

Social Spending, Taxes and Income Redistribution
in Uruguay

Marisa Bucheli

Nora Lustig

Maximo Rossi

Florencia Amábile

The World Bank
Latin America and the Caribbean Region
Economic Policy Unit
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Abstract

How much redistribution does Uruguay accomplish through social spending and taxes? How progressive are revenue collection and social spending? A standard fiscal incidence analysis shows that Uruguay achieves a nontrivial reduction in inequality and poverty when all taxes and transfers are combined. In comparison with five other countries in Latin America, it ranks first (poverty reduction) and second (inequality reduction), and first

in terms of poverty reduction effectiveness and third in terms of overall (including transfers in-kind) inequality reduction effectiveness. Direct taxes are progressive and indirect taxes are regressive. Social spending on direct transfers, contributory pensions, education and health is quite progressive in absolute terms except for tertiary education, which is almost neutral in relative terms.

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Social Spending, Taxes and Income Redistribution in Uruguay^{1 2}
Marisa Bucheli, Nora Lustig, Maximo Rossi and Florencia Amábile³

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¹ This paper was prepared for the LAC Vice Presidency of the World Bank as a background paper for the Uruguay PER and is an output of the Commitment to Equity (CEQ) project. Led by Nora Lustig and Peter Hakim the *Commitment to Equity* (CEQ) project is designed to assess the progressivity of social spending and taxes, their impact on poverty reduction, and their redistributive effects. It does this through a comprehensive incidence analysis and a diagnostic framework. The incidence analysis addresses the following three questions: How much redistribution and poverty reduction does a country accomplish through social spending and taxes? How progressive are revenue collection and social spending? What could be done to further increase redistribution and improve re-distributional effectiveness? CEQ is the first framework to comprehensively assess the tax and benefits system in developing countries and to make the assessment comparable across countries and over time. Initially, CEQ has focused on Latin America. CEQ/Latin America is a joint project of the Inter-American Dialogue (IAD) and Tulane University's Center for Inter-American Policy and Research (CIPR) and Department of Economics. The project has received financial support from the Canadian International Development Agency, the Norwegian Ministry of Foreign Affairs, the United Nations Development Programme's Regional Bureau for Latin America and the Caribbean, and the General Electric Foundation. <http://www.commitmenttoequity.org/>

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³ Nora Lustig is Samuel Z. Stone Professor of Latin American Economics, Tulane University (Department of Economics; Stone Center for Latin American Studies and CIPR); nonresident fellow at Center for Global Development and Inter-American Dialogue. Marisa Bucheli, Maximo Rossi and Florencia Amábile are members of the Economics Department at the Universidad de la Republica, Uruguay. Please send inquiries to nlustig@tulane.edu.

How much redistribution does Uruguay accomplish through social spending and taxes? How progressive are revenue collection and social spending? What could be done to further increase redistribution and improve re-distributional effectiveness? Using the *Encuesta Continua de Hogares (2009)*⁴, we apply standard incidence analysis to estimate the impact on inequality and poverty of direct taxes, indirect taxes, and social spending, here defined to include cash and food transfers and in-kind transfers in education and health in our benchmark scenario (and contributory pensions in the sensitivity analysis). Some caveats are in order. This exercise does not incorporate behavioral, life-cycle or general equilibrium effects. The analysis also does not look into the macroeconomic sustainability of taxation and social spending patterns. Nonetheless, this study is one of the most detailed incidence analyses for Uruguay to date. Indeed, there are two recent research works that analyze separately the distributive effect of social spending (Llambí et al, 2009) and taxes (Amarante et al., 2012).

The paper is organized as follows. Section 1 presents a summary of Uruguay's social spending and taxes. Section 2 presents the main results. Section 3 identifies areas for potential improvement in anti-poverty policies. Section 4 concludes. Definitions of income concepts are in the Appendix. The full set of calculations and specific information on data and anti-poverty programs are included in the Statistical Appendix, which is available on request.

1. Social Spending and Taxes in Uruguay: A Bird's Eye View

With a GNI per capita of \$13,040 (2005 PPP) in 2009, Uruguay is an upper middle-income country. In terms of population, Uruguay is small: 3.3 million people. Measured by the ratio of primary government spending (total minus debt servicing) to GDP of 27.2%, Uruguay's government is medium-sized when compared with other countries in Latin America.

Uruguay has a long tradition of providing public services and social benefits. In 2009, public social spending was equivalent to 21.1% of GDP. This spending does not include provincial or municipal benefits. Note that Uruguay is a small country with strong centralized institutions, so provincial benefits and taxes are negligible.

The three largest components are the social security system, health, and education (see Table 1). These are the components that are included in Uruguayan statistics for estimating social spending. In the present paper, we did not include all these components. Specifically, we did not include "housing and community services" because we could not identify the specific benefits allocated to each household nor "operational expenditures for social security." In the benchmark of our incidence analysis, we considered pensions as part of the market income. But in the sensitivity analysis, contributory pensions are treated as a direct transfer. Thus, the social spending is equivalent to 10.4% and 18.9% of GDP in the benchmark and sensitivity analysis scenarios, respectively.

⁴ This household survey has national coverage. For more details see the Statistical Appendix, which is available on request.

Table 1. Social spending, by component, as a percentage of GDP: 2009	
Components	%
Social security	10.9
<i>Contributory pensions^b</i>	8.5
<i>Other contributory programs^{a b}</i>	1.0
<i>Social Assistance programs^{a b}</i>	0.5
<i>Operational expenses</i>	0.9
Family allowances ^{a b}	0.4
Health ^{a b}	4.6
Education ^{a b}	3.6
Food ^{a b}	0.3
Housing and community services	1.4
Total	21.1
Notes:	
^a Considered as social spending in benchmark.	
^b Considered as social spending in the sensitivity analysis.	
Source: BPS, MEF, JUNASA, MIDES, OPP.	

In 2009, the revenues of the non-financial public sector were 28% of GDP. Government revenues are comprised of taxes (20.9% of GDP), and social security contributions (5.4% of GDP) (2009) (See Table 2). The remaining 1.7% of GDP comes predominantly from the surplus revenues of public enterprises. This resource structure does not include municipal or provincial tax revenues.

Table 2. Government revenues by component, as a percentage of GDP: 2009	
Components	%
Taxes	20.9
<i>Indirect taxes</i>	11.8
<i>Income taxes on individuals</i>	9.1
<i>Other taxes</i>	0.0
Social security contributions	5.4
<i>Employees</i>	3.1
<i>Employers</i>	2.4
Other revenues	1.7
Total	28.0
Source: BPS, MEF	

What follows is a brief description of the programs under social spending and the tax system.

2. Social Spending

Contributory social security programs: benefits and contributions

The first contributory programs of the social security system were created towards the end of the nineteenth century for workers in specific sectors. During the twentieth century, coverage was extended to all workers, including independents. The majority of contributors are administered by a public agency. There is also a subsystem for professionals and financial sector employees, which is administered by their unions, but these groups are not included in the figures in Table 1. According to Ferreira-Coimbra and Forteza (2004), around 2000 the number of jobs that contributed to these institutes was only slightly more than 10% of the total number of contributors to the social security system. The share was similar in terms of the number of pensions paid.

As of 1996, the public sector system is organized on a pay-as-you-go (PAYG) pillar, and a second, individual capitalization fund pillar, administered by a private company selected by the contributor. The amount that is allocated to each pillar depends on the salary level. There are two salary levels that determine three tiers. As a general rule, contributors with salaries below the first level contribute only to the public PAYG pillar, and only receive pensions from that pillar. They have the option of having half of their personal contributions allocated to an individual capitalization fund, and if they choose this option, they will receive benefits from both pillars. Affiliates whose salaries exceed the first level must contribute to both pillars. The amount that they contribute to the public PAYG pillar is determined by the first tier, and to a personal account is determined by the second tier. There is no obligation to contribute if one's salary exceeds the second tier (i.e., if it falls in the third tier). Employers' contributions finance only the first PAYG pillar.

The contribution rates vary among employees. For most salaried employees, personal contributions are equivalent to 15% of earnings, and employers contribute 7.5%. Independent workers contribute according to fixed values. In recent years a program called "monotributo" (single tax) has been implemented to encourage small business owners to pay their social security contributions together with their business-related taxes.

In 2009, an estimated 32% of employed workers did not contribute to social security in their principal line of employment (Source: ECH, INE). If we focus solely on salaried employees (those in a dependent work relationship), an estimated 20% do not contribute; for independent workers, the figure rises to 63%.

The main benefit for contributors is a **retirement pension**. The eligibility requirement for receiving a pension is to be at least 60 years of age and to have worked a minimum number of years. Up until July 2009, the minimum number of years was 35; since July of 2009, the minimum has been 30.⁵ Starting in July of 2009, women were granted an additional year for

⁵ Prior to the 1996 reform, the minimum number of years of service was 30. The reform increased this number to 35, and in 2009 it was reduced once again to 30.

each child born alive or adopted, up to a maximum of five years. The pension is a proportion of the base salary, which increases with the contributor's age and the number of years that he or she has made contributions. As of July 2009, the minimum rate has decreased from 50% to 45%, and the maximum rate is maintained at 82.5%. It is possible to receive a retirement pension equivalent to 50% of the base salary at 65 years of age (70 years, prior to July 2009), and 25 years of service (15 years, prior to July 2009). In all cases, the base salary is calculated as the highest value of either the average salary over the last ten years of work plus 5%, or of the 20 best years. The pension schedule is updated based on the average salary index.

In our analysis, retirement pensions are considered part of market income in the benchmark case and a direct transfer in the sensitivity analysis. Consistently, employees' contributions to the social security system are considered direct taxes in the sensitivity analysis. In the benchmark, they are included in all income concepts.

Upon the contributor's death, a **survivors' pension** is generated. Those eligible for this type of benefit include surviving spouses, unmarried children under 18 years of age (or up to 21 years of age for those who are not working), disabled children, divorced spouses who receive a food pension, and disabled parents. In all cases the beneficiaries may not have income greater than a certain limit. The benefit is equivalent to between 50% and 75% of the pension, depending on the degree of kinship and family structure. In our analysis, survivors' pensions are added to retirement pensions; therefore, they are considered part of market income in the benchmark case and a direct transfer in the sensitivity analysis.

There are also five types of benefits that are available while the contributor is active. In our analysis, these benefits are treated as a transfer in both the benchmark case and sensitivity analysis, because unlike retirement pensions, they have low requirements in terms of length of time of contribution and are designed to smooth the impact of idiosyncratic shocks or are means-tested. All of them are direct transfers in both the benchmark and the sensitivity analysis.

Unemployment insurance helps finance periods of unemployment. This program is based on a similar program that was implemented in 1958 and modified several times since then. At present, the program is governed by a 2008 law. It covers salaried workers who have lost their employment (rural workers and domestic employees were included recently, in 2001 and 2006, respectively), have been suspended, or have had their normal hours reduced by more than 25%. Public sector employees are not covered, since they are only fired due to misconduct, nor are independent workers. Workers with more than one job can draw unemployment if, by being suspended or losing a job, they lose more than half of their income.

The eligibility requirements are: i) the loss of employment cannot be due to voluntary resignation, reasons of discipline or strike; ii) the beneficiary cannot refuse a job offer without a legitimate reason, nor can he or she be receiving a regular monetary income (this last condition is not binding for those with multiple jobs, for whom the requirement is that they must have lost at least half of their income); iii) the beneficiary must have made contributions for at least six of the past twelve months and must not have drawn unemployment during the previous year. The law also requires the beneficiary to attend job training programs or forfeit the benefit. However, no implementing regulations have been issued for the last requirement and it therefore does not operate effectively.

The benefit is available to the contributor over a maximum period of six months, except for those over 50 years of age, in which case it is available for a year. In the event that GDP declines for two consecutive quarters, it is possible to extend coverage for two additional months. Additionally, in cases of “public interest,” coverage for specific cases may be extended to up to twelve additional months.

The amount of the benefit decreases over the six month period of coverage. At the outset, it is equivalent to 66% of the lost salary (the average salary over the last six months), and at the end of the period it is equivalent to 40%, with a declining monthly maximum limit. In cases where the employer has temporarily suspended the worker and plans to rehire him or her, the maximum period of coverage is four months. If, at the end of this period the employee has not been rehired, he or she has the right to claim severance pay.

The so-called **maternity allowance**, which was created in 1958, establishes a paid maternity leave. All private sector female employees, female employees who are eligible for unemployment insurance, female non-government public sector officials, and the dependent wives of the owners and co-owners of businesses are eligible. Those who are not eligible include female business owners, non-salaried female directors of cooperatives, and assisting spouses. Female workers employed in the public sector are entitled to the same benefits, but receive them directly from the agency that employs them.

This program does not have seniority requirements. The benefit is equivalent to the average salary over the last six months prior to the beginning of the period of maternity leave, with a minimum and a maximum limit. The period eligible for paid leave is 12 weeks and may be extended to up to six months for medical reasons.

Another benefit is **temporary or permanent disability coverage**. This benefit is equivalent to 65% of the basic retirement pension, plus the proceeds of the individual capitalization account. To qualify, the worker must have been working for at least two years, and have been making contributions for at least six months. The temporary disability benefit has a maximum term of three years. The worker may receive this benefit while carrying out an activity that is different from the one that caused the temporary disability.

The **sickness allowance** is a monetary benefit paid to the worker during the time that he or she is unable to work due to health problems. This benefit is available to all private sector dependent employees, partners in cooperatives, and sole business proprietors who have no other employees. To receive this benefit, the beneficiary must be up-to-date with his or her social security contributions. The beneficiary must also have made contributions for at least 75 work days or three months during the twelve month period prior to making the claim. The benefit is equivalent to 70% of the workers monthly salary, with a maximum limit. The first three days of the illness do not generate a benefit. As of the fourth day, the maximum period of coverage is one year, and may be extended one additional year if the same illness persists.

Finally, contributors are eligible to receive benefits from the **family allowance** program, which was created in 1943 and has been modified a number of times. At present, it is a program that focuses on households (with children) whose income is below a certain threshold.

This benefit is available to private sector workers, those who are eligible for unemployment benefits, and to rural producers with dependent children. The benefit covers from the time pregnancy is detected until the child is fourteen years of age (if the child only finishes primary school), or 18 years of age (if the child goes on to higher education). To receive the benefit the child must attend school. The benefit consists of a certain amount per minor child. There are two different amounts, including a higher amount for families with higher incomes (but below the program's established threshold). In 2008 a new targeted, non-contributory family allowance program was created, and the contributory program became a subsidiary program for those families who did not qualify for the new program.

In 2009, social security's contributory programs were equivalent to 9.5% of GDP (Table 1). Retirement and survivors' pensions were equivalent to 8.5% of GDP and the other contributory benefits were 1% of GDP. It is important to note that, although during the last decade, non-contributing workers have accounted for between 30% and 40% of all workers, 88% of the population over 65 receive a contributory pension from the social security system. This is largely due to the fact that, given the non-existence of employment registries (they were not created until 1996), testimony was admitted as proof of having made contributions, thus giving access to contributory benefits to many who did not fulfill the eligibility requirements. Camacho (1997) estimated that during the mid-1990s – at the time when the registries were created – 23% of expenditure on contributory pensions was not backed by the necessary funding from corresponding contributions.

Non-contributory programs: Old-age and disability assistance programs

In addition to the system of contributory benefits, there are cash transfer assistance programs equivalent to 0.5% of GDP. The assistance pension programs are available to older adults (over 70 years of age prior to July 2009, and over 65, as of July 2009), and to low-income disabled individuals who are not eligible for benefits from the contributory system. The main reason for accessing this program is if one has not made contributions over the minimum required period of time. The assistance pension program provides monetary transfers of less value than the contributory system. These benefits are considered direct transfers in both benchmark and sensitivity analysis.

Non-contributory program: Family Allowances (conditional cash transfers)

Within a context of increased poverty, in 1999 and 2004, the coverage of the family allowances program (which until that time had been available only to those who were social security system contributors) was expanded to include non-contributing, low-income families. In 2008, these modifications were repealed, and a new, targeted, non-contributory program was created. The benefits in this new program decline with an increase in the number of children in a household, and increase with each level of education each minor child studies. It was at this time that the contributory program became subsidiary in the sense that it only covers those who are not covered by the non-contributory program.

The beneficiaries of the family allowances program are children under 19 years of age who are attending school, as well as those who have not yet entered elementary school. Eligibility to receive the benefit depends on the socioeconomic level of the household to which the child belongs. This level, in turn, is determined by a set of parameters designed to capture the

program's target population, who are households (with children) that fall into the first quintile of per capita income (without imputed rent for owner's occupied housing). The calculation of income includes the deduction of food benefits and the cost of rent in the case of those who are renters.

For each household receiving the benefit, the amount received increases with the number of children, but at a decreasing rate, and is greater for a child attending secondary school than one studying in an elementary school. The average amount of the family allowance in this program is greater than the benefit available through the contributory program.

The total cost of providing this program is equivalent to 0.4% of GDP (Table 1). According to administrative records (BPS, 2010) and the population projections carried out by the INE (www.ine.gub.uy/socio-demograficos/proyecciones2008.asp), the program covers 38% of the total under-19 population, while the contributory family allowance program covers 18%.

The family allowances are considered direct transfers in both benchmark and sensitivity analysis.

The health care system: Benefits and financing

Public expenditure on health care, which is equivalent to 4.6% of GDP, is comprised of two programs: direct public health care for people living in poverty – a program that has existed since the end of the nineteenth century – and a subsidy available to contributors to the Fondo Nacional de Salud (FONASA; National Health Fund), within the framework of the National Health Insurance system, which was launched in 2007.

For low-income individuals, access to health care in the public health care system is free of charge. All services are provided free of charge: appointments with a physician, lab tests, medications and interventions. Those employed by the police and armed forces have their own health care center, and its services are also free of charge, paid for out of the public sector budget.

FONASA is a fund that transfers an amount of money to the health care provider that is serving the beneficiary. These health care providers may be public or private sector institutions. The beneficiary chooses the health care provider. The amount that FONASA transfers varies with the age of the beneficiary, with eight different ranges in the shape of a “U.” The amount is larger for those between 15 and 64 years of age (and is less for all other age ranges), and is greater for women than for men. The tax that is allocated to FONASA is composed of an employers' contribution rate of 5% of the beneficiary's salary, and a personal rate, which is also proportional to the salary. The base personal rate is 3% of the salary, with an additional charge if the worker's income exceeds a certain limit. This additional rate is 3% if the worker has dependents and 1.5% if he or she does not.

The beneficiaries are workers in a dependent work relationship, those who are sole proprietors or business owners with up to one additional employee besides themselves, and their spouses and dependent children under 18, or dependent disabled adult children. The system currently covers some inactive workers, and the intention for the future is to attain universal coverage.

To gain access to the service, the worker must be contributing to FONASA, be working at least 13 days or 104 hours per month, or receive a minimum wage that makes it possible for the worker's contribution to cover the cost of the transfer. If the worker does not meet these requirements, the employer is allowed to pay an additional contribution that covers the difference.

The subsidy provided by FONASA and the in-kind services are included in the in-kind social spending in both the benchmark and the sensitivity analysis.

The education system

Towards the end of the nineteenth century, primary education was made mandatory. At present, preschool (for 4 to 5-year-olds), and the first three years of secondary school are also mandatory. In 2009, national school attendance rates were 98% for children between 7 and 13 years of age, 81% for teens between ages 14 and 17, and 42% for young people between ages 18 and 22. Spending in education was 3.6% of GDP.

The following statistics give an idea of the new generation's educational capital. In 2009, an estimated 31% of the population between 21 and 25 years of age had not completed the mandatory 9 years of schooling; 45% of this age group had completed between 9 and 12 years of schooling, and 24% had at least initiated a program of post-secondary education.

At all levels of education there are two systems: a free, public education system, and a private system. The public education system has the larger enrollment, and accounts for 85% of elementary school enrollment, 82% of secondary school enrollment, and 83% of post-secondary enrollment.

Besides we included the public spending of the CAIF program. This program was created in 1988. The target beneficiaries are children since birth to 3 years old. The activities are financed by public sector and the actions are carried out by NGOs. public institutions with

All levels of education plus the public spending of the CAIF program were considered in-kind social spending (education) in both the benchmark and the sensitivity analysis.

Food assistance benefits

Food assistance benefits are administered by different agencies. Without considering the food assistance provided in schools (which is paid for out of the education budget), these programs account for 0.3% of GDP. In our analysis, food transfers are considered a direct transfer because they have a well-defined market value and are close substitutes for cash.

The most traditional food assistance programs offer free food baskets and dining room service to those in greatest need.

The beneficiaries of the food basket assistance program are the poorest families, indigent women who are pregnant or breastfeeding, households with children under 18 that are living in extreme poverty, and households with children under 18 that show signs of nutritional risk.

There are special baskets for low-income individuals with health problems. To gain access to this program due to economic reasons, a social worker must evaluate the family's socioeconomic situation and determine if the family should be granted access. Cases of nutritional risk are evaluated by the health services and no economic limitations are applied. The benefit is granted for a period of up to 24 months, which may be renewed.

The national dining room system provides food assistance in the form of daily lunches. This service is provided for individuals who are socially and biologically vulnerable, such as women who are pregnant or breastfeeding, disabled individuals, low-income elderly individuals, and the unemployed. No income limits apply. A social worker decides who shall be granted access to the service and may also remove individuals from the program. Participants in the program must present an ID.

As of 2006, there is a food card system that allows participating households with children under 18 to obtain food and hygiene products, free of charge. Other participants in this program include women who are pregnant or breastfeeding. To qualify for this program, the household must have an income lower than an established limit and be able to prove that they experience a situation of severe need. To remain in the program, children under fourteen must attend school, and children and pregnant women must make regular visits to health care centers.

The food benefits are considered social spending in both the benchmark and the sensitivity analysis. They are treated as direct transfers because they are more easily transformed in money than the other in-kind benefits (education and health).

Housing and community services

Housing programs are administered by several different agencies. These programs include subsidies for purchasing or repairing homes, and programs aimed at improving the quality of life for those living in irregular settlements. During the present presidential term, a program called "Plan Juntos" was created, and is administered directly by the president's office. However, there is no information available regarding the implementation of this program. Thus, in-kind benefits from housing and community services are not included in our analysis.

More details on the social assistance transfers can be found in the Statistical Appendix, which is available on request.

Taxes

The tax structure in 2009 is shown in Table 3.

TOTAL	100
Indirect taxes	56
IVA (VAT)	48
Others	9
Direct taxes on personal income	22
IRPF (Personal Income Tax)	10
FONASA (National Health Fund contribution)	11
FRL (Labor Retraining Fund)	0
IASS (Social Security Assistance Tax)	1
Other taxes	22
Source: DGI.	

Indirect taxes

Of the taxes levied by the government, 56% are indirect taxes, with the Value Added Tax (IVA) accounting for a predominant share. The IVA accounted for 48% of government tax revenues in 2009. The IVA's base rate is 22%. Goods and services considered basic necessities are exempt (for example, education and milk), or are taxed at a rate of 10% (for example, several types of food, such as meat and bread, and health care items). The remaining 9% of tax revenues derived from "other" indirect taxes refers to taxes on specific products such as fuel, alcoholic beverages, tobacco, automobiles, and various other articles.

These taxes are paid by public sector, firms and households. The distribution by contributor is not available. The indirect taxes paid by households are considered in the benchmark and sensitivity analysis.

Direct taxes on personal income

Direct taxes on personal income account for 22% of the government's tax revenues. This entire amount is withheld from salaries and wages at the moment they are generated.

The tax on personal income (IRPF) was created in 2007. This tax treats income derived from work and income derived from capital separately. Income derived from capital is taxed at a 12% flat rate, although there are some differences between categories. There are thresholds below which income is not taxed. Deductions are also allowed for such things as irrecoverable loans or subleases.

Income derived from work, on the other hand, is taxed at progressive rates. Deductions are allowed for all levels and are basically associated with family-related responsibilities. Those whose income falls into the first income tier do not pay taxes. Individuals must file an annual tax return, but in cases where the individual has only one job, it is assumed that the employer has withheld the correct amount of taxes.

At first the IRPF also required pensioners to pay taxes similar to those on income derived from work. Pensions were to be considered in addition to income derived from work, and were subject to similar deductions. However, following a series of successful court appeals by pensioners who were able to win exemptions from paying income tax, it was decided to abolish the requirement, and pensions are no longer taxable under the IRPF. At the same time (2008), the Social Security Assistance Tax (IASS) was created. Similarly to the IRPF on work-derived income, pensions are also taxed at progressive rates and deductions are allowed, but the taxes are lower than the income tax. In 2009, the IASS and the IRPF together accounted for 11% of the government's tax revenues.

The tax that finances FONASA, created in 2008, accounted for 11% of total tax revenues. As mentioned in the section describing the health care system's benefits, this tax consists of a tax rate equivalent to either 3% or 6% of the beneficiary's income, depending on the beneficiary's level of income, and on whether the worker is the sole beneficiary, or if his or her family are also covered.

Finally, the Fondo de Reconversión Laboral (Labor Retraining Fund), created in 1992, is a tax that is proportional to the beneficiary's salary, and is allocated to creating work programs. Only private sector salaries are taxed, at a rate of 0.125%. This tax accounts for less than 1% of total tax revenues.

All these taxes are considered in the benchmark and sensitivity analysis.

Other taxes

Twenty-two percent of total tax revenues come from taxes on business revenues and on taxes on the property of individuals and legal entities. These taxes are not included in our analysis.

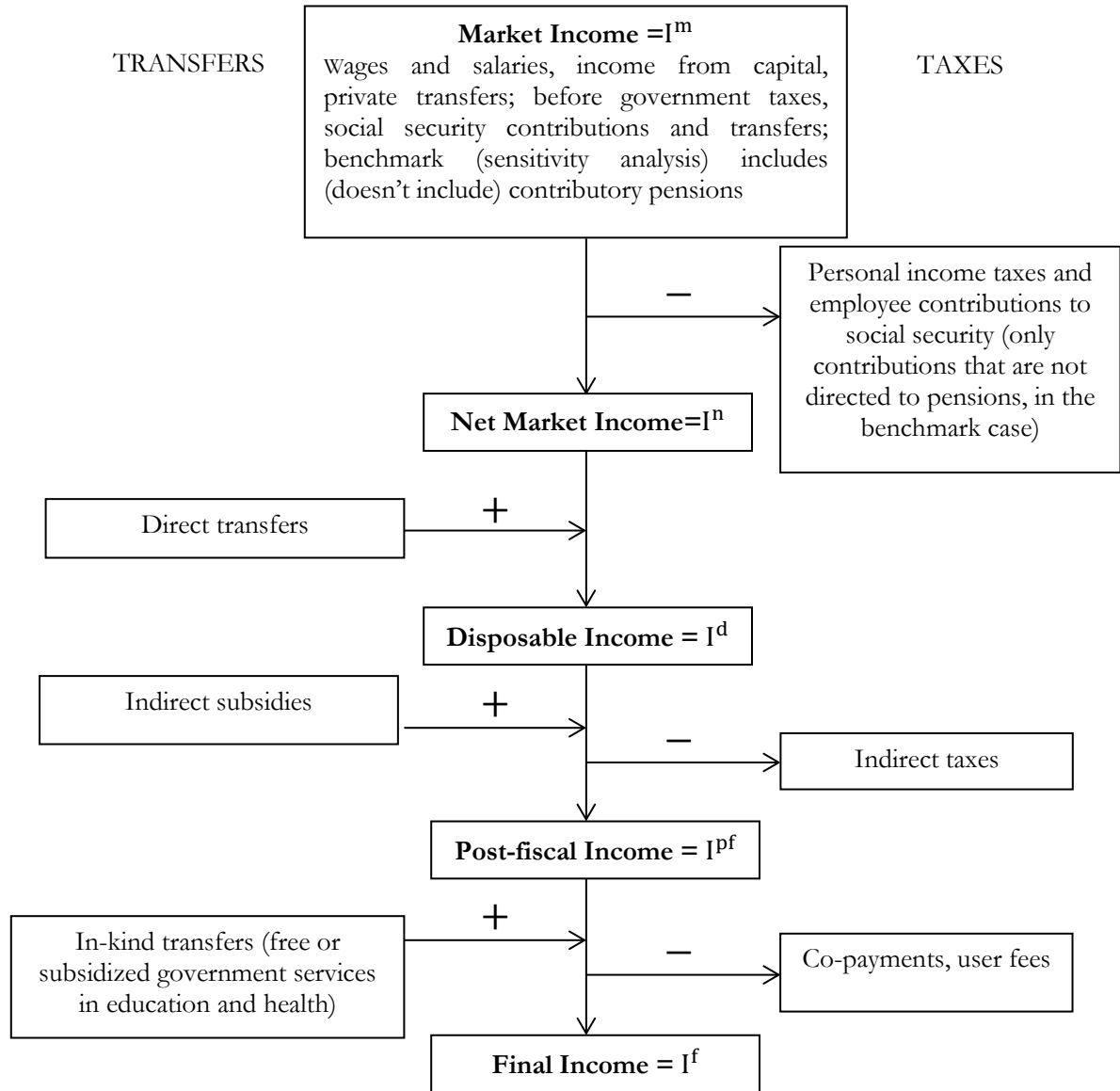
Social Spending, Taxes and Income Redistribution in Uruguay: Main Results

Here we present the results of applying standard incidence analysis to household-level data from the *Encuesta Continua de Hogares (2009)*. This household survey is of national coverage and its main characteristics can be found in the Statistical Appendix, which is available on request. Incidence analysis must be based on clearly defined income concepts. The definitions used here are presented in the Appendix and summarized below in Diagram 1. Household surveys seldom include the full range of information to generate each income concept needed for incidence analysis. Uruguay is no exception. That is why some of the items in the tax and social spending space had to be inferred, simulated or taken from secondary sources. A brief description of how each income concept was constructed is in the Appendix.

For the purposes of this exercise, **social spending** includes **direct transfers** (Table A1 in the Statistical Appendix, which is available on request) plus government **spending on education**

and health in the benchmark scenario; it also includes government **spending on contributory pensions** in the sensitivity analysis. **Direct taxes** include taxes on wages and capital plus contributions to social security excluding (including) the contribution to pension fund in the benchmark scenario (sensitivity analysis). **Indirect taxes** include consumption taxes (assuming no evasion).

Diagram 1 – Definitions of Income Concepts: A Stylized Presentation



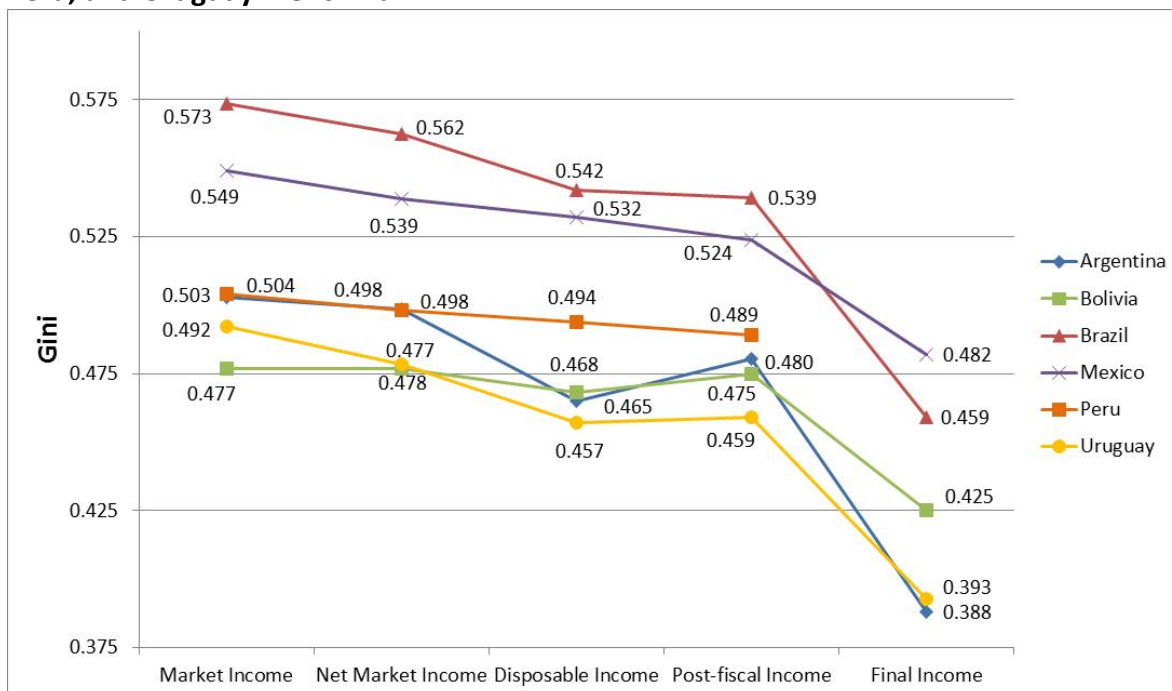
Note: in some cases we also present results for “final income*” which is defined as disposable income plus in-kind transfers minus co-payments and user fees.

Source: Lustig and Higgins (2012).

i. **Impact of Social Spending and Taxes on Inequality and Poverty**

Figure 1 compares Uruguay with five other countries in the region (Argentina, Bolivia, Brazil, Mexico and Peru). As we can see, Uruguay has the lowest disposable income Gini and the second lowest market and final income Ginis. Direct taxes and transfers lower the Gini by 3.5 percentage points, less than Argentina. Taxes and social spending (direct and in-kind transfers in education and health) lower the Gini by 10.0 percentage points, less than Argentina and Brazil.

Figure 1 - Gini Coefficient for Each Income Concept: Argentina, Bolivia, Brazil, Mexico, Peru, and Uruguay. Benchmark.



Note: Peru was dropped for some of the indicators because it is not comparable with other countries since health spending includes only a fraction of public spending on health due to data limitations.
 Source: Lustig et al., 2012; for Uruguay authors' calculations based on *Encuesta Continua de Hogares* (2009) and National Accounts.
 Note: For definition of income concepts see text.

Table 4 and Figure 2 present the impact of social spending and taxes on the Gini coefficient and headcount ratio (using the international poverty lines of US\$2.50 and US\$4 PPP per day and the national moderate and extreme poverty lines) for the benchmark scenario (contributory pensions are part of market income) and sensitivity analysis (contributory pensions are a government transfer). As one can observe, direct taxes and transfers combined lower inequality and poverty, indirect taxes increase inequality and poverty, and in-kind transfers in education and health have the largest effect in terms of lowering inequality. It is worth noting that the Gini coefficient of market income and the headcount ratio when pensions are considered part of market income (benchmark scenario) are lower than when they

are under government transfers (sensitivity analysis). This means that contributory pensions have an important equalizing and poverty-reducing effect.

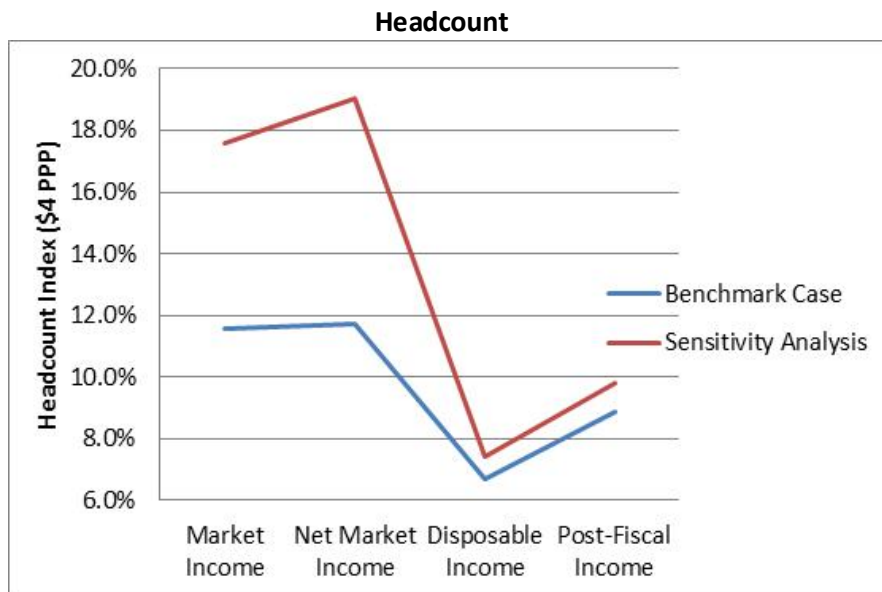
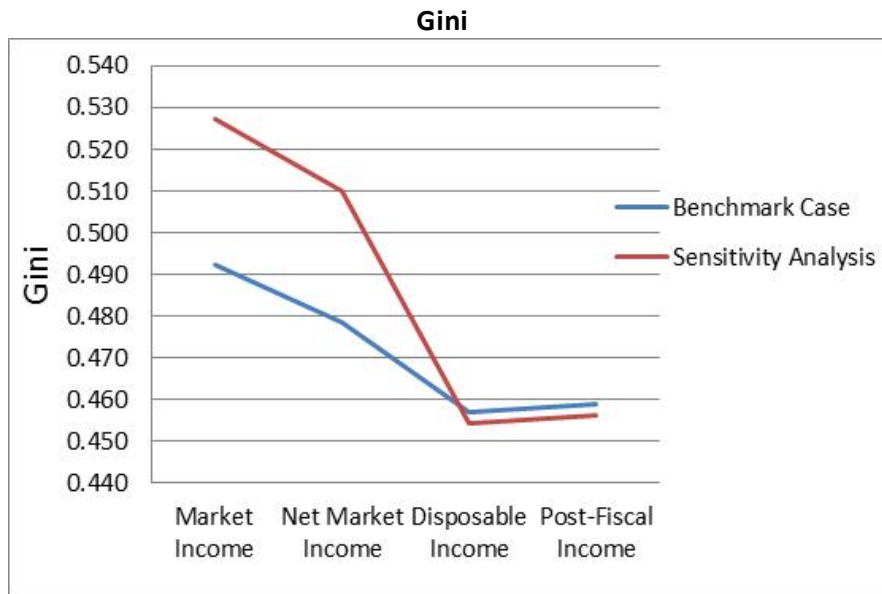
Table 4 – Taxes, Transfers, Inequality, and Poverty. Benchmark and Sensitivity Analysis

Benchmark: contributory pensions as part of Market Income					
<i>Indicator</i>	Market Income	Net Market	Disposable Income	Post-fiscal	Final Income
Gini	0.492	0.478	0.457	0.459	0.393
Headcount index Pov Line \$2.5 PPP/day	5.1%	5.1%	1.5%	2.3%	
Headcount index Pov Line \$4 PPP/day	11.6%	11.7%	6.7%	8.9%	
Headcount index National Extreme Pov Line	5.5%	5.5%	1.8%	2.7%	
Headcount index National Moderate Pov Line	25.8%	26.3%	22.7%	26.3%	
Sensitivity Analysis 1: pensions are treated as a government transfer					
<i>Indicator</i>	Market Income	Net Market	Disposable Income	Post-fiscal	Final Income
Gini	0.527	0.510	0.454	0.456	0.385
Headcount index Pov Line \$2.5 PPP/day	8.5%	9.0%	1.5%	2.6%	
Headcount index Pov Line \$4 PPP/day	17.6%	19.0%	7.4%	9.8%	
Headcount index National Extreme Pov Line	9.2%	9.7%	1.9%	3.0%	
Headcount index National Moderate Pov Line	36.2%	39.7%	24.9%	29.3%	

Source: Authors' calculations based on *Encuesta Continua de Hogares* (2009) and National Accounts.

Note: For definitions of income concepts see Diagram 1 and Appendix.

Figure 2 – Gini and Headcount Ratio. Benchmark vs. Sensitivity Analysis



Source: Author's calculations based on *Encuesta Continua de Hogares (2009)* and National Accounts.

Notes:

For definition of income concepts see text.

Benchmark case: contributory pensions are included in market income.

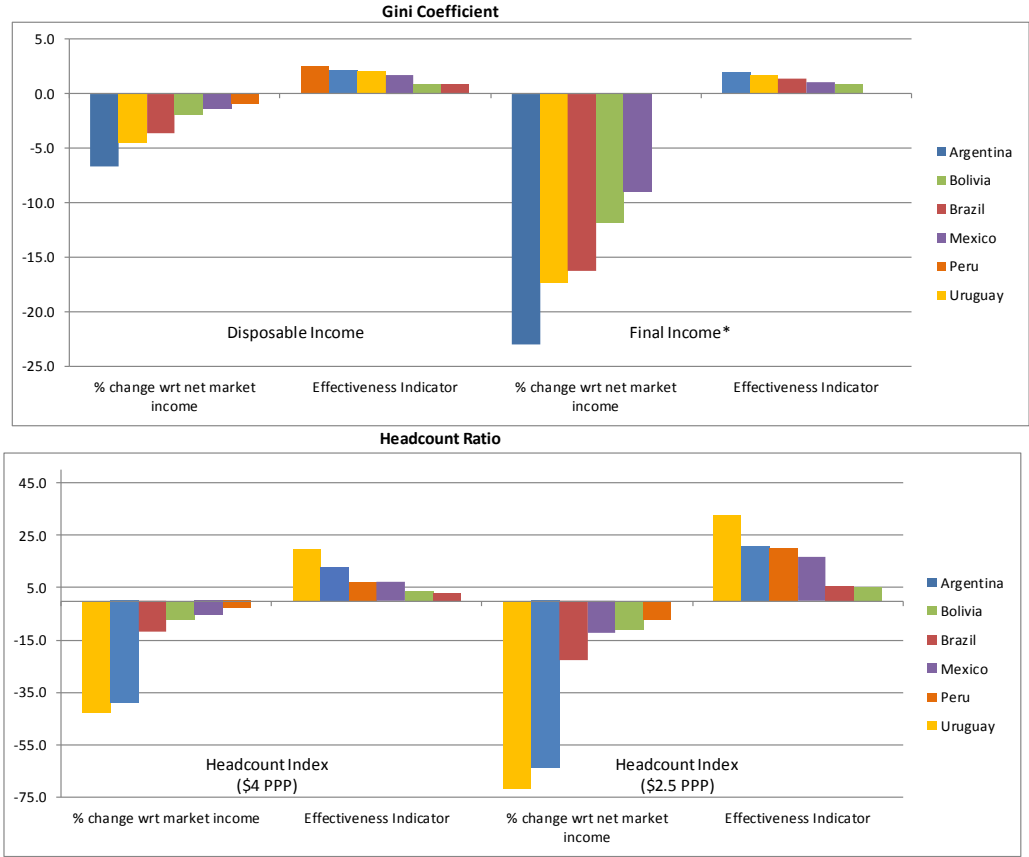
Sensitivity analysis: contributory pensions are treated as government transfers.

ii. Redistributive Effectiveness

The Effectiveness Indicator is defined as the effect on inequality or effect on poverty of the transfers being analyzed divided by their relative size. Specifically, it is defined as follows for the Gini (and would be similarly defined for any other inequality or poverty measure by replacing the word Gini with the appropriate measure). For direct transfers, the effectiveness indicator is the fall between the net market income and disposable income Ginis as a percent of the net market income Gini, divided by the size of direct transfers as a percent of GDP. Although the size of direct transfers is measured by budget size according to National Accounts, only direct transfer programs that are captured by the survey (or otherwise estimated by the authors) are included, since they are the only programs that can lead to an observed change in income. For direct and in-kind transfers, the effectiveness indicator is the fall between the net market income and final income Ginis as a percent of the net market income Gini, divided by the size of the sum of direct transfers, education spending, health spending, and (where it was included in the analysis) housing and urban spending, as a percent of GDP. The formulas are in the Appendix.

In Figure 3 we present the reductions in the Gini coefficient and the headcount ratio for the benchmark scenario for Uruguay and the other five Latin American countries included in this analysis. As one can observe, Uruguay ranks second and first in terms of inequality and poverty reduction, respectively, but ranks third and second in effectiveness in inequality and first in effectiveness in poverty reduction. That is, Uruguay is able to get the most out of the public spending spent in relation to its GDP in terms of its effect on extreme and moderate poverty, but is not that efficient in terms of inequality.

Figure 3 – Decline in Gini, Headcount Ratio, and Redistributive Effectiveness: Argentina, Bolivia, Brazil, Mexico, Peru and Uruguay



Source: Lustig et al., 2012; for Uruguay, authors' calculations based on *Encuesta Continua de Hogares (2009)* and National Accounts.

Note: Peru was dropped for some of the indicators because it is not comparable with other countries since health spending includes only a fraction of public spending on health due to data limitations. For definition of effectiveness and income concepts see text. For headcount ratio the changes are measured from net market to disposable income. “With respect to” is abbreviated “wrt” in the figure.

iii. The Incidence of Taxes and Social Spending

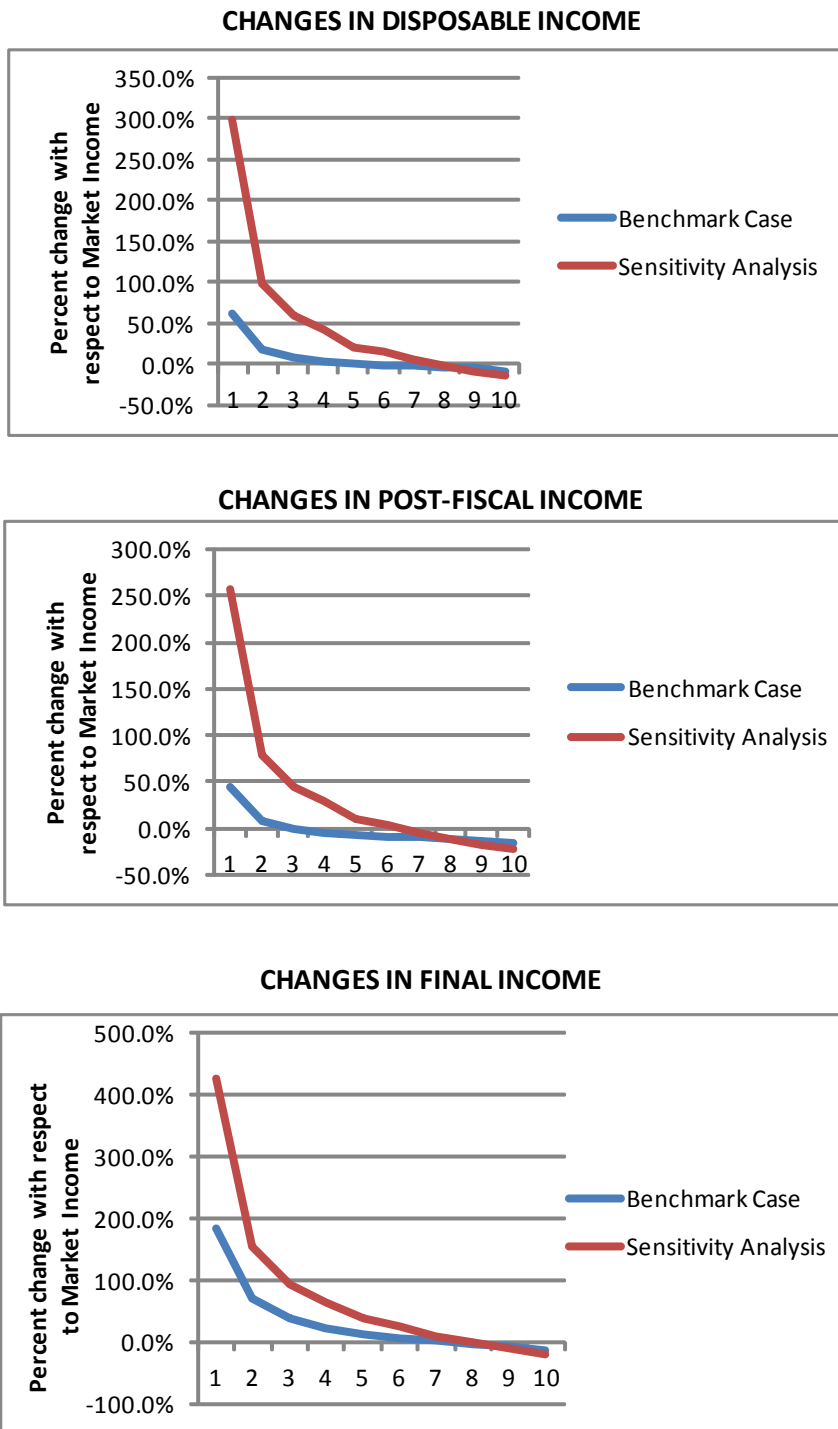
As one can observe in Table 5, the incidence of direct taxes and social spending follows the desirable pattern: it rises and declines with income, respectively. Indirect taxes, in contrast, show the opposite: the two poorest deciles get hit the hardest. In Figure 4 we can see how the incidence changes when contributory pensions are considered a government transfer (the sensitivity analysis): the effect of social spending is much higher for the bottom deciles. This is because contributory pensions go to households whose market income in the sensitivity analysis case (which does not include income from contributory pensions) is low or negligible.

Table 5. Incidence of Taxes and Transfers (Benchmark Case).

	Direct Taxes	Net Market Income	Non-contributory Pensions	Flagship CCT	Other Direct Transfers (Targeted or Not)	All Direct Transfers	Disposable Income	Indirect Taxes	Post-Fiscal Income	In-kind Education	In-kind Health	In-kind Transfers	Final Income
Deciles													
1	-0.4%	-0.4%	21.6%	14.3%	26.0%	61.9%	61.5%	-16.8%	44.7%	67.5%	70.2%	137.6%	182.4%
2	-0.9%	-0.9%	6.2%	4.9%	8.3%	19.3%	18.4%	-10.8%	7.7%	28.7%	33.1%	61.8%	69.5%
3	-1.3%	-1.3%	3.4%	1.9%	5.2%	10.4%	9.1%	-9.5%	-0.3%	17.6%	22.3%	39.9%	39.6%
4	-1.7%	-1.7%	1.6%	0.9%	2.6%	5.0%	3.4%	-8.8%	-5.4%	12.5%	16.2%	28.7%	23.3%
5	-2.0%	-2.0%	1.0%	0.4%	1.8%	3.2%	1.3%	-8.5%	-7.2%	9.3%	12.2%	21.5%	14.3%
6	-2.4%	-2.4%	0.6%	0.2%	1.3%	2.0%	-0.4%	-8.2%	-8.6%	6.7%	9.1%	15.7%	7.1%
7	-3.0%	-3.1%	0.3%	0.1%	0.7%	1.1%	-1.9%	-8.0%	-10.0%	5.1%	6.7%	11.8%	1.8%
8	-3.9%	-3.9%	0.1%	0.1%	0.4%	0.6%	-3.3%	-8.0%	-11.3%	4.2%	4.7%	8.9%	-2.4%
9	-5.3%	-5.3%	0.1%	0.0%	0.3%	0.3%	-5.0%	-8.1%	-13.0%	3.0%	3.1%	6.2%	-6.9%
10	-9.0%	-9.0%	0.0%	0.0%	0.1%	0.1%	-8.9%	-7.5%	-16.4%	1.0%	1.3%	2.3%	-14.1%
Total Population	-5.4%	-5.4%	0.8%	0.5%	1.2%	2.4%	-3.0%	-8.1%	-11.1%	5.6%	6.7%	12.4%	1.3%

Source: Authors' calculations based on *Encuesta Continua de Hogares*(2009).

Figure 4 – Changes in Income by Decile



Source: Authors' calculations based on *Encuesta Continua de Hogares (2009)* and National Accounts.

Notes: For definition of income concepts see text.

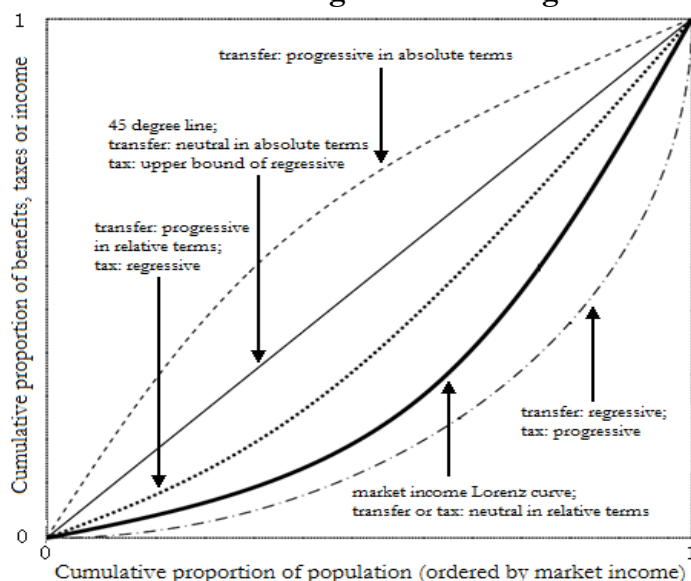
Benchmark case: contributory pensions are included in market income.

Sensitivity analysis: contributory pensions are treated as government transfers.

iv. Progressivity of Taxes and Social Spending

In the literature there is no convention for defining progressivity, especially for government transfers. For example, some authors call the transfers that are progressive in relative terms, regressive in absolute terms. Here we have followed a very simple rule: any transfer or tax that increases (decreases) inequality is called regressive (progressive). For a more detailed discussion see the Appendix. Diagram 2 presents concentration curves that correspond to progressive, neutral and regressive taxes and transfers as defined here.

Diagram 2 - Concentration Curves for Progressive and Regressive Transfers and Taxes

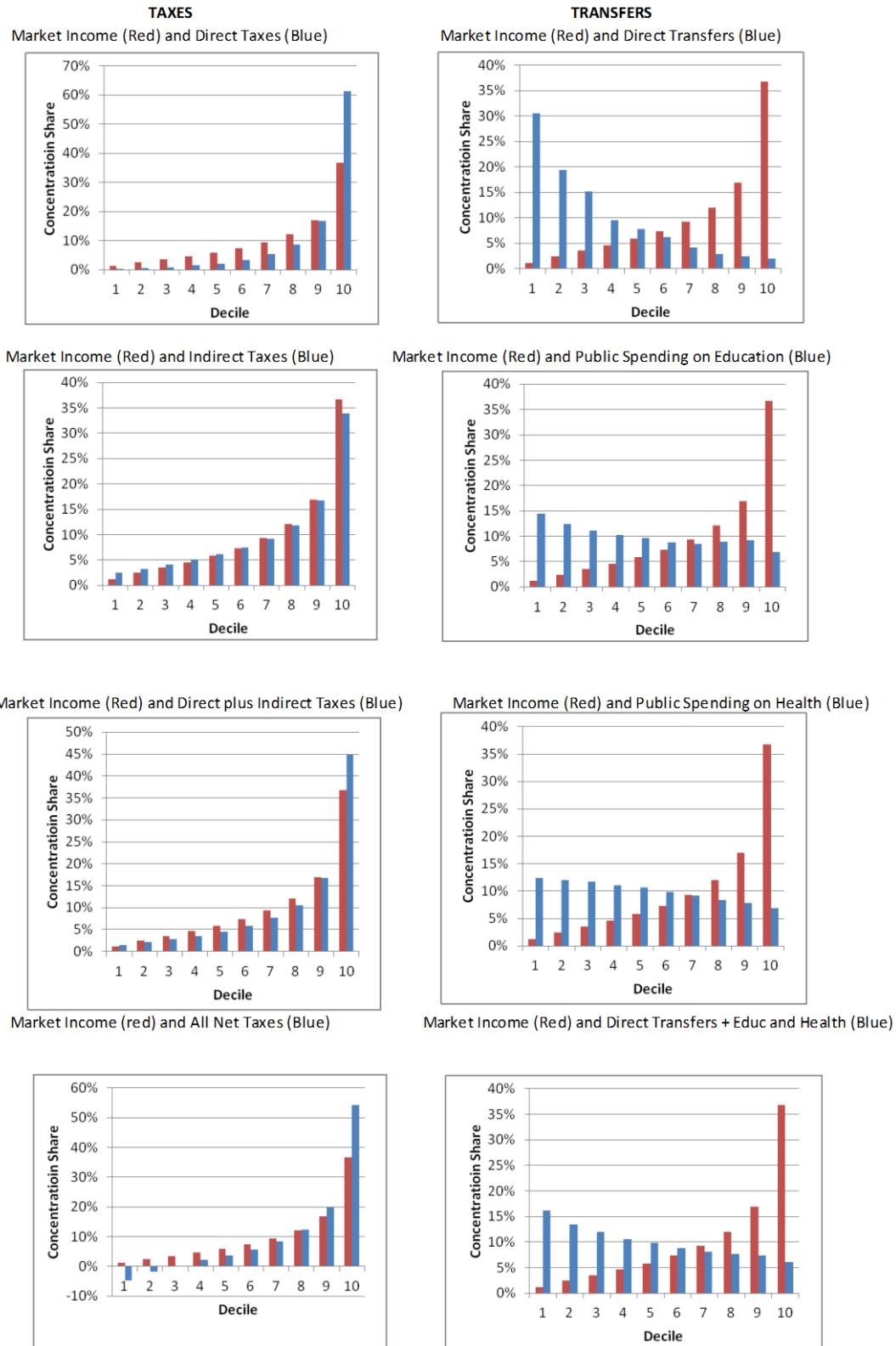


Source: Lustig and Higgins (2012).

In terms of concentration shares by decile, taxes are progressive (regressive) if the proportion paid is lower (higher) than the share of income for the poor and the opposite happens at the top of the income scale. In Figure 5, one can observe that **direct taxes** are progressive, **indirect taxes** are somewhat regressive and **overall taxes** (direct plus indirect taxes) are progressive. A similar result is obtained by Amarante et al. (2012). Figure 5 also shows that **net taxes** (direct plus indirect taxes minus direct transfers) are progressive.

A transfer is progressive in absolute terms if the proportion received is higher, not only than the share of income, but also than the population share for the poorest decile and this relationship declines as we move up to higher deciles. In Figure 5 we can see the concentration share of transfers in the benchmark scenario. **Direct transfers** are progressive in absolute terms. Spending on **education and health** are slightly progressive in absolute terms as well. Hence **social spending** is progressive in absolute terms overall. These results are qualitatively similar to those obtained by Llambi et al. (2009), though the variable used for ordering (market income in our case) is different.

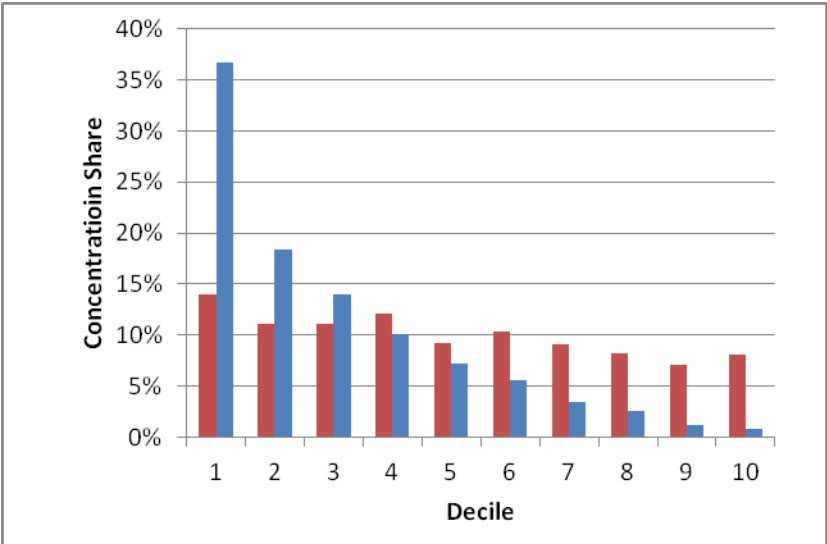
Figure 5 – Concentration Shares for Taxes and Transfers



Source: Lustig et al., 2012; for Uruguay, authors' calculations based on *Encuesta Continua de Hogares* (2009) and National Accounts.

In Figure 6 we present the concentration share of pensions when we consider contributory pensions as transfers. As expected, **non-contributory pensions** are progressive in absolute terms. **Contributory pensions** are progressive in absolute terms indicating that per capita benefits are pretty much the same for all deciles. The reader should remember that such a transfer significantly reduces the post-pensions inequality.

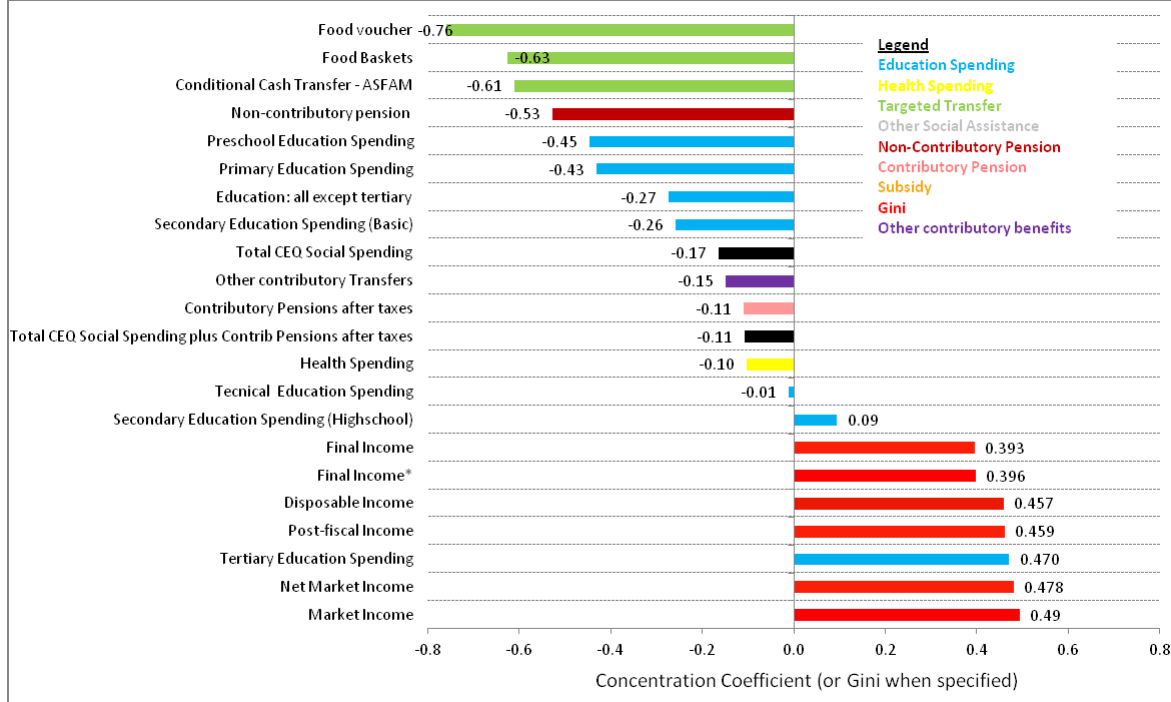
Figure 6 – Non Contributory Pensions (Blue) and Contributory Pensions (Red)



Source: Authors' calculations based on *Encuesta Continua de Hogares* (2009).

Uruguay’s **concentration coefficient** for **social spending** in the benchmark scenario (when contributory pensions are part of market income) equals -0.17 (Figure 7) and is the second most progressive among the six countries considered here. The concentration coefficients for its food programs and flagship cash transfer programs are among the highest in absolute value in the region and thus the most progressive in absolute terms. As shown in Figure 7, the only components of social spending that are not progressive in absolute terms are spending on **high school** and **tertiary education**. No components are outright regressive (unequalizing), which can be seen in Figure 7 by the fact that no programs have a concentration coefficient greater than the market income Gini. However, it is worth noting that tertiary education in Uruguay is almost neutral in relative terms, and is less progressive than it is in all five of the other Latin American countries studied. The concentration coefficient of tertiary education in Uruguay, at 0.47, is quite close to the market income Gini of 0.49, and is higher than the concentration coefficient of tertiary education in Brazil (0.46), Bolivia (0.37), Peru (0.31), Mexico (0.22) and Argentina (0.20).

Figure 7 – Concentration Coefficient by Spending Category and for Total Social Spending



Source: Authors' calculations based on *Encuesta Continua de Hogares* (2009).

Note: CEQ (from Commitment to Equity, the name of the multi-country project) Social Spending includes all cash transfers (except for contributory pensions) and other direct transfers plus public spending on education and health. The concentration coefficients of Contributory Pensions after taxes and Total CEQ Social Spending plus Contributory Pensions after taxes are calculated with respect to sensitivity analysis market income (to avoid calculating the concentration coefficient with respect to an income definition that includes that component) while the concentration coefficients for the other components are calculated with respect to benchmark case market income.

3. Enhancing the Redistributive Capacity: Where to Look

Given that the previous analysis is standard incidence analysis with no behavioral or inter-temporal effects, no macro-sustainability analysis and no analysis of marginal effects, one should be cautious about jumping to conclusions in terms of policy implications. Instead, here we shall highlight the areas in which the government should look further to determine if there is space to enhance its redistributive and anti-poverty capacity without compromising macroeconomic stability, efficiency, and growth.

One area to look at first is the safety net system (direct transfers). We saw above that, thanks to direct transfers, extreme poverty is reduced quite a bit, that the use of resources is effective in this respect, and that most of the government's social spending is progressive in absolute terms. Could this be improved? In order to answer this question we will consider three indicators: the percentage of benefits from direct transfers going to the nonpoor, the coverage of direct transfers among the poor and the per capita benefit for the extreme and moderate poor. To define extreme and moderate poverty we use the international lines of US\$2.50 and US\$4 PPP per day.

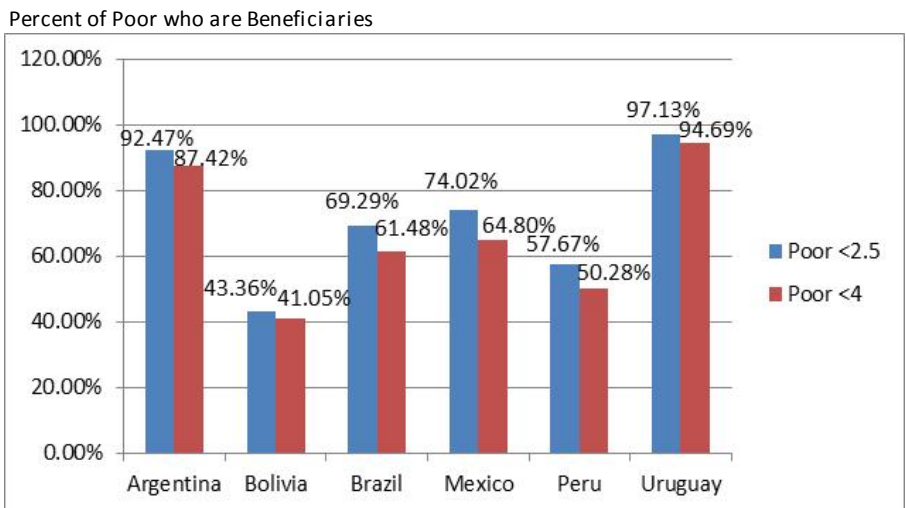
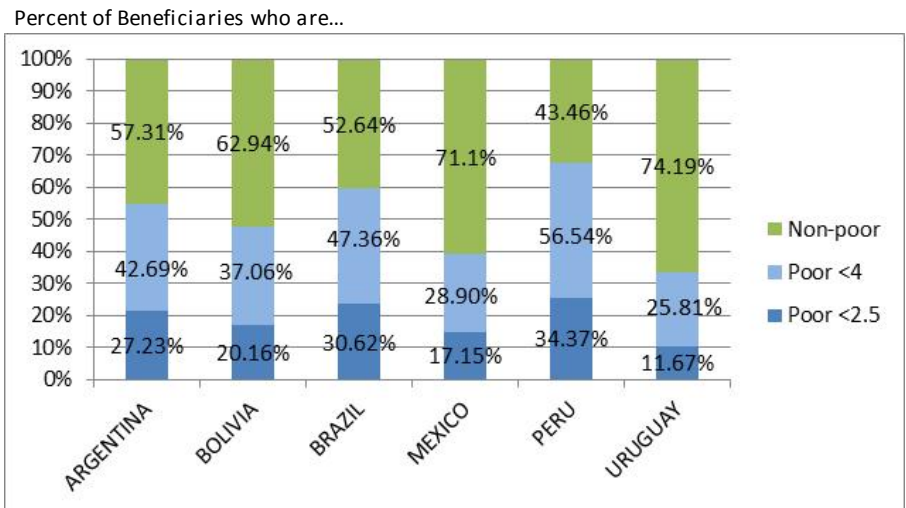
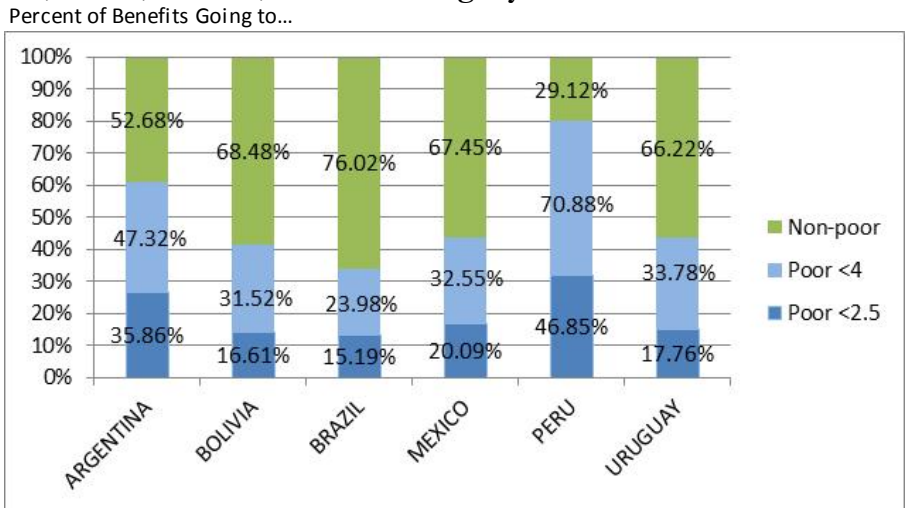
In Table 6 we can observe the average transfer for different “income groups.” As one can see, the average per capita direct transfer received by the extreme and moderate poor (among beneficiary households) appears to be enough to move them out of extreme and moderate poverty. However, Figure 8 (bottom graph) shows that around 5% of the Uruguayan poor do not receive any direct transfers. Hence, neither the average per capita transfer nor the lack of coverage among the poor seems to be behind the “persistence” of extreme and moderate disposable income poverty. The next step must be to examine the reasons behind this result. The process could be done in two steps. First, one should examine whether the per capita transfers excluding non-contributory pensions are “too” low. If the answer is affirmative, this means that direct cash transfers in other programs are not sufficiently high to eradicate extreme poverty. Second, the government should determine whether or not the solution is to increase the size of the transfer. In addition to fiscal considerations, several other factors should be assessed. Would extreme poverty be eradicated by simply giving more money to the extreme poor? Or, do the post-transfers poor require more nuanced interventions that address issues of dysfunctional behavior (such as alcoholism and drug abuse)? It would also be very important to assess whether increasing the size of a transfer would be self-defeating if, for example, it decreases the adult labor force participation or hours worked.

Table 6 – Per capita Transfers in Transfer Recipient Households by Income Group

SPENDING CATEGORY	PER CAPITA IN TRANSFER RECIPIET HOUSEHOLDS (PPP 2005)										
	Groups:	y < 1.25	1.25 < y < 2.5	y < 2.5	2.5 < y < 4	y < 4	4 < y < 10	10 < y < 50	y > 50	y > 4	Total
Conditional Cash Transfer ("Asignaciones Familiares")		\$0.54	\$0.52	\$0.53	\$0.52	\$0.52	\$0.50	\$0.49	\$0.68	\$0.50	\$0.51
Non-contributory pensions		\$2.27	\$2.31	\$2.30	\$2.20	\$2.25	\$2.38	\$2.35	\$2.08	\$2.37	\$2.33
Food baskets		\$0.62	\$0.53	\$0.55	\$0.48	\$0.52	\$0.39	\$0.36	\$0.41	\$0.38	\$0.43
Food vouchers		\$0.30	\$0.29	\$0.29	\$0.30	\$0.29	\$0.29	\$0.29	\$0.24	\$0.29	\$0.29
Other contributory benefits		\$1.64	\$1.17	\$1.27	\$0.84	\$1.00	\$0.67	\$0.86	\$3.16	\$0.78	\$0.80
Above (all above for benefits, at least one for beneficiaries)		\$1.93	\$1.54	\$1.64	\$1.22	\$1.41	\$0.97	\$0.94	\$2.47	\$0.96	\$1.08
Education: preschool		\$4.37	\$4.37	\$4.37	\$4.37	\$4.37	\$4.37	\$4.37	\$4.37	\$4.37	\$4.37
Education: primary		\$4.29	\$4.29	\$4.29	\$4.29	\$4.29	\$4.29	\$4.29	\$4.29	\$4.29	\$4.29
Education: secondary (ciclo básico)		\$5.31	\$5.31	\$5.31	\$5.31	\$5.31	\$5.31	\$5.31	\$5.31	\$5.31	\$5.31
Education: secondary (bachillerato)		\$5.46	\$5.46	\$5.46	\$5.46	\$5.46	\$5.46	\$5.46	\$5.46	\$5.46	\$5.46
Education: Técnica		\$10.06	\$10.06	\$10.06	\$10.06	\$10.06	\$10.06	\$10.06	\$10.06	\$10.06	\$10.06
Education: all except tertiary		\$0.00	\$0.00	\$0.00	\$11.32	\$11.32	\$11.35	\$11.37	\$11.38	\$11.37	\$11.37
Education: tertiary		\$0.00	\$0.00	\$0.00	\$4.64	\$4.60	\$4.89	\$5.39	\$5.97	\$5.14	\$5.02
Health		\$2.01	\$1.99	\$2.00	\$1.97	\$1.98	\$1.91	\$1.81	\$1.69	\$1.84	\$1.86
Contributory pensions		\$15.77	\$11.94	\$13.87	\$13.25	\$13.57	\$15.27	\$18.98	\$26.32	\$17.48	\$16.51
Income		\$0.76	\$1.90	\$1.61	\$3.29	\$2.55	\$6.99	\$21.53	\$83.63	\$21.75	\$19.53
Population by group		1.2%	3.6%	4.9%	6.4%	11.3%	27.8%	54.2%	6.8%	88.7%	100.0%

Source: Authors' calculations based on *Encuesta Continua de Hogares* (2009).

Figure 8 – Leakages and Coverage of Direct Transfers (Benchmark Case): Argentina, Bolivia, Brazil, Mexico, Peru and Uruguay



Source: Lustig et al., 2012; for Uruguay authors' calculations based on *Encuesta Continua de Hogares (2009)* and National Accounts.

Note: For these calculations a 'beneficiary' was identified as such if he or she received at least one of the direct transfers itemized in the coverage table.

A preliminary glimpse at the characteristics of the 'excluded' can be found in Table 7, which shows the results of two probit regressions: the probability of being poor before government transfers and the probability of remaining poor after government transfers, conditional on being poor before government transfers. There are two results of note. First, poor households with children are more likely to remain poor than poor households without children, even after transfers. Second, households in Montevideo and households whose head has completed primary education are less likely to be poor before transfers, but, if they *are* poor before transfers, they are more likely to remain in poverty. That is, households with certain characteristics are more likely to be excluded from the existing safety net system (of direct transfers).

Table 7 - Probability of Being and Remaining Extremely Poor After Direct Transfers

Dependent dummy variable (right):	Poor ^a before transfers			Poor after transfers, conditional on poor before		
Independent dummy variables (below)	Coefficient	Std Error	Significant ^b	Coefficient	Std Error	Significant ^b
Intercept	-1.6543	0.1010	***	-0.2006	0.2530	
Children (omitted: no children)						
Household has children ^c	0.9240	0.0360	***	0.6224	0.1290	***
Region (omitted: Interior urbano)						
Montevideo	-0.1366	0.0360	***	0.2648	0.0930	***
Interior Rural	0.3364	0.0460	***	0.1572	0.1050	
Gender of household head (omitted: female)						
Male	-0.0582	0.0340	*	0.0280	0.0930	
Age of household head (omitted: less than 25 years old)						
25-40 years old	0.2095	0.0800	***	-0.4158	0.1850	**
41-64 years old	-0.1581	0.0840	*	-0.5813	0.1920	***
65 years old or over	-0.4677	0.0940	***	-1.5081	0.2360	***
Maximum education level of household head (omitted: never attended school)						
Primary complete	-0.2523	0.0380	***	0.2173	0.0930	**
Secondary incomplete	-0.6358	0.0480	***	0.1190	0.1150	
Secondary complete	-1.4281	0.1480	***	-0.5393	0.4830	
Tertiary incomplete	-1.3035	0.1820	***	0.7997	0.6930	
Tertiary complete	-1.5891	0.2410	***			
Marital Status (omitted: divorced/widowed)						
Married	0.3599	0.0430	***	0.0446	0.1060	
Single	0.3683	0.0420	***	0.0093	0.0990	
Labor Market State (omitted: inactive)						
Informal	-0.2425	0.0430	***	0.1090	0.1050	
Formal	-1.2219	0.0570	***	-0.2073	0.1520	
Unemployed	0.0209	0.0740		0.5466	0.1580	***
Race (omitted: non-afro)						
Afro	0.3651	0.0450	***	0.1390	0.0970	

Source: Authors' calculations based on *Encuesta Continua de Hogares* (2009).

Notes:

a. Using \$2.50 PPP per day poverty line

b. * indicates statistically significant from zero at the 10% level, ** at the 5% level, *** at the 1% level.

c. Dummy variable equal to one if the household contains one or more members under 18 years old.

Dark blue indicates cases in which that group is less likely to be poor than the omitted group before taxes and transfers, but, conditional on being poor before transfers, is more likely than the omitted group to remain in poverty (with statistically significant coefficients in both probits); light blue, the same but the second probit was not significant; orange means that the coefficients positive and significant in both cases.

Omitted variables: no children, urban interior, divorced/widowed, inactive, non-afro, household head: female, less than 25 years old, never attended school

4. Concluding Remarks

We have presented the results of standard incidence analysis of taxes and social spending in Uruguay using the *Encuesta Continua de Hogares* (2009). The incidence analysis was done for a benchmark scenario in which contributory pensions are under market income and a sensitivity analysis in which they are considered a government transfer.

Our main findings are the following:

1. Uruguay achieves a nontrivial reduction in inequality and poverty when all taxes and transfers are combined. In comparison with other five countries in Latin America, it ranks first (poverty reduction) and second (inequality reduction), and first in terms of poverty reduction effectiveness and second and third in terms of inequality reduction effectiveness.
2. Direct taxes are progressive and indirect taxes are regressive. Social spending is quite progressive in absolute terms.
3. Social spending on education and health is quite progressive except for tertiary education, which is almost neutral in relative terms. However, the latter result is based on a snapshot. It would be useful to do marginal incidence analysis for tertiary education to see how it has evolved over time. Has regressivity increased or decreased? Nevertheless, the fact that tertiary education is almost neutral in relative terms indicates that the causes for this should be understood. Uruguay stands out because it has a relatively high drop-out rate for secondary education. Understanding the dynamics behind this phenomenon and introducing corrective measures will also result in a change in the incidence of tertiary education down the road.
4. When contributory retirement pensions are treated as a transfer, they are progressive in absolute terms.
5. Although extreme poverty by international standards is low and direct net transfers contribute to this outcome significantly, extreme poverty is not eradicated. An assessment of whether this is a consequence of the size of the transfer in some of the programs or other factors may shed light on how cash transfer programs need to change so that extreme poverty can be eradicated.

Glossary

BPS: Banco de Previsión Social

DGI: Dirección General Impositiva

INE: Instituto Nacional de Estadística

JUNASA: Junta Nacional de Salud

MEF: Ministerio de Economía y Finanzas

MIDES: Ministerio de Desarrollo Social

OPP: Oficina de Planeamiento y Presupuesto

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Appendix

A1. Market, Net Market, Disposable, Post-fiscal and Final Income: Definitions and Measurement⁶

As usual, any incidence study must start by defining the basic income concepts. In our study we use five: Market, Net Market, Disposable, Post-fiscal and Final income. One area in which there is no agreement is how pensions from the contributory system should be considered. Some authors treat them as part of market income and others place them under government transfers, and others exclude them altogether. Since this is an unresolved issue, in our study we defined a benchmark case in which contributory pensions are part of market income. We also did a sensitivity analysis where pensions are classified under government transfers.

In what follows, we present the precise definitions of each income concept used in the benchmark case and the sensitivity analysis.

Market income is defined as:

$$I^m = W + IC + AC + IROH + PTran + SSP \text{ (benchmark)}$$

$$I^{ms} = W + IC + AC + IROH + PTran \text{ (sensitivity analysis)}$$

Where,

I^m/I^{ms} = market income⁷ in benchmark and sensitivity analysis, respectively.

W = gross (pre-tax) wages and salaries in formal and informal sector; also known as earned income.

IC = income from capital (dividends, interest, profits, rents, etc.) in formal and informal sector; excludes capital gains and gifts.

AC = autoconsumption; also known as self-production.

IROH = imputed rent for owner occupied housing; also known as income from owner occupied housing.

PTran = private transfers (remittances and other private transfers such as alimony).

SSP = retirement pensions from contributory social security system.

Net Market income is defined as:

$$I^n = I^m - DT - SSC \text{ (benchmark)}$$

$$I^{ns} = I^{ms} - DT - SSC^s \text{ (sensitivity analysis)}$$

Where,

I^n, I^{ns} = net market income in benchmark and sensitivity analysis, respectively.

DT = direct taxes on all income sources (included in market income) that are subject to taxation.

SSC/ SSC^s = respectively, all contributions to social security except portion going towards pensions⁸ and all contributions to social security without exceptions.

⁶ For more details on concepts and definitions, see Lustig and Higgins(2012).

⁷ Market income is sometimes called primary income.

⁸ Since here we are treating contributory pensions as part of market income, the portion of the contributions to social security going towards pensions are treated as 'saving.'

Disposable income is defined as:

$$I^d = I^n + GT \text{ (benchmark)}$$
$$I^{ds} = I^{ns} + GT^s \text{ (sensitivity analysis)}$$

Where,

I^d, I^{ds} = disposable income in benchmark and sensitivity analysis, respectively.
GT = direct government transfers; mainly cash but can include transfers in kind such as food.
 $GT^s = GT + SSP$

Post-fiscal income is defined as:

$$I^{pf} = I^d + \text{IndS} - \text{IndT} \text{ (benchmark)}$$
$$I^{pfs} = I^{ds} + \text{IndS} - \text{IndT} \text{ (sensitivity analysis)}$$

Where,

I^{pf}, I^{pfs} = post-fiscal income in benchmark and sensitivity analysis, respectively.
IndS = indirect subsidies (e.g., lower electricity rates for small-scale consumers).
IndT = indirect taxes (e.g., value added tax or VAT, sales tax, etc.).

Final income is defined as:

$$I^f = I^{pf} + \text{InkindT} - \text{CoPaym} \text{ (benchmark)}$$
$$I^{fs} = I^{pfs} + \text{InkindT} - \text{CoPaym} \text{ (sensitivity)}$$

Where,

I^f, I^{fs} = final income in benchmark and sensitivity analysis, respectively.
InkindT = government transfers in the form of free or subsidized services in education and health; urban and housing.
CoPaym = co-payments, user fees, etc., for government services in education and health.⁹

Because some countries do not have data on indirect subsidies and taxes, we also defined *Final income** = $I^{f*} = I^d + \text{InkindT} - \text{CoPaym}$.

A2. Construction of Income Concepts

i. Allocating Taxes and Transfers at the Household Level¹⁰

Unfortunately the information on direct and indirect taxes, transfers in cash and in-kind and subsidies cannot always be obtained directly from household surveys. When it can be obtained, we call this the *Direct Identification Method*. When the direct method is not feasible, one can use the inference, simulation or imputation methods (described in more detail below).

⁹ One may also include participation costs such as transportation costs or foregone incomes because of use of time in obtaining benefits. In our study, they were not included.

¹⁰ Based on Lustig and Higgins (2012).

As a last resort, one can use secondary sources. Finally, if none of the options exist, the analysis for that category will have to be left blank.

Direct Identification Method

On some surveys, questions specifically ask if households received benefits from (paid taxes to) certain social programs (tax and social security systems), and how much they received (paid). When this is the case, it is easy to identify transfer recipients and taxpayers, and add or remove the value of the transfers and taxes from their income, depending on the definition of income being used.

Inference Method

In some cases, transfers from social programs are grouped with other income sources (in a category for “other income,” for example). In this case, it might be possible to infer which families received a transfer based on whether the value they report in that income category matches a possible value of the transfer in question.

Simulation Method

In the case that neither the direct identification nor the inference method can be used, transfer benefits can sometimes be simulated, determining beneficiaries (taxpayers) and benefits received (taxes paid) based on the program (tax) rules. For example, in the case of a conditional cash transfer that uses a proxy means test to identify eligible beneficiaries, one can replicate the proxy means test using survey data, identify eligible families, and simulate the program’s impact. However, this method gives an upper bound, as it assumes perfect targeting and no errors of inclusion or exclusion. In the case of taxes, estimates usually try to make assumptions about evasion.

Imputation Method

The imputation method is a mix between the direct identification and simulation methods; it uses some information from the survey, such as the respondent reporting attending public school or receiving a direct transfer in a survey that does not ask for the amount received, and some information from either public accounts, such as per capita public expenditure on education by level, or from the program rules.

The four methods described above rely on at least some information directly from the household survey being used for the analysis. As a result, some households receive benefits, while others do not, which is an accurate reflection of reality. However, in some cases the household survey analyzed lacks the necessary questions to assign benefits to households. In this case, there are two additional methods.

Alternate Survey

When the survey lacks the necessary questions, such as a question on the use of health services or health insurance coverage (necessary to impute the value of in-kind health benefits to

households), an alternate survey may be used by the author to determine the distribution of benefits. In the alternate survey, any of the four methods above could be used to identify beneficiaries and assign benefits. Then, the distribution of benefits according to the alternate survey is used to impute benefits to all households in the primary survey analyzed; the size of each household's benefits depends on the quantile to which the household belongs. Note that this method is more accurate than the secondary sources method below, because although the alternate survey is somewhat of a "secondary source," the precise definitions of income and benefits used in CEQ can be applied to the alternate survey.

Secondary Sources Method

When none of the above methods are possible, secondary sources that provide the distribution of benefits (taxes) by quantile may be used. These benefits (taxes) are then imputed to all households in the survey being analyzed; the size of each household's benefits (taxes) depends on the quantile to which the household belongs.

ii. Construction of Income Concepts: Uruguay

The methods used in Uruguay are presented in Table A1.

Table A.1

URUGUAY: INCOME CONCEPTS USED IN INCIDENCE ANALYSIS (<i>Encuesta Continua de Hogares</i> , 2009)		
Yellow highlight shows difference between:	BENCHMARK	SENSITIVITY ANALYSIS
Pre-incidence Analysis Income	Market Income	Market Income
INCOME CONCEPTS: DEFINITIONS, METHODS AND SOURCES		
MARKET INCOME		
Earned and Unearned Incomes of All Possible Sources and Excluding Government	Included	Included
Social Security Pensions	Included	Not included
Gifts, proceeds from sale of durables.	Not included	Not included
Autoconsumption	Included	Included
Imputed rent for owner occupied housing	Included	Included
NET MARKET INCOME=MARKET INCOME - (DIRECT TAXES AND EMPLOYEE CONTRIBUTIONS TO SOCIAL SECURITY)		
Direct Taxes	<u>Simulation Method</u> : Subtracted from Market Income to generate Net Market Income. Taxes not reported in survey. For wages/salary, "Impuesto a la Renta de las Personas Físicas", for capital "Impuesto a la Renta de las Personas Físicas". Estimates based on official estimates by the finance ministry, imputed by applying the tax law to the ECH data. Methodology used is consistent with imputations made for spending in present study.	<u>Simulation Method</u> : Subtracted from Market Income to generate Net Market Income. Taxes not reported in survey. For wages/salary, "Impuesto a la Renta de las Personas Físicas", for capital "Impuesto a la Renta de las Personas Físicas". Estimates based on official estimates by the finance ministry, imputed by applying the tax law to the ECH data. Methodology used is consistent with imputations made for spending in present study.
Employee contributions to social security	Not included	<u>Simulation Method</u> . Estimates based on reported income and contributions rate rules. The survey inquires whether the worker contributes to SS. We subtract out contributions to pensions and other contributions.
DISPOSABLE INCOME = NET MARKET INCOME + DIRECT GOVERNMENT TRANSFERS		
Non-contributory pensions	<u>Direct Identification Method</u> . These transfers corresponds to old-age and disability assistant programs ("Pensión a la vejez"). They are captured by the survey	<u>Direct Identification Method</u> . These transfers corresponds to old-age and disability assistant programs ("Pensión a la vejez" and "Pensión de invalidez"). They are captured by the survey
Targeted monetary transfers	<u>Direct Identification Method</u> . For Uruguay this column only includes AFAM (Family allowances program)	<u>Direct Identification Method</u> . For Uruguay this column only includes AFAM (Family allowances program)
Other direct transfers	<u>Direct Identification Method</u> . Public transfers like unemployment insurance and maternity allowance were included.	<u>Direct Identification Method</u> . Public transfers like unemployment insurance and maternity allowance were included.
Food Transfer	<u>Direct Identification Method</u> . The survey reports the beneficiaries from food voucher and food baskets. The program of food voucher is "Tarjeta Uruguay Social" and it aims to provide money for buy food in extreme poverty households. This cash transfer does not have conditions, but it can only be used to purchase food and cleaning products. The amount of the transfer ranges depending on the number of children under 18 years at home. In 2009, the transfer for one child at home was 479 pesos per month and it can reached 1287 pesos per month if there were 4 children or more children at home. The food basket program gives food baskets through health posts, pre-schools and schools.	<u>Direct Identification Method</u> . The survey reports the beneficiaries from food voucher and food baskets. The program of food voucher is "Tarjeta Uruguay Social" and it aims to provide money for buy food in extreme poverty households. This cash transfer does not have conditions, but it can only be used to purchase food and cleaning products. The amount of the transfer ranges depending on the number of children under 18 years at home. In 2009, the transfer for one child at home was 479 pesos per month and it can reached 1287 pesos per month if there were 4 children or more children at home. The food basket program gives food baskets through health posts, pre-schools and schools.
Social Security Pensions	Not included	<u>Direct Identification Method</u> . Included
POST-FISCAL INCOME = DISPOSABLE INCOME + INDIRECT SUBSIDIES - INDIRECT TAXES		
Indirect subsidies	Not included	Not included
Indirect taxes	We matched the Household Survey (2009) and the Expenditure Survey carried out in 2006 using the command <i>uvis</i> of STATA. <i>uvis</i> means "univariate imputation sampling" and imputes missing values in the single variable <i>yvar</i> based on multiple regression on <i>xvars</i> . The estimated consumption includes indirect taxes. Estimates on indirect taxes are based on tax rates. We did not consider evasion.	We matched the Household Survey (2009) and the Expenditure Survey carried out in 2006 using the command <i>uvis</i> of STATA. <i>uvis</i> means "univariate imputation sampling" and imputes missing values in the single variable <i>yvar</i> based on multiple regression on <i>xvars</i> . The estimated consumption includes indirect taxes. Estimates on indirect taxes are based on tax rates. We did not consider evasion.

Table A.1 (continue)		
URUGUAY: INCOME CONCEPTS USED IN INCIDENCE ANALYSIS (Encuesta Continua de Hogares, 2009)		
FINAL INCOME = POST-FISCAL INCOME + GOVERNMENT IN-KIND TRANSFERS/FINAL INCOME* = DISPOSABLE INCOME + GOVERNMENT IN-KIND TRANSFERS		
In-kind education	<u>Imputation Method.</u> The survey reports whether the individual attends school and the level of education. It does not report if the individual attends public or private school. But the survey of 2008 did. Thus we use the 2008 survey to predict the attendance to public school for the survey of 2009. The education benefit is based on the cost per student by level. The annual per capita cost is (calculated as the coefficient of public accounts and number of assistance to public education by ECH): preschool: \$29 533 pesos; primary: \$29008 pesos; secondary: ciclo básico: \$36297; secondary bachillerato \$35899; technical: \$36938; university: \$76968; teaching: \$76927; technical education \$67978. Source: ECH (2009) and CGN (2009).	<u>Imputation Method.</u> The survey reports whether the individual attends school and the level of education. It does not report if the individual attends public or private school. But the survey of 2008 did. Thus we use the 2008 survey to predict the attendance to public school for the survey of 2009. The education benefit is based on the cost per student by level. The annual per capita cost is (calculated as the coefficient of public accounts and number of assistance to public education by ECH): preschool: \$29 533 pesos; primary: \$29008 pesos; secondary: ciclo básico: \$36297; secondary bachillerato \$35899; technical: \$36938; university: \$76968; teaching: \$76927; technical education \$67978. Source: ECH (2009) and CGN (2009).
In-kind health	<u>Imputation Method.</u> Imputations based on average cost. The survey reports if the individual usually use care services of public or private sector. If he uses public services, we impute the average cost of public services. If he uses private services, the survey reports if he has a subsidy. In this case, one possibility is that the individual uses the mutual system in which case the subsidy is the monthly fee. Another possibility is that the individual has a private insurance in which case he receives a partial subsidy. For those who report affiliation to public health service the benefit is \$13686 pesos per year , if the affiliation is to mutual system: \$11615 pesos per year (average public transfer to the system) and if it is to private insurance system, \$8584 pesos per year (average public transfer to the system). Source: CGN (2009), Junasa (2009) and ECH (2009).	<u>Imputation Method.</u> Imputations based on average cost. The survey reports if the individual usually use care services of public or private sector. If he uses public services, we impute the average cost of public services. If he uses private services, the survey reports if he has a subsidy. In this case, one possibility is that the individual uses the mutual system in which case the subsidy is the monthly fee. Another possibility is that the individual has a private insurance in which case he receives a partial subsidy. For those who report affiliation to public health service the benefit is \$13686 pesos per year , if the affiliation is to mutual system: \$11615 pesos per year (average public transfer to the system) and if it is to private insurance system, \$8584 pesos per year (average public transfer to the system). Source: CGN (2009), Junasa (2009) and ECH (2009).
Subsidized portion of social security (social security "deficit" as a percent of total social security spending)	We did not take into account this phenomenon. In fact, from public accounts 29% of total transfers were subsidized in 2009.	We did not take into account this phenomenon. In fact, from public accounts 29% of total transfers were subsidized in 2009.
SCALED-UP INCOMES, TAXES AND TRANSFERS FOR INCIDENCE ANALYSIS INCLUDING GOVERNMENT IN-KIND TRANSFERS		
Scaling up factor and method	The ratio between National Accounts and household income in ECH is 1.20. We used this factor to scale up: earnings, capital income, other contributory benefits, inter household transfers, taxes on income, profits, and capital gains (IRPF), social contribution to security system and Indirect taxes (IVA, IMESI). The factor is 1.09 for contributory pensions and direct taxes to contributory pensions (IASS). The factor is 1.49 for non-contributory pensions. The factor is 1.39 for food voucher. The scaling up factor for ASFAM, Health, Education, Food baskets, Imputed rent for owner-occupied housing and auto-consumption is 1, because we imputed the per capita values of public benefits in the survey.	The ratio between National Accounts and household income in ECH is 1.20. We used this factor to scale up: earnings, capital income, other contributory benefits, inter household transfers, taxes on income, profits, and capital gains (IRPF), social contribution to security system and Indirect taxes (IVA, IMESI). The factor is 1.09 for contributory pensions and direct taxes to contributory pensions (IASS). The factor is 1.49 for non-contributory pensions. The factor is 1.39 for food voucher. The scaling up factor for ASFAM, Health, Education, Food baskets, Imputed rent for owner-occupied housing and auto-consumption is 1, because we imputed the per capita values of public benefits in the survey.

A3. Effectiveness Indicators

In mathematical notation, let $X^{(j)}$ be the inequality or poverty measure of interest (e.g., the Gini coefficient or headcount index), which is defined at each income concept $j = m, n, d, pf, f, f^*$. Let S^D be total public spending on the direct transfer programs captured by the survey or otherwise estimated by the authors, measured by budget size in national accounts (note that in the sensitivity analysis this concept includes spending in social security pensions),

and let S^H and S^E be total public spending on health and education, respectively. Then the effectiveness indicator for direct transfers is defined as:

$$\frac{(X(I^n) - X(I^d))/X(I^n)}{S^D/GDP}$$

and the effectiveness indicator for direct and in-kind transfers is defined as:

$$\frac{(X(I^n) - X(I^{f*}))/X(I^n)}{(S^D + S^H + S^E)/GDP}$$

A4. Progressive and Regressive Revenues and Spending: Definitions

Given that there is no unique convention in the definition of progressivity and regressivity as it relates to taxes and transfers, we also present the definitions used here in order to avoid ambiguities. Progressivity can be measured in absolute terms: i.e., by comparing transfers/taxes per capita among quantiles; or in relative terms: i.e., by comparing transfers/taxes as a share of each quantile's income.

A convention often followed in the literature is to call transfers progressive when they are progressive in absolute terms and to call taxes progressive when they are progressive in relative terms.¹¹ This is a bit strange as it leaves us with different criteria for taxes and transfers; how would we use the terminology in the case of net transfers? We shall call net transfers progressive (regressive) if the post-taxes and transfers distribution of income is more (less) equal than the market income distribution. Transfers and taxes classification will use a terminology consistent with this definition.

Transfers will be progressive in absolute terms when their per capita value declines with market income. The corresponding concentration coefficients are negative. The latter is very typical of, for example, conditional cash transfer programs (CCTs). Transfers will be progressive in relative terms, when while their per capita value increases with market income, their relative value with respect to market income declines. The concentration coefficient is positive but smaller than the market income Gini. The latter is typical of contributory pensions, public spending on education and health and general price subsidies (including VAT exemptions) on basic foodstuffs, for example. A transfer that implies the same benefit in per capita terms (in proportion to market income) for everyone is neutral in absolute (relative) terms. In these cases, the concentration coefficient is zero (equal to the market income Gini coefficient). Of course, it is better (for equality, that is) if a transfer is progressive or neutral in absolute (as opposed to relative) terms. Transfers will be regressive when their relative value with respect to market income increases with income. The corresponding concentration coefficient is positive and higher than the market income Gini. Regressive transfers are

¹¹ See Lambert (2002).

uncommon or nonexistent within social spending. However, subsidies to certain industries and producers as well as some consumption subsidies on items purchased primarily by the middle-classes and the rich will be regressive.

Taxes will be *progressive in absolute terms* when their per capita value increases with market income. However, practically all taxes (except for a poll tax: i.e., everyone pays the same amount) are progressive in absolute terms. Thus, we are interested in relative progressivity: taxes (and social security contributions) will be *progressive in relative terms* when, not only their per capita value rises with market income, but when their relative value with respect to market income does too. For purposes of the analysis, we will call this tax *progressive* and omit the “relative” qualifier since it is really unnecessary. The majority of income tax systems (on paper but not necessarily in practice) have this characteristic. A tax will be *regressive* whenever its relative value with respect to market income declines as income rises. Value Added Taxes (VAT) are broadly regressive. A flat tax in absolute terms (a poll tax) is *regressive*. When everybody pays the same tax rate in proportion to their income, the tax is called *neutral*.¹²

See Diagram 2 in text for a synthesis of the above.

¹² If a transfer is progressive (regressive) in absolute (relative) terms, it follows by definition that it must be progressive (regressive) in relative (absolute) terms, but the converse is not true. If a tax is progressive (regressive) in relative (absolute) terms, it follows by definition that it must be progressive (regressive) in absolute (relative) terms. However, the converse is not true.