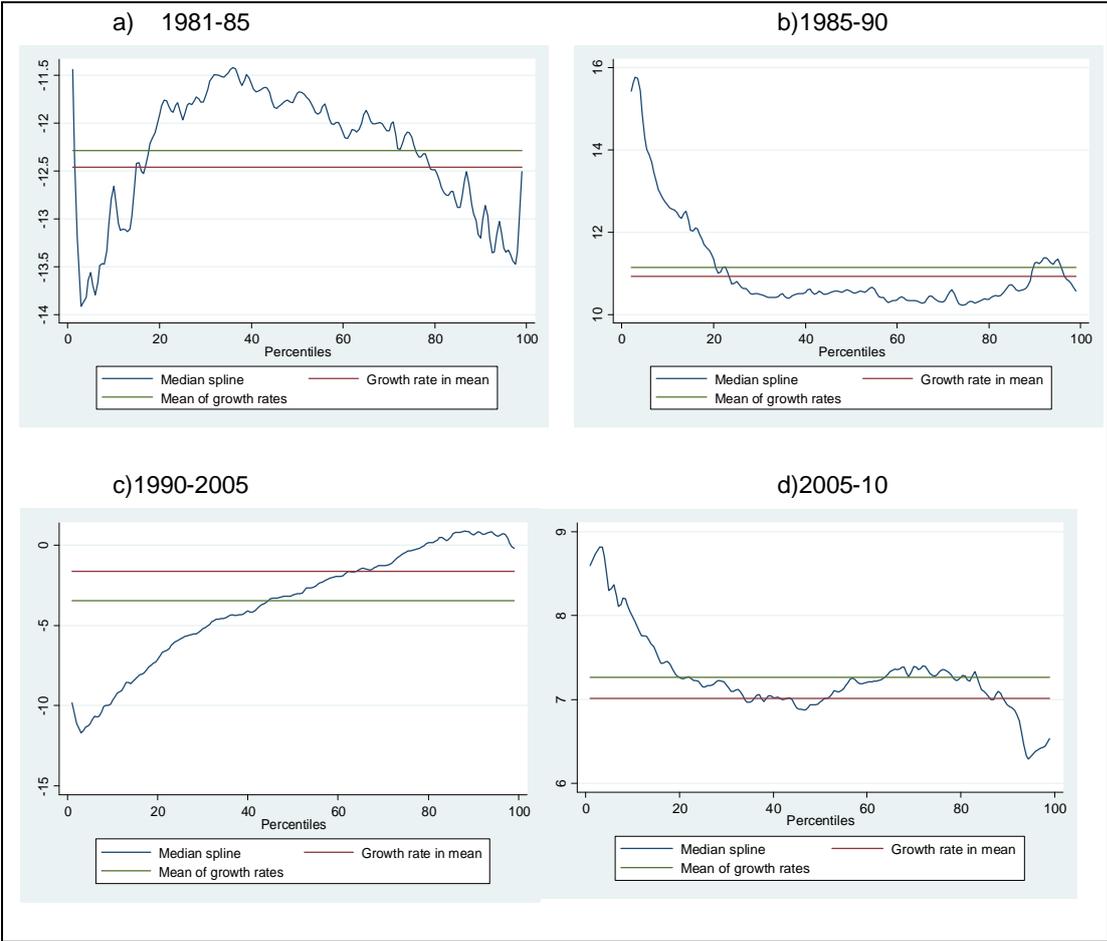
Table 2
Income inequality and change in income at different points of the distribution,1981-2010
Urban areas

Regime	1981-85 Extreme right	1985-90 Moderate right	1990-2005 Right	2005-10 Centre-left
Initial Gini	44.2	40.7	41.9	45.0
Final Gini	40.7	41.9	45.0	44.2
Inequality variation	-3.5	1.2	3.1	-0.8
Mean growth rate of hh income	-12.5	10.9	-1.63	7.01
Growth rate bottom 10th percentile	-13.2	14.5	-10.66	8.41
Growth rate bottom 15th percentile	-13.1	13.8	-10.03	8.18

Source: Own elaboration based on ECH.

important fall in poverty incidence, which decreased to 18 per cent in 2010. The global right regime was characterized by varying development in poverty that coincided with the presidential periods. Between 1990 and 1995, under the government of Lacalle (*Partido Nacional*), poverty decreased 6 percentage points. During the following two presidential periods under the charge of *Partido Colorado*, poverty increased. First, there was a mild increasing trend, going from 20 per cent to 23 between 1995 and 2000, under Sanguinetti's presidency, whilethe following presidential period, corresponding to Batlle's presidency, was dominated by the severe 2002 economic crisis and poverty reached a pike of 42 per cent in 2003.

To gain insights into the determinants of this evolution of poverty, we decomposed its development path for the two regimes in power during 1990-2010, by following the method proposed by Datt and Ravallion (1992). Its basic idea is to take into account the heterogeneity of growth rates across populations. It shows how much poverty would have changed if the average growth of income were the same for all households, and how much it would have been if only inequality had changed, and income growth were zero (and it includes a remaining residual term). This decomposition requires that the poverty line is kept constant in real terms over time, which is equivalent to assuming that the underlying inflation of the poverty line is the same as the underlying inflation of the income variable. Usually, household income is deflated using the retail price index (RPI) that reflects the prices of an average consumption basket. In countriessuch as Uruguay, which measure poverty on the basis of an absolute poverty line, these change their value according to variations in the price of the consumption basket items of poor households.[4] Taking this point, Gunther and Grimm (2007) include a third term in the decomposition, a 'relative price shift' or 'poverty line' component, which reflects the change in poverty explained by the difference of the inflation rate of the poverty line to the inflation rate of the general RPI. [5] The growth component reflects, then, the change in poverty that would have occurred if inequality had not changed, and if the poor had experienced the same increase in the cost of living as the average population (RPI).

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[4] In Uruguay, for example, the poverty line is constructed using the second decile of population as a reference stratum.

[5] A similar methodology, using percentile specific price indexes could also be constructed to compute percentile specific growth rates for the GICs.

As mentioned above, the period of the right-wing regime as a whole showed an increase in poverty which is mainly explained by the growth component (Table 3). Both distribution and, to a lesser extent, the poverty line component contributed to this increase in poverty. The poverty line effect reflects the evolution of the implicit prices of the consumption basket relative to RPI. This pattern of relative prices took place mainly during the first ten years of the regime, and was reverted in the last five.

When we consider the different presidential periods within the right-wing regime, the most salient feature is the relatively important role of distribution in the increase of poverty during 1995-2000. The 2000-05 poverty increase is mainly explained by the growth component, and both the redistribution and the poverty line effects contributed to a decrease in poverty. Finally, the significant decrease in poverty incidence after 2005 and continuing until 2010 is again explained mainly by the growth component. Both the redistribution and the poverty line effect operated in the same direction, as income growth was higher for poorer households (Figure 2), and the implicit prices of the poverty line increased less than the RPI.

Figure 3
Poverty incidence (headcount ratio)
National poverty line (based on INE 2010), 1990-2010
Urban areas
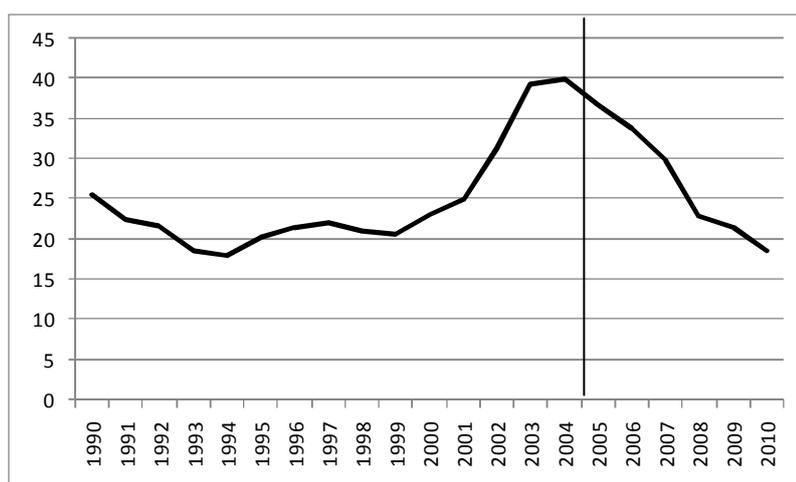
Source: Own elaboration based on ECH.

Table 3
Poverty decompositions, 1990-2005
Urban areas

	Right regime				Centre-left regime
	1990-2005	1990-95	1995-2000	2000-05	2005-10
Poverty change	11.0	-5.3	2.7	13.5	-17.0
Growth	10.3	-5.9	-0.5	16.8	-14.9
Redistribution	1.7	0.1	3.3	-1.7	-2.1
Poverty line	0.6	1.5	1.0	-1.9	-2.8
Residual	-1.6	-0.9	-1.1	0.3	2.9

Source: Own elaboration based on ECH.

3   Driving forces in the evolution of inequality

Despite the recent decrease in inequality, income distribution was more distorted in 2010 than in the years before the crisis and in the late 1980s. In what follows we assess the role of the different income sources in shaping this result, and we then concentrate on labour earnings.

3.1 Income sources

Labour earnings are the main source of income of Uruguayan households, and represent around 55 per cent throughout the entire period (Figure 4 and Appendix Table A3), although its share has lessened over the years for all income strata.[6] In spite of underreporting, there was an important increase in the share of capital income among the top deciles in 2004-10, although the levels were similar to those at the beginning of period covered by this study.

Main modifications during the period to the income structure by deciles refer to the increasing share of public transfers, both contributory and noncontributory. The share and location of contributory transfers experienced a significant modification when comparing 1989 and 2004. In 1989 a constitutional amendment approved in a plebiscite modified the indexation mechanism of contributory pensions. Since then, the value of pensions has been adjusted quarterly, using earlier wage index fluctuations. In the context of decreasing inflation, this new rule led to a significant increase in pensions relative to wages. As a result, households composed of elderly adults shifted to the median and higher deciles. Hence, the relative share of pensions was higher in the lower strata at the beginning of the period, whereas it peaked around the sixth decile at the end of the period.[7]

The only noncontributory benefits before 1999 were pensions targeted to the elderly (*Pensiones a la Vejez*) that had beenset up in 1930. In 1999, the traditional child allowances regime, *Asignaciones Familiares*, originally created in 1943 to provide transfers to formal workers with children, was cautiously expanded to include female household-heads with amonthly income equivalent to less than three minimum wages. In 2004, after the 2002 crisis, the government opened this practice for all households with similarly defined minimum income. As most poor households were composed of informal workers and income was checked against the administrative records of the social security system, the system in practice was considerably expanded.

In 2005, when *Frente Amplio* took power, a new transfer scheme was set up, PANES (*Plan Nacional de Atención a la Emergencia Social*), which was aimed at reaching the poorest 8 per cent of the population. PANES provided a fixed monthly stipend to households, regardless of their composition, as well as a foodcard, a workfare programme and other minor interventions aimed at coping with long-run poverty.

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[6] This figure is affected by the well-known fact that household surveys misreport capital income (for the Uruguayan case, see Mendive and Fuentes 1997).

[7] It should be noticed that this amendment was proposed by the government of *Partido Colorado*, labelled here as centre-right, but it was an initiative of the pensioners' unions and later supported by *Frente Amplio*.

Figure 4
Distribution of income by source and per capita decile
1981, 1984, 1989, 2004 and 2010
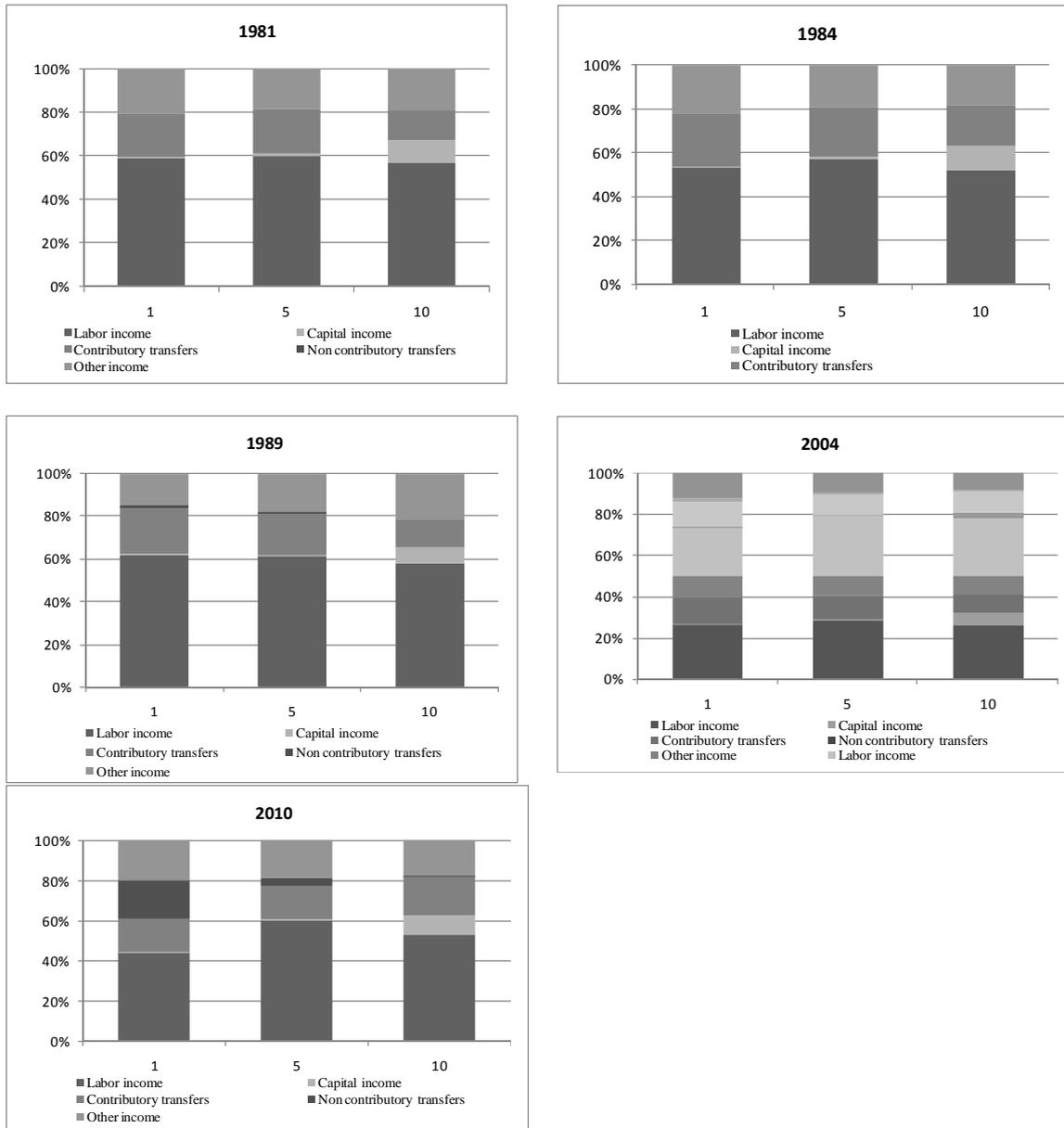
Source: Own elaboration based on ECH.

In December 2007 PANES was replaced with the *Asignaciones Familiares Plan de Equidad*, a permanent programme that basically reshaped the previously existing child allowances system.[8] As a result, the coverage of publictransfers in the lower strata rose significantly (70 per cent), and at present, noncontributory transfers account for around 20 per cent of the first decile income. This new transfer scheme significantly reduced extreme poverty and has had a mild effect on poverty (Dean and Vigorito 2011).

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8   In section 5 we present the main features of this new regime.

Figure 5
Shapley inequality decomposition by income source
Per capita household income, 1981-2010
Absolute contributions to Theil's index (Urban areas)
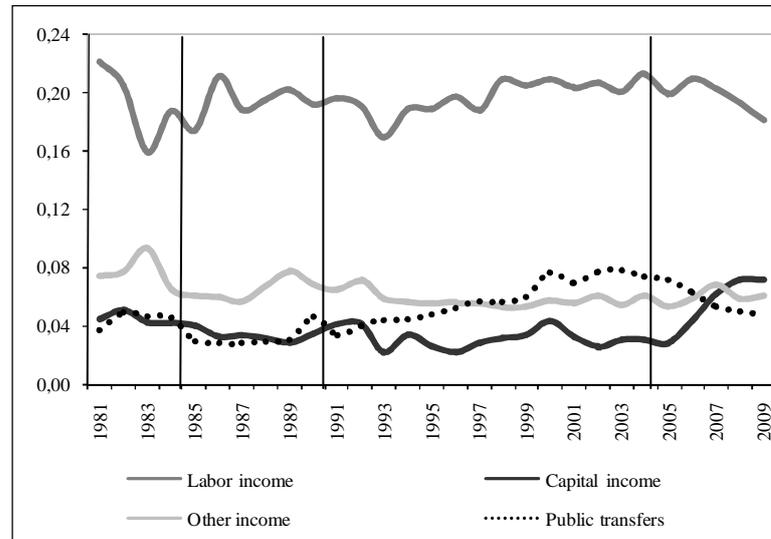
Source: Unpublished work by Alves et al. (2010).

Table 4
Shapley decomposition results: noncontributive public transfers
Per capita household income, 2001-09
Absolute contributions to Theil'sindex

	Asignaciones Familiares	*Ingreso Ciudadano*	Other income sources	Total
2001	-0.0007		0.3585	0.3578
2003	-0.0008		0.361	0.3604
2004	-0.001		0.3765	0.3756
2006	-0.0013	-0.0019	0.3804	0.3768
2007	-0.0013	-0.0024	0.3908	0.3861
2008	-0.0015		0.363402	0.3616
2009	-0.0015		0.3622	0.3607

Source: Unpublished work by Alves et al. (2010) .

In order to single out the contribution of the main income sources to inequality, Alves et al. (2010) carried out Shapley decompositions by income sources following the methodology developed by Shorrocks (1999). Figure 5 depicts the absolute contribution of each income source to Theil's index, showing that labour income is the main contributor to inequality, and that share of this source and of public transfers has shrunk, whereas the share of capital income has increased during the last few years. An analysis of the subperiods considered in this study reveals that there is a strong association between the contribution of labour earnings to inequality and the evolution of total inequality.

The share of public transfers during 1990-2004 has been shaped by the effect of the indexation mechanism of pensions, which, due to the reasons previously stated, made these transfers more regressive (Appendix Figure A2). Meanwhile, the inception of noncontributive transfers in recent years created a redistributive pole, although its magnitude is still small. Even though the first *Asignaciones Familiares* (AFAM)

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expansion was in 1999, it is possible to accurately identify this in the household surveys from 2001 onward. Table 4 shows the absolute contribution of *Ingreso Ciudadano* and *Asignaciones Familiares* to inequality in 2001-09, indicating that even though they were redistributive, their contribution has been minimal.

3.2 Labour earnings inequality

Given that disparity in labour earnings is one of the main drivers of household income inequality, we focus in this section on its development and determinants. The return to democracy yielded a mild improvement in labour income inequality due to generous increases in wages and probably to the restoration of wage councils. This trend continued during the second period, labelled as moderate right regime, whereas 1990-2004 revealed a substantial increase in labour income inequality in all employment sectors. This change can be linked to liberalization, changes in institutions and the severe 2002 crisis. Labour inequality finally began to decrease after 2007.

The labour market underwent significant changes throughout the whole period: during the two economic crises (1982 and 2002), unemployment peaked and real wages decreased substantially. Since 2006, participation and employment rates have been increasing, led by rapid economic growth, and in 2010 unemployment dropped to its minimum level (Appendix Table A4). At the same time, there was considerable variation in the composition of the labourforce and of the occupied workers, as there was a significant increase in female participation rates (Espino, Leites and Machado 2010).

Average years of schooling of the labourforce have also increased inrecent years, although at a slower pace than what has been observed in certain other LA countries(Cruces, García Domench and Gasparini 2011).In fact, the recent fall in the skill premium in many Latin American countries has been related to the increase in the educational attainment of the population. The Uruguayan case allows for a different interpretation. Asis known, the expansion and universalization of primary schooling was achieved in the first decades of the twentieth century. In spite of these early achievements, secondary school dropout rates since the 1990s have been around 30 per cent, remaining steady ever since. As a result, the average years of schooling of the labourforce have increased but not as fast as in other countries of the region. For the working-aged population (25-65 yrs), thisrose from 7.1 years in 1981 to 9.9 in 2010.

Table 5
Average years of schooling by quintile of per capita household income

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Total	Q5-Q1
1981	5.01	5.80	6.48	7.44	9.64	7.11	4.64
1985	5.81	6.63	7.46	8.70	11.08	8.19	5.27
1990	6.06	6.80	7.49	8.50	10.68	8.15	4.62
1995	6.29	7.09	7.86	9.03	11.44	8.56	5.15
2000	6.57	7.50	8.28	9.43	11.91	8.97	5.33
2005	7.04	7.68	8.66	9.92	12.54	9.36	5.50
2010	7.10	8.04	9.06	10.50	13.18	9.85	6.08
Variation 1981-2010	2.09	2.24	2.58	3.07	3.54	2.74	

Source: Own elaboration based on ECH.

Figure 6
Shapley inequality decomposition by income source, labour earnings, 1981-2010
Absolute contributions to the Theil index
Urban areas
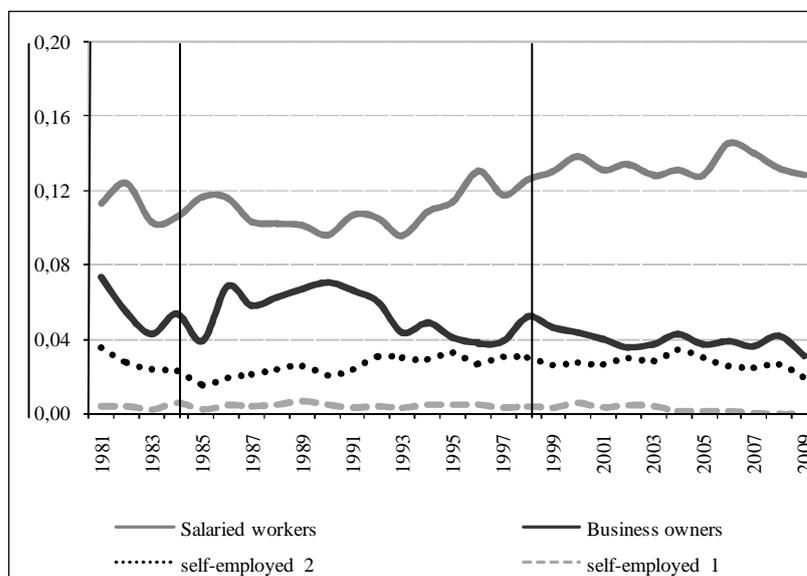
At the same time, the educational gap between the richer and the poorer quintiles also increased.[9] Whereas the absolute difference between the years of schooling of the working-aged population in the richer and poorer quintiles was 4.6 years in 1981, the gap had widened by 2010 to 6.1 (Table 5).

The crises and further recovery efforts have also induced changes in the composition of employment by institutional sector: during the economic slowdown, the share of the self-employment grew significantly whereas salaried work increased during the rapid growth years (Appendix Table A6).

Within labour earnings, the main contribution to inequality came from salaried workers (Figure 6), and the evolution of inequality of this source is highly correlated with that of total labour earnings inequality (Appendix Figure A3). It must be noticed that during 1990-2004, the absolute contribution of this source to total labour earnings inequality increased significantly.

Many analysts point out that increasing earning inequality during the right political regime is explained by increasing returns to education (see, for example, Bucheli and Furtado 2000; Arim and Zoppolo 2000; Amarante et al. 2011). Figure 7 presents the evolution of the returns to education for female and male workers for the whole period.[10] An increasing trend is detected for those with 13-15 years of education, and especially for those with 16 or more years of education. In the case of men, both trends follow a more similar path.

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9 As stated in Cruces, García Domench and Gasparini (2011), unconditional measures of inequality like the Gini index report a decrease in educational inequality (from 30.4 to 22.7 between 1981 and 2010).

10 These returns originated from the estimation of Mincer equations including discrete levels of education. The omitted variable is 6 years or less, which corresponds to primary education.

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Figure 7
Returns to education, coefficient on discrete levels of education, 1981-2010
Urban areas

Women

Men
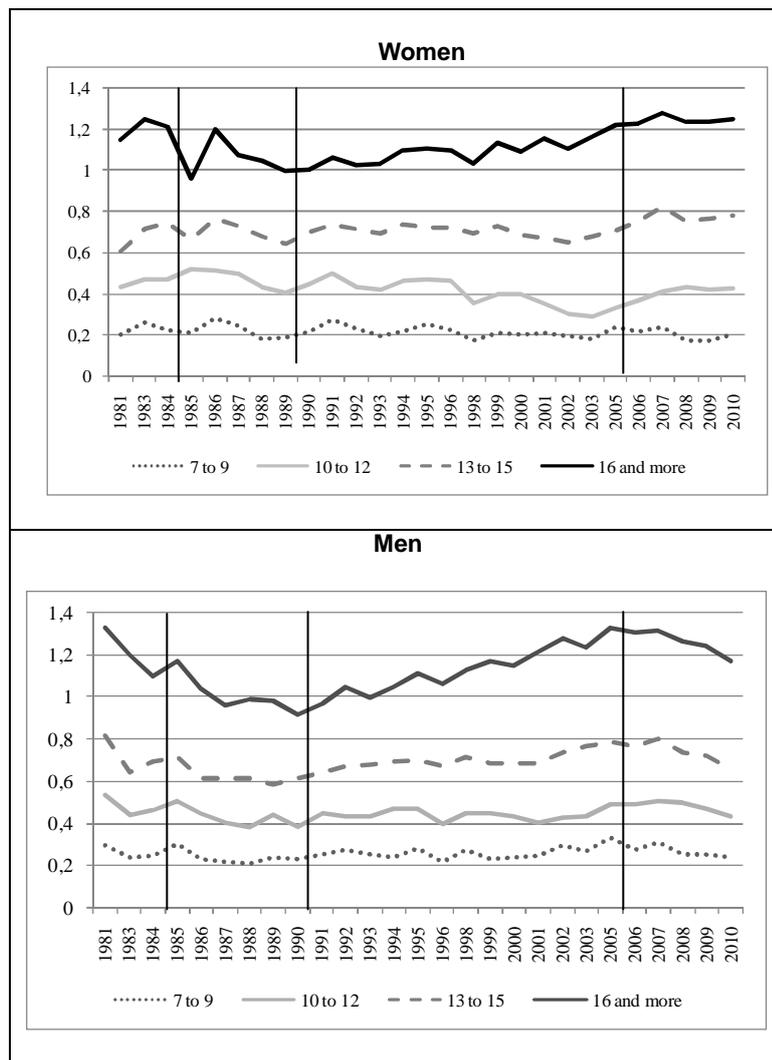
Source: Own elaboration based on ECH:

As labour income inequality and returns to education increased during 1994-2007, many researchers attempted to single out its causes, resorting to the main explanations found in the international literature: trade liberalization, changes in wage-setting mechanisms and its effects on trade unions and skill biased technological change.

Casacuberta and Vaillant (2002) show that during the 1990s decade, trade openness, both in the form of increasing export orientation and import penetration, turned into a larger skill premium. Arim and Zoppolo (2000)suggest that the important role of residual factors in explaining changes in earnings inequality during that period may possibly reflect the effect of institutional factors such as the absence of centralizedwage bargaining.

In 2005-10 labour income inequality fell, significantly contributing to the recent alleviation of inequality. It is difficult to disentangle the reasons behind this fall because institutional changes coincided with the income tax inception, wage increases and employment growth.

The two most important institutional changes were the increase in minimum wages and restoration of the wage councils. The role of the increase in minimum wages on labour income inequality has been assessed in previous research (UNDP 2008). Contrafactual exercises show that the improved minimum wage contributed slightly to a higher equality in wages. The total incidence of the increase in minimum wages on the Gini index of salaried workers was estimated to be -0.4 in 2004-06. This figure rose to -0.54 in the case of low skilled workers and to -0.98 in the case of young adults aged up to 23. Unfortunately, the effect of centralized wage setting on earnings inequality has not been singled out clearly to date, as there are many puzzling effects coinciding in this period.

Another important labour market change has been the increase in formalization. Workers not covered by social security decreased from almost 40.7 per cent of total workers to 31.6 per cent between 2004 and 2009. This increase in formalization mainly reflects the development of social protection among private workers.At the same time, the government's active policy of encouraging formalization plus restoring the wage councils led to an increase in unionization, although affiliation rates were lower than the ones observed in the years after the return of democracy.

The Lemieux (2002) decomposition makes it possible to single out prices, characteristics, distribution of residuals and residual effects in the evolution of inequality. Using this methodology, Alves et al. (2010) find that prices (returns to education, gender and regional gap) and characteristics (educational attainment, gender, region of residence, industry and institutional sector) played an important role in labour income inequality in 1981-2009 and during the subperiods. Still, a large fraction of the decomposition remains in the residual factors, which has been interpreted, again, as the role of institutions and other unobserved factors, Also based on micro simulation techniques, Alves et al. (2011) show that the increase in employment and the reduction of the regional gap had an important role in the recent decline of returns to education.

With regard to employment characteristics, it can be noted that in this period the substantial reduction in self-employment and increasing formalization among private workers could have also had key impact. Self-employment, as a coping strategy, increased significantly during the crisis, but fell thereafter (Appendix Table A5).

The 2005-10 reversion of the increasing labour inequality trend can be related to recent policy reforms. In order to analyse whether changes in returns to education were led by the recent inception of the income tax, we estimated the skill premium before and after taxes. As ECH captures post-tax income, we estimated pre-tax income by simulating the tax on labour earnings (*Impuesto a las RetribucionesPersonales*) in effect in 2006 and the new income tax for 2008 and 2010 (see details in Annex 2).

We estimated standard Mincer equations for all workers,taking the entire labourforce (covering women and men) and private workers into account. The dependent variable was the logarithm of hourly pre- and post-taxes earnings. Independent variables included schooling, gender, region and a quadratic expression in age. Education was considered as discrete intervals of completed years of schooling and we also ran separate specifications using a quadratic expression in years of schooling. In what follows, we report the coefficients of the educational variables for all workers and by gender.

Returns to education for both pre- and post-tax labour income rose between 2006-08 and decreased between 2008-10. Income tax for the entire labourforce exerted a significant contribution to the reduction of inequality by downsizing the skill premium in 2008 relative to 2006 (Table 6).Despite this initial and significant equalizing effect, the 2008-10 evolution of pre-tax skill premium shows the same pattern as the post-tax one. Even though the level of pre-tax inequality was considerably mitigated by the income tax, it contributes to explain the reversal of the 2006-08 inequality trends but, as expected, it is a level shift and cannot explain by itself the 2008-10 reduction in returns to education.

When we restrict our sample to private workers, we find the same trends, although in the case of women the skill premiumwas growing on average and for the higher skilled workers. These trends are present both in pre- and post-taxes estimations (Table 6).We also calculatedpost- and pre-taxes Gini and Theil indexes for the entire labourforce, private workers, men and women for 2006, 2008 and 2010 (Table 7).As the income tax was applied in July 2006, its contribution to inequality increased in 2006-08, causing a reduction of 2 percentage points in theearnings imbalance. As was stated before, reversal of the trend in inequality could be related to this policy innovation. Meanwhile, in 2010 the redistributive effect of the income tax was exactly the same as in 2008, possibly indicating that its effect had triggered a fall in the level, rather than in the trend, of inequality: the 2008-10 evolution warranted further clarification to capture the effects of the income tax in order to determine whether earnings have grown significantly, which might have resulted in a compositional effect generated by a proportion of workers moving to high-income tracks. This clearly was not the case, as these proportions remained steady throughout the whole period.

Table 6
Pre- and post-taxes returns to education, all workers,
2006, 2008 and 2010

Years of schooling	Post-taxes			Pre-taxes		
	2006	2008	2010	2006	2008	2010
	Total					
7-9	0.232	0.225	0.220	0.236	0.261	0.249
10-12	0.402	0.465	0.412	0.409	0.534	0.479
13-15	0.720	0.752	0.710	0.730	0.853	0.800
16 and more	1.208	1.272	1.211	1.238	1.373	1.304
Yrs of schooling	0.0518	0.0692	0.0574	0.0487	0.0947	0.0799
	Men					
7-9	0.267	0.243	0.236	0.267	0.274	0.267
10-12	0.475	0.479	0.421	0.479	0.532	0.483
13-15	0.750	0.712	0.641	0.751	0.785	0.717
16 and more	1.300	1.251	1.168	1.304	1.300	1.237
Years of schooling	0.0606	0.0659	0.0564	0.0574	0.0881	0.0774
	Women					
7-9	0.160	0.167	0.198	0.170	0.208	0.223
10-12	0.266	0.406	0.409	0.278	0.496	0.483
13-15	0.606	0.721	0.778	0.629	0.853	0.884
16 and more	1.026	1.201	1.251	1.078	1.345	1.364
Yrs of schooling	0.0326	0.0659	0.0680	0.0309	0.0972	0.0949

Note: All coefficients significant at 1%.

Source: Own elaboration based on ECH.

Table 7
Pre- and post-taxes hourly labour earnings inequality indexes,
2006, 2008 and 2010

	2006		2008		2010	
	Post-tax	Pre-tax	Post-tax	Pre-tax	Post-tax	Pre-tax
			Gini index			
Total	0.494	0.495	0.468	0.486	0.446	0.466
Private employees	0.458	0.475	0.442	0.466	0.424	0.448
Men	0.501	0.500	0.470	0.486	0.443	0.463
Women	0.482	0.486	0.464	0.483	0.448	0.470
			Theil index			
Total	0.537	0.529	0.445	0.469	0.391	0.420
Private employees	0.424	0.449	0.397	0.435	0.366	0.404
Men	0.569	0.554	0.460	0.479	0.396	0.423
Women	0.486	0.492	0.422	0.453	0.380	0.413

Source: Own elaboration based on ECH.

In sum, although it is difficult to disentangle the forces driving the inequality evolution throughout the timespan analysed in this study, returns to education, employment variations and institutional changes played a key role. In recent years, the fall in inequality can be related to the increase in the real value of the minimum wage, income tax, decreasing returns to education and increasing employment. Although income tax has an equalizing effect and reduces the returns to education, and despite its relevant role in the 2006-08 inequality reduction, it was not the only factor involved, particularly in 2008-10. The rapid increase of employment in recent years generated a clear compositional effect reducing the categories with a more precarious labourforce attachment and increasing the rest. Meanwhile the role of centralized wage-setting mechanisms remains unclear.

The results obtained in this section with regard to the major forces behind household income inequality during the period point to the importance of public transfers and labour earnings. The lack of a noncontributive system of public transfers during the right-wing tenure can partly explain the increased poverty and inequality of these years and the lack of mitigating forces to offset the severe fall in household wellbeing during the 2002 crisis.

During the recent years of 2005-10, the stable macroeconomic environment, coupled with rapid economic growth and the inception of many reforms, reversed the trend in inequality after three years and generated the modest reduction of inequality in 2008-10. The next question is how sustainable is this process and which policy interventions can deepen it. We address this issue in the next section.

4   Distributional effects of the income tax and child allowances: the present situation and potential expansions

The aim of this section is to assess the sustainability and potential limits of the present process of inequality alleviation withregard to two policy instruments: income tax and child allowances.In what follows we analyse the distributional impact of the income tax, and of two noncontributory public transfers (*Asignaciones Familiares* and *Tarjeta*

Alimentaria). Next, we present our simulation exercises, based on different policy scenarios. Other relevant institutional aspects that were present in the recent period, such as minimum wages and the role of wage councils, are not addressed in this section due to the difficulties involved in carrying out simulations in view of their potential behavioural effects that could lead to employment variations.

The estimations depicted in this section had been carried out for the entire population as household surveys have had national coverage since 2006. Due to this reason, the 2010 baseline Gini index presented in what follows is slightly different from the one presented in the earlier sections, as the latter is restricted to urban areas due to comparability with earlier years.

It must be noted that other policy actions of the period, which did not affect current income, can also have medium- and short-run results in terms of household wellbeing.This is the case with health reform and the lack of reforms in the educational system, but these are not considered here, although they can produce significant long-run effects on inequality.

4.1 Distributive incidence of income tax and noncontributory transfers

The Uruguayan tax system relies mainly on indirect taxes, which represent around 65 per cent of total tax revenue. Direct taxes consist of a dual personal income tax (*Impuesto a la Renta de las Personas Físicas*, IRPF) that combines a progressive tax schedule for labour income with a low flat tax rate on capital income. IRPF was implemented as part of a broader tax reform that aimed at creating a more efficient and equitable tax system. The labour income component of IRPF consists of six marginal income tax rates ranging from zero in the first bracket to 25 percent in the highest. Pensions were originally taxed as the labour component of the IRPF, but judicial responses to pensioners' suits ruled that this tax was not constitutional. As a result, pensions were no longer taxed by IRPF, but a new tax known as IASS (*Impuesto de Asistencia a la Seguridad Social*) was sanctioned in July 2008.

Table 8
Income tax rates, 2010

Labour earnings IPRF tax rates	Rate, %
Less than US$8,878	0
Ranging between US$ 8,878 – 12,683	10
12,683 – 19,025	15
19,025 – 63,415	20
63,415 – 126,831	22
More than US$ 126,831	25
Capital income tax rates	Rate, %
Interests for deposits in domestic currency and *Unidades indexadas*, more than a year, and for debentures and other public debt titles	3
Interests for bank deposits, one year or less, in domestic currency	5
Profits or benefits from IRAE contributors	7
Other capital rents (rents, leases)	12

Source: Based on information for *Direccion General Impositiva*.

Capital is taxed at different rates depending on the source, ranging from 3 per cent to 12. Rental and lease income above a certain threshold (around US$3000 per year) is taxed according to the highest rate, 12 per cent (Table 8, bottom panel).

IRPF allows deductions to be made for child health expenditures (up to US$1,374 per year), social security contributions and a portion of a tax on graduates (*Fondo de Solidaridad*) that contributes to public tertiary education funding. Capital income tax also allows deductions based on bad debts, real estate taxes and commissions for renting.

Previous empirical analyses of the distributional impact of the tax reform, based on ex ante techniques, conclude that the reform had positive redistributive effects, mainly derived from the replacement of a previous tax on labour income (IRP) by the IRPF (Amarante, Arim and Salas 2007; Llambí et al. 2008, Rodríguez and Perazzo 2007. The magnitude of the redistributive change ranges from 1 to 2 percentage points of the Gini index, which can be understood as a modest but significant reduction. In an analysis using pseudo panel data, considering one pre-reform year (2006) and two post-reform years (2008 and 2009), Martorano (2011) confirms the positive impact of the tax reform on the equity of new direct taxes.

The two noncontributory transfers that are analysed in this section are *Asignaciones Familiares* and *Tarjeta Alimentaria*. The new *Asignaciones Familiares* (AFAM) stems from an old contributory programme, created in 1942, to cover formal workers with children.[11] In 2008, as part of a more ambitious equity programme (*Plan de Equidad*), AFAM was redesigned. The new design, which is our baseline, maintains its contributory strand (which has been means-tested since 1995) and enlarges its noncontributory strand by expanding the programme's target population. It also introduces a proxy-means score that is jointly assessed with an income threshold to determine programme eligibility. The target population of the new AFAM composed of 500,000 children living in poor households, regardless of the parents' contributory status. The transfer is conditional on children, aged 6 to 17, attending school. The old contributory regime is maintained for non-eligible households. Under the new regime the monthly transfer is higher and the amount increases as the child enters secondary school.

The value of the transfer is adjusted quarterly according to retail price developments. Nowadays the transfer for primary school children is a monthly stipend of US$41, which is supplemented with US$18 for those attending secondary level. In order to avoid undesired effects on fertility, an equivalence scale of 0.6 is used to calculate benefits at the household level.

PANES households with children or pregnant women were also entitled to an electronic foodcard (*Tarjeta Alimentaria*), with a varying monthly value, depending on the number of children and pregnant women in the household. After PANES ended, *Tarjeta Alimentaria* remained as a component of *Plan de Equidad*. In May 2009 the

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[11] The transfer was conditional on children attending school, although this conditionality was not enforced. In 1995, the system was transformed into a means-tested regime as a result of fiscal constraints. Later on, two subsequent reforms were carried out in 1999 and 2004. This last reform created a sub-programme targeted towards indigent households, cancelling the stipulation of contributing to the social security system and increasing the value of the transfer.

programmewas expanded to compensate for the old in-kind food transfer (*Canasta Riesgo Social*) that was discontinued; its beneficiaries were entitled to *Tarjeta Alimentaria*. This implied a strong expansion of programme coverage (beneficiary households increased 40 per cent), as well as a distortion in its targeting, as the eligibility criteria for *Canasta Riesgo Social*presented severe drawbacks. Depending on the composition of the beneficiary household, the *Tarjeta Alimentaria*transfer in 2010 was valued between US$27 – 72 a month.

*Asignaciones Familiares*at present reaches almost 18 per cent of the Uruguayan households and is mainly concentrated in the lower-income strata (Table 9). *Tarjeta Alimentaria* covers 6.5 per cent of households. Almost 40 per cent of the Uruguayan households pay IRPF.

With regard to the redistributive impact of IRPF and AFAM, the Kakwani progressivity index is negative for transfers and positive for taxes, indicating that both policies are progressive, the former being considerably more progressive.

We estimated the distributional impact of the simulated IRPF, IASS and transfers, based on data from the household surveys and the procedure outlined in Annex 4. Considering that these two policy regimes did not generate behavioural responses in terms of labour supply and hours of work, their joint effect explains around 2.5 points of the Gini index (Table 10). The magnitude of the distributional impact of both policies is similar, being slightly more redistributive that IRPF.[12] Although transfers are more progressive, the average rates involved determine that the redistributive effect of taxes is higher (re-ranking effects are very small in magnitude). Earlier research arrived at very similar results (Amarante et al. 2011; Amarante, Arim and Salas 2007).

A comparison of pre- and post-tax income indicates that the actual IRPF on labour has a redistributive effect corresponding to a one-point decrease in the Gini coefficient, whereas the effect of the IRPF on capital is a decrease of around 0.2 Gini points (Amarante et al. 2011). On the transfer side, previous ex ante micro simulation exercises have shown that if AFAM reaches its target population accurately, it could imply a 1 percentage point reduction of the Gini index (Amarante et al. 2010).

Table 9
Coverage and progressivity of tax and transfers, 2010

Tax and transfer	% households covered	Progressivity index (Kakwani)
Asignaciones Familiares(AFAM)	17.9	-1.00
Tarjeta	6.5	-1.16
AFAM and *Tarjeta*	5.8	-1.21
IRPF (labour)	30.9	0.32
IRPF (total)	39.6	0.32

Source: Own elaboration based on ECH.

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[12] Comparisons with the national accounting system indicate that capital income is severely underestimated in household surveys (Amarante et al. 2007). This implies that the distributive impact of the income tax calculated from this source is probably underestimated. Nevertheless, it must be mentioned that the expanded value of the capital tax revenue that stems from household surveys is very similar to the administrative tax records, which illustrates an important evasion of direct taxes on capital.

Figure 8
Lorenz and concentration curves, 2010, Total

a) AFAM

b) Tarjeta Alimentaria

c) IRPF

c) IRPF-Labour+IASS

d) IRPF-Labour

e) IRPF-Capital
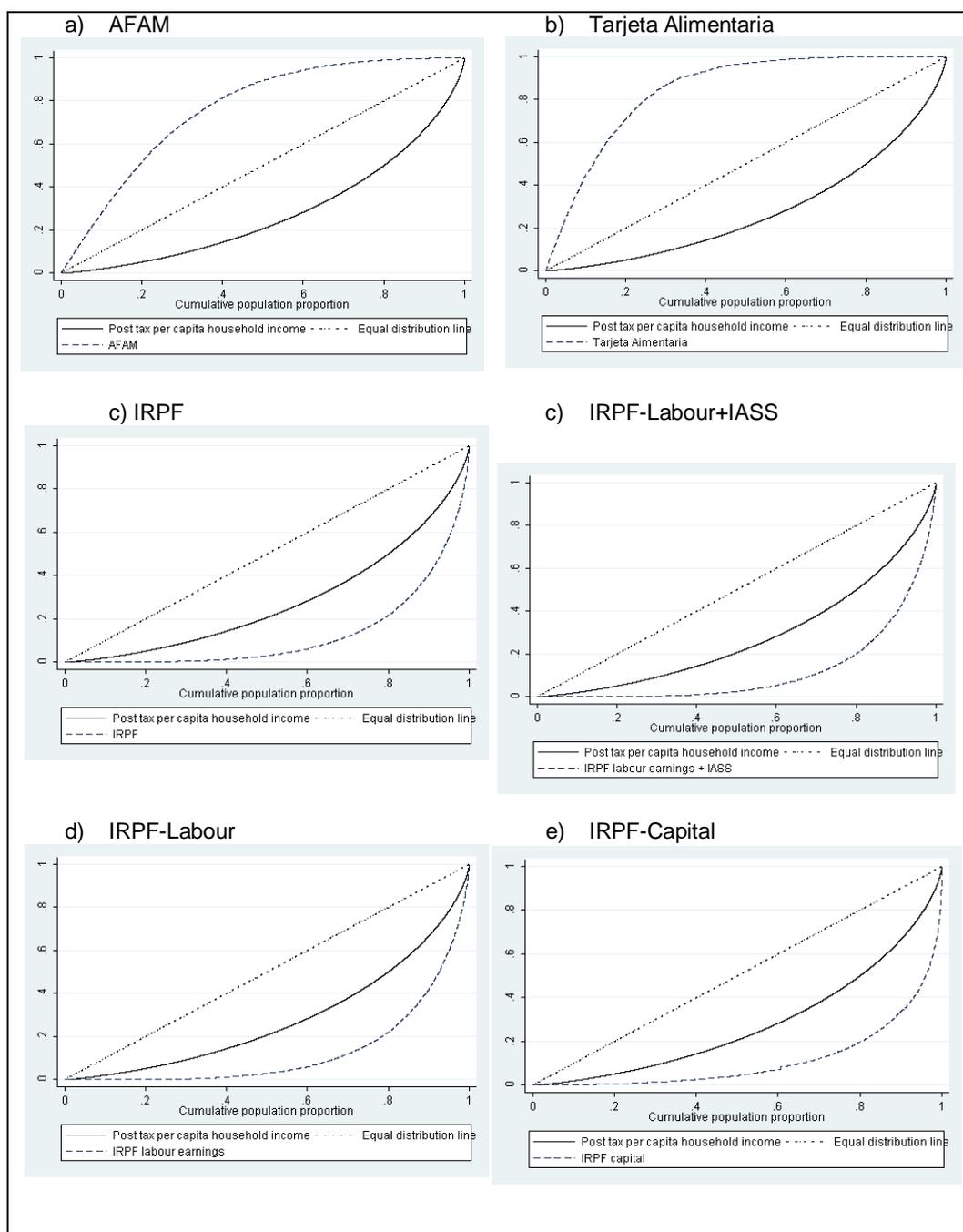
Source: Own elaboration based on ECH.

Table 10
Distributive impact of the income tax and transfers
Total for 2010

	Gini index	Variation
Actual 2010	44,3	
Removing AFAM & Tarjeta	45.4	1.1
Removing IRPF (and IASS)	45.6	1.3
Removing AFAM, Tarjeta, IRPF and IASS	47.5	2.4

Source: Own elaboration based on ECH.

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At the same time, it has been shown in previous research for Uruguay that arithmetic and behavioural simulations on transfers produce approximately the same results as long as potential effects on adult labour supply are negligible (Amarante et al. 2011). Martorano (2011) analyses the effects of taxation on labour supply, and finds that the so-called income effect is dominant with respect to the substitution effect. Hence, the decrease in after-tax wages did not bring about a decrease in hours of work. A similar conclusion is found by De Rosa, Esponda and Soto (2010), who emphasize thatbehavioural responses to modifications in the tax structure in Uruguay are, in general terms, very small.

It is interesting to compare the redistributive impact of Uruguay's direct tax and transfers system with data from the developed countries. For instance, Levy and Sutherland (2009) find that income tax accounts for 4 points of the Gini index and means-tested benefits for 0.7 in Spain, on a total Gini index of 0.305. For Sweden the same figures correspond to 4, 2 and 0.24. In the light of this, it may be argued that there is still margin for an expansion on income tax, whereas the redistributive performance of transfers seems to be similar to the one achieved by similar programmes in the European Union.

4.2 Micro simulation exercises

One crucial point to be assessed is to what extent margins exist for expanding the existing redistributive mechanisms. When redistributive reforms are introduced, they affect the level of inequality but not necessary its trend, unless other effects are in operation or the reforms are deepened. In what follows we consider different expansion scenarios for the two policies, and simulate their effects on income inequality.

In order to carry out our exercise, we present two expansion scenarios for IRPF and two for AFAM and *Tarjeta Alimentaria* (Table 11):[13]

Scenario 1: We split the fourth labour income bracket in two equal parts and increased the marginal rate of the upper bracket from 22 per cent to 25. We also increased the marginal rate of the top labour income bracket from 25 per cent to 30 (see Table 8 to compare with baseline scenario).

Scenario 2: We simulated some features of the Spanish labour income tax system based on *Agencia Tributaria* (2011) and Adiego et al. (2010). To simulate a rough version of the Spanish labour income tax system, we created the income brackets and the amount for deductions based on their relative distance to the average income. We applied similar eligibility conditions for deductions and marginal rates as are currently used in Spain. Details are presented in Annex 4.

Scenario 3: We expanded AFAM to fully cover households in the first three income deciles and doubled the *Tarjeta Alimentaria.*

Scenario 4: Wedoubledthe amount of the present transfer of AFAM and *Tarjeta Alimentaria.*

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[13] Due to the underreporting of capital income all the scenarios considered only refer to labour earnings.

Table 11
Simulation results of different income tax modification scenarios
on hourly labour earnings inequality, total

Scenario	1	2	Baseline
Gini	44.7	43.4	44.7
Variation	0.0	1.3	

Source: Own elaboration based on ECH.

In the following exercises we also simulate IASS, maintaining its present brackets. The baseline scenario corresponds to 2010. Hence, the simulations capture the marginal contribution to inequality of the different scenarios relative to the current status of the reforms considered.

The main results of our exercise are depicted in the following tables. We first present the impact that the income tax scenarios have on labour earnings inequality and then turn to household income inequality.The modifications considered in scenarios 1 and 2 have different distributive impacts: whereas the former does not exert any change relative to the baseline, the latter results in a reduction of labour income inequality of 1.3 percentage points in the Gini index (Table 11).

Table 12 gives the household income inequality obtained under the assumptions considered in the different scenarios. When considering IRPF modifications only, scenario 1 produces a Gini index similar to the baseline one. Although we are not presenting additional simulations in this vein, we have carried out numerousvariations departing from the present structure; the results were very similar. The same is true in Amarante et al. (2011). Meanwhile, scenario 2 implies a significant margin of redistribution compared to the present situation, as Gini index falls 1.1 percentage points. The fact that the tax burden is higher than at present and that the deductions vary significantly with the number of children might contribute to explain this result.

As mentioned earlier, we kept IASS and capital income taxes contant in these simulations. The introduction of progressional rates on capital income taxes could also yield an increase in the redistributive power of the present IRPF. This aspect needs to be studied further with administrative income tax data.

Table 12
Micro simulation results on the distributional impact of the different policy scenarios

	Baseline Gini: 44.3		
	Scenario 1	Scenario 2	AFAM only
Scenario 3	43.18	42.22	43.43
Scenario 4	42.7	41.69	42.92
Income tax only	44.2	43.20	
Gini index variation (relative to baseline)			
Scenario 3	-1.12	-2.08	-0.87
Scenario 4	-1.6	-2.61	-1.38
Income tax only	-0.1	-1.1	

Source: Own elaboration based on ECH.

Table 13
Gains and income losses by income decile and scenario

Decile	Pressure on household income (%)			Effective rate (%)			Simulated income variation combining transfer & income tax scenarios (%)			
	Baseline	Sc. 1	Sc.2	Baseline	Sc. 1	Sc. 2	Sc. 1.3	Sc. 1.4	Sc. 2.3	Sc. 2.4
1	0.0	0.0	0.1	0.0	0.0	0.1	20.7	31.3	20.6	31.3
2	0.1	0.1	0.7	0.1	0.1	0.7	8.4	14.5	7.9	13.9
3	0.3	0.3	1.9	0.2	0.2	1.9	4.0	7.2	2.4	5.6
4	0.6	0.6	3.1	0.4	0.4	3.1	2.1	1.7	-0.4	-0.8
5	1.0	1.0	4.4	0.7	0.7	4.3	1.1	0.8	-2.3	-2.7
6	1.4	1.4	5.5	1.0	1.0	5.6	0.6	0.4	-3.5	-3.7
7	2.3	2.3	7.5	1.5	1.5	7.1	0.2	0.1	-5.0	-5.1
8	3.0	3.0	8.8	2.2	2.2	8.7	0.1	0.0	-5.7	-5.7
9	4.3	4.3	11.0	3.4	3.4	11.2	0.0	0.0	-6.7	-6.7
10	6.2	6.4	13.6	6.2	6.3	15.6	-0.2	-0.2	-7.4	-7.4
Total	3.6	3.7	9.1	2.3	2.3	7.8	1.0	1.5	-4.4	-3.9

Source: Own elaboration based on ECH.

In terms of transfers, higher redistribution could be achieved in the two scenarios used in this analysis, so there is still margin for expanding their redistributive power. The combination of the two policy modifications could yield a total reduction ranging from 1.2 to 3 percentage points in the Gini index, where this upper bound is close to their present effect, as shown in Table 10.

In terms of income gains and losses, Table 13 depicts the tax burden applied in our scenarios as well as the combined effect of the transfers and new income tax schemes. Scenario 1 has considerable resemblance to the current situation whereas scenario 2 would mean important modifications in the tax burden of the upper deciles. As expected, none of these scenarios affect the incidence of poverty.

The feasibility of the tax scheme implied in scenario 2 could be problematic in terms of its political economy, as it will erode the wellbeing of the middle classes. When the combined effects of the tax and the AFAM reforms are considered, it is clear that in all scenarios, the 2 first deciles experience significant increases in their income (Table 14).

It must be remarked that the different scenarios result in very diverse fiscal outcomes (Table 14). The scenarios related to income tax modifications suggest an increase in tax revenue, which is particularly significant in the case of scenario 2. This could also be consistent with a VAT reduction, as it could increase the present tax revenue considerably. Estimations by *Dirección General Impositiva* point out that a one-point reduction in VAT is equivalent to approximately US$200 million, so that even after funding the AFAM expansion with this tax revenue, it would be possible to cut VAT, which currently is 22 per cent. Of course, the macroeconomic effects implied by these results and conjectures need to be assessed in depth in further studies. With respect to transfers, public expenditure increases in two scenarios, and this increase reaches half a point of GDP in the case of doubling the transfer amount.

Although these results indicate that margins exist for expanding the current reforms and reducing inequality, it must be noted they are limited and need to be explored further. The results suggest that significant changes need to be introduced to improve the redistributive potential of IRPF whereas AFAM provides a wider range of possibilities

for reaching higher progressivity than income tax. These results also suggest that other reforms need to be considered if sustaining the drop in inequality is on the policy agenda.

Considering the results obtained in section 3, some recent trends within the labour market are also contributing to the present alleviation of inequality, although the share of labour in GDP is lower than before the crisis. If the reasons for the reduction are related to increased employment as suggested in some micro-simulation exercises conducted by Alves et al. (2010), this improvement path is close to its end, as Uruguay is reaching its lowest limit in terms of unemployment.

Table 14
Changes in tax revenue and public spending in each scenario.

Scenario	Baseline	Simulation	Variation (%)	Variation as % of GDP
Tax revenue from IRPF (labour) (million US$) 2010				
Scenario 1	714	733	2.7	0.05
Scenario 2	714	1823	155.3	2.68
Public spending on AFAM (million US$) 2010				
Scenario 3	208	224	7.7	0.04
Scenario 4	208	393	88.9	0.15
Net gain/loss by scenario (combining IRPF and AFAM)				
Scenario 1.3	506	509	0.6	0.01
Scenario 1.4	506	340	-32.8	-0.1
Scenario 2.3	506	1599	216.0	2.64
Scenario 2.4	506	1430	182.6	2.53

Source: Own elaboration based on ECH.

5   Final comments

This study has shown the main trends of household income inequality in Uruguay over the years 1981-2010, broken down into as subperiods on the basis of the main political regimes: extreme right (1981-84), centre-right (1985-89), right and centre (1990-2004) and left (2005-10). Due to the scarcity of micro-data, it was not possible to assess the full impact of the *de facto* regime on inequality although facts, such the suppression of wage councils and trade unionism and the significant fall in real wages, hint at a negative effect. Inequality fell during the years covered in this study (1981-84).Inequality also fell moderately during the restoration of democracy, increased significantly during the right-wing regime, and the Washington consensus policies adopted then. The first two years of the left regime also meant increased inequality, but this has started to fall since then, reversing the trend of the previous 15 years.

The increase in inequality was mainly driven by trade liberalization, suppression of centralized wage-setting mechanisms, drop in minimum wages and the lack of a social protection system oriented to the most deprived households.

In a context of a stable macroeconomic system, the recent fall in inequality resulted from a shrinkinglabour income inequality and the introduction of noncontributory

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public transfers schemes. The last period under review combines a wide set of redistributive reforms with rapid economic growth, making it difficult to single out the specific causes of the reduction in labour earnings inequality. However, the micro-simulation results of this study and earlier research suggest that improved minimum wages, introduction of the income tax, the fall of returns to education and increasing employment are the main causes. The last has generated important compositional effects. Despite these possible causes, a large portion of the reduction in labour market inequality remains unexplained. If the reduction in inequality is an outcome of increased employment as has been suggested in some micro-simulation exercises, the opportunities of this path are coming to a close, as Uruguay is reaching its lowestlimits in terms of unemployment. Further policy actions aimed at fostering labour market participation of women, for example, need to be studied.

In this study we tried to analyse the margins for a sustained reduction in inequality by assessing the potential impact of an expanded*Asignaciones Familiares*, *Tarjeta Alimentaria*and the labour component of income tax.

The combined effect of these simulations could allow for a reduction of 1 to 3 points of the Gini index, which would be still placed over 40. Modifications to the present income tax structure need to be significant in order to achieve real change in terms of inequality, although the potential effect of improving the redistributive power of the capital component of IRPF was not assessed here due to data availability. Furthermore, *Asignaciones Familiares*offers a wider range of possibilities for reaching higher progressivity.

Increases in minimum wages could also play a key role although they were not explored here as their micro and macroeconomic effects would have required developing a full simulation model.These results also suggest that the tax expansion and transfer reform would need to be coupled with new interventions, which could contributeto sustaining the fall in inequality in the long run. Some intervention measures, such as the educational reform, will have medium-term effects. But the effects of additional taxes on capital income need to be explored further and a relevant effort in terms of data-gathering is needed to meet this task.

Acronyms

AFAM	*Asignaciones Familiares* (child allowances scheme)
BPC	*Base de Prestaciones Contributivas*
CAUCE	*Convenio Argentino Uruguayo de Cooperación Económica*
ECH	*Encuestas Continuas de Hogares* (Uruguayan household surveys)
GICs	growth incidence curves
IASS	*Impuesto de Asistencia a la Seguridad Social*
IREA	*Impuesto a las Rentas de las Actividades Económicas*
IRPF	*Impuesto a la Renta de las Personas Físicas* (dual personal income tax)
LA	Latin America
MERCOSUR	Common Market of the South
PANES	*Plan Nacional de Atención a la Emergencia Social*
PEC	*Protocolo de Expansión Comercial*
RPI	retail price index

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Annex 1:The Uruguayan household surveys

The information used in this paper is derived from the micro-data of the Uruguayan household surveys (*Encuesta Continua de Hogares*) for the period 1986-2009. This survey, carried out by *Instituto Nacional de Estadística* (INE),covers the whole year and collects detailed information on labourforce attainment, the socioeconomic characteristics of households and income by source.

During the course of the 29 years considered in this study, there were modifications to the sampling framework, questionnaire and geographical coverage, generating breaks in the series. The sampling framework for the 1981-85 period was the 1975 Population Census;for the 1986-97 period, it was the 1985 Population Census; for the 1998-2005 period, the 1996 Population Census, and from 2006 onward, the sample was drawn from the Conteo 2006 (First Phase of the Census to be carried out in 2011).

Although population growth in Uruguay is moderate, changes in the sampling framework result in different sampling weights and this creates discontinuities in the series, particularly those related to income. At the same time, surveys dating from 1981 to 1997 covered geographical areas of 900 inhabitants and more, where 87 per cent of the population live. Furthermore the sample in the period 1998-2005 was restricted to urban centres of 5,000 inhabitants and more (85 per cent of the population). Finally, the survey has had national coverage since 2006. Thus, in order to have a comparable timeseries, we restricted the sample to urban areas of 5,000 inhabitants and more for the entire period under analyses, with the exception of 1985 when only Montevideo was included.

The income questions also experienced significant variation over time, so we needed create a compatible income aggregate. Capital income has been gathered since 2006 in more detail, with noncontributive benefits singled out. As noncontributive benefits were expanded from the year 2005, these modifications in the survey instrument are not a severe drawback to the accuracy of this source of income.

ECH collects after-tax current income. The household income aggregate used here included labour earnings for salaried workers, self-employed and entrepreneurs (both in kind and in-cash), capital income (from interests, rents, royalties, financial assets), public and private transfers (including remittances) and imputed owner's occupied housing. This income definition is different from the one used by INE, as our interpretation excludes the imputation for health insurance coverage, whereas INE adds the market value of health insurance to household income for formal workers. The INE series also includes the value of health insurance for eligible children as household income to reflect the 2007 amendment to the health scheme that extended coverage to dependants aged 18 years or under. As we did not include this component, our average income series does not show the same trend as INE in recent years.

Annex 2: Pre-tax income estimations

Our simulations are based on an arithmetical model that does not include behavioural responses. For each household, we calculated the amount of taxes paid and benefits received, based on the actual tax and benefit system, and a scenario based on policy design modification. Thus our baseline reflected the actual disposable household income within the current framework of IRPF and *Asignaciones Familiares*. The redistributive impact was analysed considering inequality measures for the baseline and for the simulated income in each scenario.

To perform our analysis, we needed to estimate gross household income, as the Uruguayan household survey included information on net income (i.e., after taxes). Gross income was estimated for 2006, 2008 and 2010 by taking the corresponding tax systeminto accountfor each year. For this estimation, we considered each worker groups' specific circumstances with respect to social security contributions, health insurance, etc., for both the main and secondary occupations. In fact, labour income was broken down intothe main and secondary occupation.When a person reported more than one occupation, we separated the earnings in those originating from the primary occupation and the secondary ones. For simplicity, the secondary earnings were collapsed to one category even if the wage earner had more than two occupations.

For each year, we reproduced the existing tax schedules, as following:

January - December 2006	IRP
January - June 2008	IRPF
July - December 2008	IRPF - IASS
January -December 2010	IRPF - IASS

Due to the judicial resolution, pensions were not taxed by IRPF from July 2008 onward. Instead, a new tax, known as IASS, was created. Furthermore, during 2008, the ceiling for the exemption bracket was increased from 60 to 84 BPC[14] per year, and deductions for children were doubled (from 13 to 26 BPC per year). These changes were considered in our model.

In the case of IRPF on capital income, we calculated the amount paid by each household according to their declared capital income. Nevertheless, given the problems in the declaration of this source of income in the household survey,we decided not to make simulations on this component of the tax.

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[14] 1 BPC=US$103.

Annex 3: Tables

Appendix Table A1

Income distribution indicators, 1981-2010, Urban areas

Year	Gini	Theil	Income distribution by per capita quintiles					
			1	2	3	4	5	Total
1981	44.2	35.7	4.5	9.5	14.6	22.0	49.3	100
1982	44.4	36.5	4.6	9.4	14.5	22.0	49.5	100
1983	44.0	34.6	4.6	9.5	14.6	22.2	49.1	100
1984	43.2	33.9	4.9	9.7	14.8	22.2	48.5	100
1985	40.7	30.4	5.4	10.5	15.3	22.3	46.5	100
1986	42.0	32.4	5.0	10.1	15.2	22.3	47.4	100
1987	41.2	31.1	5.2	10.4	15.2	22.3	46.8	100
1988	42.2	38.3	5.6	10.2	14.6	21.2	48.4	100
1989	41.4	33.5	5.6	10.3	15.0	21.7	47.5	100
1990	41.9	34.1	5.5	10.1	14.8	21.6	48.0	100
1991	41.7	33.0	5.6	10.2	14.9	21.5	47.8	100
1992	44.9	36.8	4.7	9.2	14.2	21.9	50.1	100
1993	40.8	29.3	5.5	10.3	15.2	22.2	46.8	100
1994	42.3	32.3	5.3	10.0	14.7	21.8	48.2	100
1995	42.2	31.7	5.2	9.9	14.8	22.2	47.9	100
1996	42.8	32.7	5.1	9.9	14.6	21.9	48.5	100
1997	42.9	33.0	5.2	9.7	14.6	21.8	48.7	100
1998	43.9	34.8	4.8	9.5	14.4	21.8	49.4	100
1999	43.8	34.9	5.0	9.5	14.3	21.6	49.5	100
2000	45.5	38.7	4.7	9.1	13.9	21.3	51.0	100
2001	45.4	37.5	4.7	9.0	13.8	21.6	50.8	100
2002	45.8	38.1	4.6	8.8	13.8	21.6	51.1	100
2003	45.2	37.4	5.0	9.0	13.8	21.3	50.9	100
2004	46.0	38.9	4.7	8.8	13.7	21.5	51.3	100
2005	44.2	35.2	4.6	9.6	14.3	22.8	48.7	100
2006	46.3	39.0	4.6	8.7	13.6	21.5	51.7	100
2007	46.6	39.9	4.6	8.5	13.5	21.4	51.9	100
2008	46.2	39.6	4.5	8.8	13.8	21.6	51.4	100
2009	45.4	38.4	4.8	8.9	13.9	21.7	50.7	100
2010	44.2	35.2	4.9	9.2	14.2	22.0	49.7	100

Source: Own elaboration based on ECH.

Appendix Table A2

Income inequality and change of income at different percentile

Right regime

	1990-95	1995-2000	2000-05	1990-05
Initial Gini	41.9	42.2	45.5	41.9
Final Gini	42.2	45.5	45.0	45.0
Change in inequality	0.3	3.3	-0.5	3.1
Mean growth rate of hh income	2.74	0.25	-6.73	-1.63
Growth rate, bottom 10th percentile	0.97	-1.08	-6.32	-10.66
Growth rate, bottom 15th percentile	1.2	-1.27	-6.49	-10.03

Source: Own elaboration based on ECH.

Appendix Table A3
Distribution of income by source and per capita decile, Urban areas
1931, 1984, 1989, 2004 and 2010
After tax income

Year	1	2	3	3	5	6	7	8	9	10	Total
	Labour income										
1981	59.1	61.7	63.2	63.4	60.0	57.8	58.5	59.7	59.3	56.9	58.9
1984	53.4	59.3	59.4	57.2	57.2	56.1	57.0	56.0	57.1	52.0	55.4
1989	61.9	65.3	61.5	63.0	61.2	60.0	60.9	62.7	63.4	58.3	61.0
2004	47.6	56.1	58.8	57.6	58.3	56.8	55.7	55.3	55.3	54.5	55.5
2010	44.7	53.6	58.7	60.2	59.8	60.1	60.3	58.9	57.8	53.3	56.8
	Capital income										
1981	0.3	0.3	0.4	0.9	1.2	1.8	1.6	3.2	4.0	10.7	5.0
1984	0.3	0.6	0.6	1.0	1.2	1.4	2.1	2.7	4.1	11.4	5.2
1989	0.2	0.4	0.7	0.8	0.8	1.3	1.8	2.0	3.0	7.5	3.5
2004	0.1	0.1	0.4	0.7	0.4	0.7	1.1	0.9	2.3	5.8	2.8
2010	0.1	0.2	0.3	0.7	0.7	1.0	1.4	2.2	3.0	9.7	4.2
	Contributory transfers										
1981	19.9	20.8	19.2	18.8	20.5	20.0	18.8	17.1	15.3	13.5	16.6
1984	24.4	21.2	21.4	22.5	22.5	23.2	21.0	21.8	19.6	18.3	20.4
1989	21.9	18.1	19.7	18.1	19.0	18.3	16.6	15.1	13.1	12.4	15.2
2004	23.8	18.4	17.6	19.4	19.8	21.7	22.6	24.1	23.5	21.2	21.7
2010	16.2	15.4	15.1	15.8	16.9	17.5	18.4	18.6	19.7	19.1	18.3
	Noncontributory transfers										
1981	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	1.3	1.4	1.4	1.1	1.1	0.9	0.7	0.4	0.3	0.1	0.5
2004	3.3	2.5	2.2	2.1	1.6	1.4	1.1	0.7	0.2	0.1	0.8
2010	19.0	11.8	7.4	4.9	3.5	2.2	1.5	0.7	0.4	0.1	2.1
	Other income (ownership rent, pensions from abroad, private transfers)										
1981	20.7	17.2	17.2	16.9	18.2	20.4	21.0	20.0	21.3	18.9	19.5
1984	21.9	18.9	18.6	19.2	19.1	19.4	19.8	19.5	19.3	18.3	19.0
1989	14.7	14.8	16.7	17.0	17.9	19.4	20.1	19.8	20.2	21.7	19.7
2004	25.3	22.9	21.0	20.2	19.9	19.4	19.5	19.0	18.7	18.4	19.2
2010	20.0	19.0	18.5	18.5	19.1	19.2	18.5	19.6	19.2	17.7	18.6

Source: Own elaboration based on ECH.

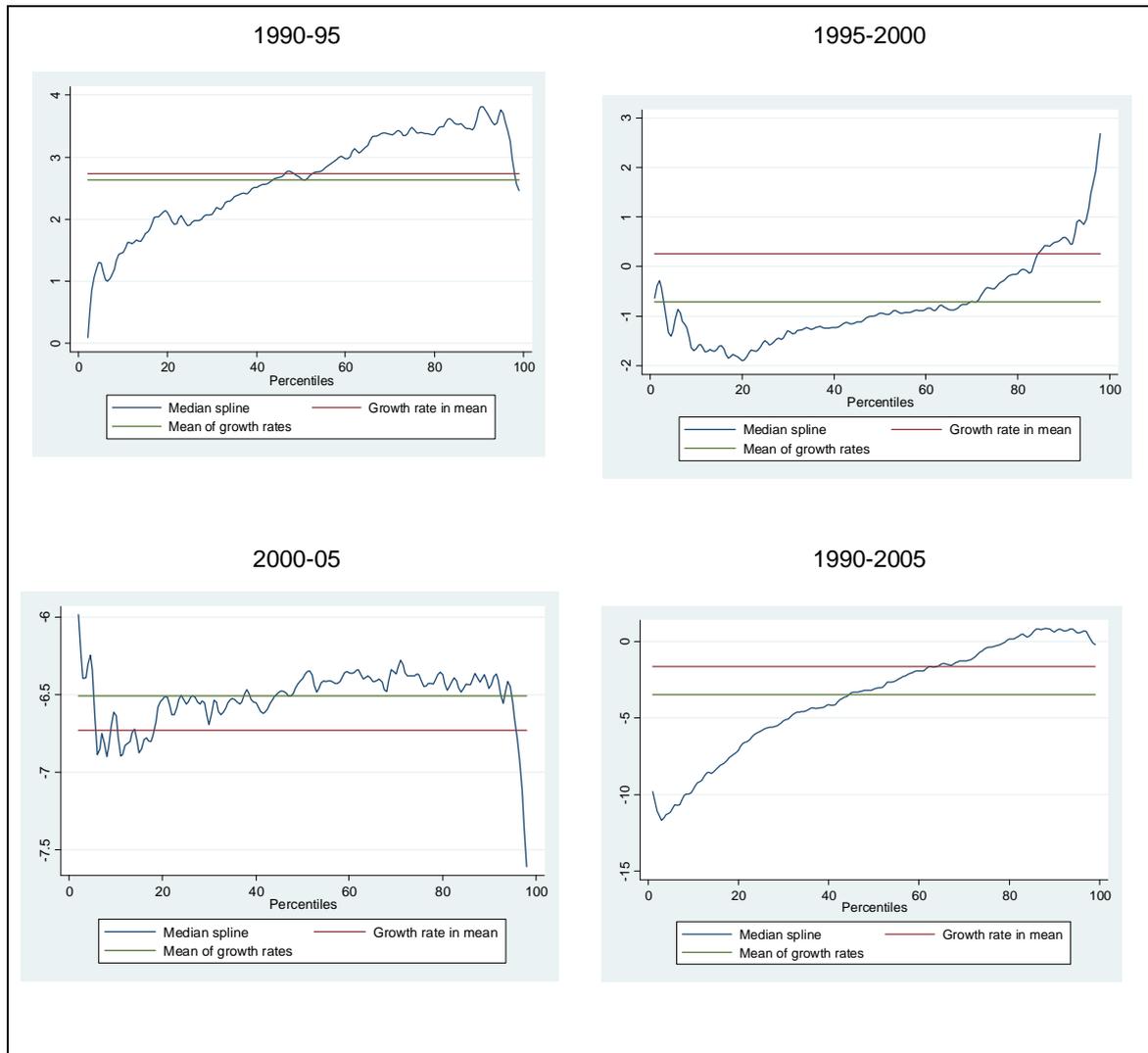| Year	Participation rate	Unemployment rate	Employment rate
1986	55.7	9.8	50.2
1987	57.9	9.2	52.6
1988	57.4	8.7	52.4
1989	57.9	8.1	53.2
1990	57.6	8.6	52.7
1991	56.6	8.8	51.6
1992	56.6	8.9	51.5
1993	56.1	8.3	51.4
1994	58.4	9.2	53.0
1995	59.4	10.4	53.2
1996	58.5	12.0	51.5
1997	58.0	11.6	51.3
1998	59.9	10.1	53.9
1999	58.2	11.3	51.6
2000	58.6	13.6	50.6
2001	60.6	15.3	51.4
2002	59.1	17.0	49.1
2003	58.1	16.9	48.3
2004	58.5	13.1	50.8
2005	58.5	12.2	51.4
2006	60.9	11.4	53.9
2007	62.7	9.6	56.7
2008	62.6	7.9	57.7
2009	63.3	7.7	58.4
2010	63.3	7.1	58.8

Source: Own elaboration based on ECH.

Appendix Table A5
Uruguayan labourforce by employment sector, 1981-2010

| Year	Private workers	Public workers	Self-employed with investment	Self-employed without investment	Unpaid workers	Other
1981	52.58	22.37	4.18	11.36	1.87	7.64
1982	51.86	21.55	4.49	12.28	2.41	7.4
1983	47.08	23.78	4.65	14.14	2.07	8.3
1984	45.31	24.05	5.33	14.09	2.25	9.0
1986	45.94	23.9	7.30	11.16	6.92	4.8
1987	46.64	23.1	6.92	11.85	6.85	4.6
1988	47.18	23.0	6.61	11.64	6.75	4.8
1989	49.04	21.9	6.98	11.37	5.92	4.8
1990	50.83	21.9	6.54	11.01	5.02	4.7
1991	52.65	20.9	6.46	12.76	1.99	5.3
1992	54.97	19.4	7.06	13.26	0.46	4.8
1993	53.25	19.6	6.81	13.79	2.01	4.6
1994	53.22	18.7	6.70	14.38	2.17	4.8
1995	52.88	19.1	6.83	14.26	2.15	4.8
1996	53.05	18.5	6.79	15.11	2.11	4.5
1997	54.32	17.8	6.94	14.35	2.00	4.6
1998	56.11	16.3	7.09	13.89	1.78	4.8
1999	55.95	16.3	7.47	14.44	1.71	4.1
2000	55.57	17.1	8.02	13.77	1.65	3.9
2001	54.46	16.6	8.82	14.61	1.39	4.1
2002	52.08	17.9	10.30	14.38	1.52	3.8
2003	52.14	18.00	9.72	15.23	1.36	3.5
2004	52.56	17.67	9.22	15.18	1.59	3.8
2005	54.58	16.63	8.25	15.13	1.32	4.1
2006	54.83	16.48	6.76	15.91	1.40	4.6
2007	55.63	15.56	5.16	17.46	1.38	4.8
2008	56.04	15.57	4.20	17.92	1.31	5.0
2009	56.68	15.29	3.73	18.04	1.60	4.7
2010	56.68	15.29	3.73	18.04	1.60	4.7

Source: Own elaboration based on ECH.

Appendix Figure A1
GICs under the different presidential periods of the right regime

Appendix Figure A2
Shapley inequality decomposition of public transfers, per capita household income,1981-2010
Urbanareas, Theil index
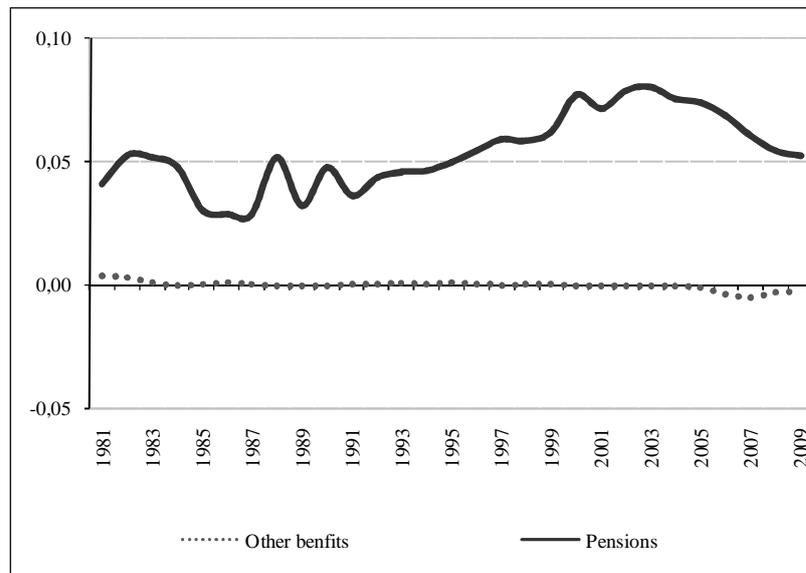
Source: Unpublished work by Alves et al. (2010).

AppendixFigure A3
Hourly earnings Gini index by employment sector, Urban areas

Source: Own elaboration based on ECH.

37
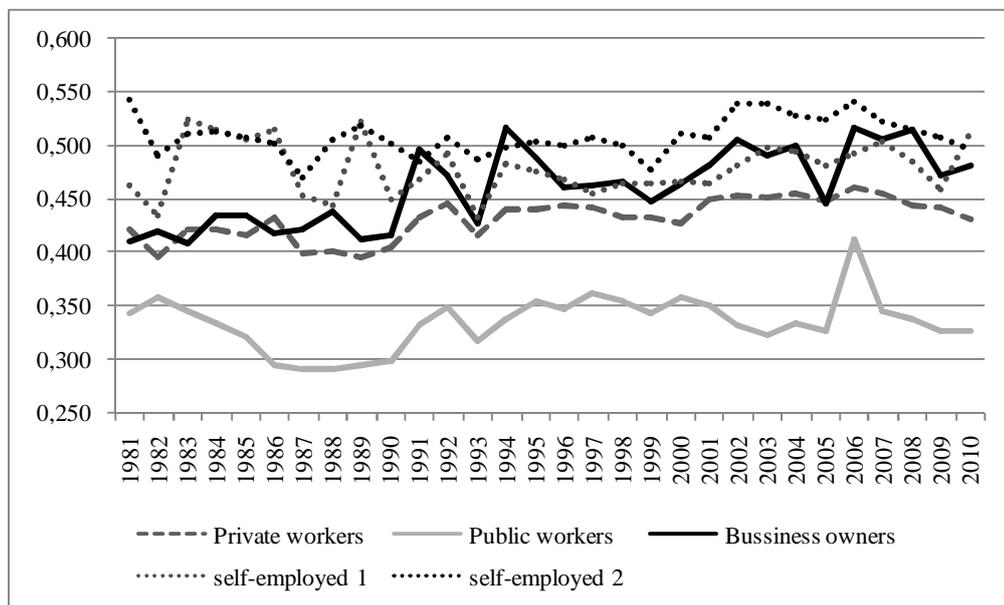
Annex 4
   Methodology for the simulating some features of the current Spanishincome tax with Uruguayan data

In order to analysethe effect of potential modifications on the present income tax in Uruguay that may promote a reduction in inequality, we simulated certain features of the Spanish labour income tax system, such as income brackets and deductions. The information on the Spanish tax system used here is based on *Agencia Tributaria* (2011) and Adiego et al. (2010).

In order to calculate the deductions and income brackets we expressed each of these items in terms of the average wage in Spain, and then estimated the corresponding income for Uruguay by multiplying these coefficients with the 2010 average wage calculated from the household survey.

The procedure is as follows:[15]

Gross baseline income is derived by subtracting an amount for labour earnings and social security contributions. As the labour earnings deduction can be used by one household member only, we selected the member with thehighest labour earnings:

Monthly labour earnings brackets (UYU)[16]	Deduction (UYU)
from 0 to 9,606	4,269
9,606 to 13,875	4,269-(0.35*(income-9,606))
13,875 and higher	2,775

Social security contribution		
Age in years	Reduction (UYU)	Maximum (UYU)
<= 52	Total SSC	10,464
> 52	Total SSC	13,080

After deducting these two items from taxable income, the following tax brackets were applied with regard to monthly labour earnings.

Monthly labour earnings, ranging	Rate (%)
from 0 to 5,284	0
5,284 to 18,165	24
18,165 to 33,861	28
33,861 to 54,788	37
54,788 to 125,565	43
125,565 to 183,116	44
183,116 and over	45

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[15] Although taxation is based on annual income, we presented all the amounts used in our analysis on a monthly basis to facilitate comparisons with the Uruguayan household survey.

[16] US$1 equals 19.85 Uruguayan pesos (UYU)

In addition, the following deductions were considered. Note that when both parents cohabit, deductions for dependants are halved between the two. The same applies for relatives. In order to simplify the calculations, the amount of deductions is divided among all household members who are obligated to pay income tax:

Age in years	Deduction (UYU)
< 65	5,390
>= 65 and<75	6,350
>75	6,564

Offspring: these deductions are targeted towards parents living with their unmarried dependants younger than 25years, and with income less than UYU8,371.Note thatthese amounts are cumulative. For instance, a household with two offspring would be able to deduceUYU1,921 + UYU2,135.

Deduction for dependants under 25 yrs	Deduction (UYU)
1stchild	1,921
2nd	2,135
3rd	3,842
4th or more	4,376

Elderly relatives: these deductions areavailable for household members with whomelderly relatives live, and who have an income of less than UYU8,371. In order to simplify calculations, in this exercise we considered as relatives all adults older than 65 yrs with income lower than UYU8.371.

Age in years	Deduction (UYU)
>65 y <=75	961
>75	1,174

Maternity deduction: UYU 1,256 a month per child aged 0 to 3.

Once all the aforementioned deductions have been summed, the same brackets and rates as indicated above were used to estimate the tax payment. Finally, the final tax payment is obtained by subtracting the total amount of deductions from the tax payment calculated in the previous step. If this calculation yields a negative value, the amount to be paid is equalized to 0, as no payment from the state is generated.