2023, Volume 46, Issue 92, 62-124/ ISSN 2304-4306

E C O N O M Í A

revistas.pucp.edu.pe/economia

www.fondoeditorial.pucp.edu.pe

Impact of Taxes, Transfers, and Subsidies on Income Distribution and Poverty in Argentina

Dario Rossignolo[ab]

[a]Faculty of Economic Sciences, Universidad de Buenos Aires

✉ darossignolo@economicas.uba.ar

[b]Faculty of Economic Sciences, Universidad Nacional de Córdoba

✉ darossignolo@gmail.com

Abstract

This study evaluates the impact of direct and indirect taxes, as well as public expenditure on transfers (monetary and in-kind, economic subsidies, healthcare, and education), on income distribution and poverty in Argentina. It utilizes a standard fiscal incidence analysis and combines data from the Permanent Household Survey (EPH) and the National Household Expenditure Survey (ENGHo). The findings indicate that fiscal policy has been a powerful instrument in reducing inequality and poverty. However, unusually high levels of public spending could potentially render the programs unsustainable.

Article History: Received: 08 September 2022 / Revised: 11 May 2023 / Accepted: 11 May 2023

Keywords: Taxes, Public Spending, Inequality, Poverty

JEL Classification: H2, I3, D3

https://doi.org/10.18800/economia.202302.003

1. Introduction

This study is innovative in four ways. Firstly, it employs the standard incidence analysis method used by the Commitment to Equity (CEQ) project of Tulane University, consistent with the most recent literature on the topic. This method distinguishes between fiscal interventions via taxes and public spending, enabling a sequenced calculation of the impact of fiscal policies on income distribution and poverty.

Secondly, this study applies the aforementioned method to the annualized data of the Permanent Household Survey (EPH – Encuesta Permanente de Hogares), primarily from the fourth quarter of 2016, supplemented with the National Household Expenditure Survey (ENGHo – Encuesta Nacional de Gastos de los Hogares) 2012-2013 where EPH information was insufficient to make the respective allocations. Specifically, as the EPH does not include consumption data, the ENGHo was used to allocate indirect taxes and economic subsidies.

Thirdly, the selection of 2016 is significant, as it was a time when economic subsidies, which had been substantial in previous periods, were reduced and targeted, in addition to the expansion of some social programs. For instance, the Universal Child Allowance (AUH - Asignación Universal por Hijo) was extended to participants in the Simplified Tax Regime (Monotributo); and the Universal Pension for the Elderly (PUAM - Pensión Universal al Adulto Mayor) was introduced, providing a monetary transfer to older individuals without an income.

Fourthly, a crucial clarification is that this study, like several precedents on the subject[1] but unlike the CEQ methodology, used incomes adjusted for underreporting. It should be noted that these estimates constitute an annual incidence analysis, requiring the conversion of income and expenditure amounts from the respective surveys into annual figures.

The paper is structured as follows. Section 2 introduces empirical literature precedents for Argentina. Section 3 provides an overview of taxes and public spending in Argentina. Section 4 addresses methodological issues related to the calculations and adjustments made to the data, while Section 5 discusses normative issues and how the fiscal instruments were analyzed. Section 6 presents the results of the analysis of the impact of taxes and public spending on poverty and inequality, and Section 7 offers some concluding remarks.

2. The Evolution of Taxes and Public Spending

This section offers a brief overview of the evolution and structure of tax revenue and public spending across three jurisdictional levels, focusing on 2016, the period under analysis in this study.

2.1 Behavior of Tax Collection

Argentina's tax burden experienced significant growth over the last decade, exceeding 32% of GDP in 2015. During this period, the tax burden steadily increased, partially due to the impact of "extraordinary taxes"[2] that accounted for around 4.3% of GDP in 2008 (more than half were

[1] For example, Gómez Sabaini et. al. (2002); Gasparini (1998), and Rossignolo et al. (2013)

[2] Export duties, bank debits, and credits.

export duties) and, despite slightly declining over the last five years, still remained significant.

The abolition of the private capitalization social security system also explains the increase in tax pressure, as social security resources became the most significant category of direct taxes from 2008 onwards. Additionally, the lack of inflation adjustment in corporate balances and the sporadic adjustment of minimums and income tax brackets also contributed to the rise in the collection of corporate and personal income tax. This phenomenon, known as "bracket creep," can be exemplified by the fact that in 1997, approximately 12.5% of total taxable income was concentrated in the bracket with the maximum marginal personal income tax rate; by 2011, the same bracket concentrated 58% of the total (Gómez Sabaini and Rossignolo, 2014).

In 2016, the tax burden (at the national and provincial levels) reached 31.4% of GDP,[3] lower than the tax burden of 32.1% in 2015 (Table 1). The largest portion (42%) of tax collections comes from indirect taxes, combining national and provincial taxes. Out of total indirect taxes, 77% corresponds to general taxes on goods and services (VAT and Gross Income Tax).

Considering only excise taxes, the tax on fuels concentrates the largest proportion (over 60% of the total in the category), followed by the tax on tobacco (around 25%).

Among direct taxes, the income tax stands out, representing around 60% of the total of these resources. The corporate income tax brings in more revenue than the personal income tax, although the gap has been narrowing for the reasons explained above.

Table 1

National and Provincial Tax Burden Percentage of GDP

	2016
Total tax revenue	**24.5**
Direct tax revenue	**8.4**
Taxes on income, profits, and capital gains	**5.4**
Personal	2.2
Corporations and enterprises	2.9
Unspecified	0.3
Property taxes	**3.0**
Indirect tax revenue	**14.5**
VAT	11.2
Excise taxes on goods and services	1.7
International trade and transactions	1.6
Other indirect taxes	
Social contributions	**6.9**
Total tax revenue (including social contributions)	**31.4**

Source: MECON.

[3] Adding municipalities' own tax collection (around 1.5% of GDP, information not updated), the total tax collection of the three jurisdictional levels would reach approximately 33% of GDP.

2.2 Public Expenditure

The evolution of social public expenditure in Argentina over the last 15 years can be divided into three different stages. The first one is set within the context of the severe socio-economic disturbance that the country experienced during the early years of the century and is primarily characterized by the creation of emergency social programs designed to alleviate the impacts of the crisis.

Among these initiatives, the following stand out: income transfer programs, such as the Unemployed Household Heads Plan (PJyJHD - Plan Jefes y Jefas de Hogar Desocupados) and the Income for Human Development (IDH - Ingreso para el Desarrollo Humano) Program, as well as the Remediar healthcare program and the Emergency Food Program (PEA - Programa de Emergencia Alimentaria). The second stage covers the years between the consolidation of economic recovery and the international crisis of 2008. During this period, state expenditures focused on more structural solutions to social problems. In the pensions area, the Pension Moratorium (2005) allowed individuals who had not achieved the minimum contributing years for receiving the benefit to retire through a payment plan, bringing their contributions up to date. Additionally, the Education Financing Law mandated a gradual increase in investment in education and in science & technology, aiming for a share of 6% of GDP.

Lastly, efforts were made to revamp the PJyJHD program to reduce family vulnerability and strengthen the work culture. This entailed facilitating the transition of beneficiaries to either the Families for Social Inclusion Plan (PFIS) or the Training and Employment Insurance (SCE) Plan, based on their employability.

The third and final stage, starting in 2008, aimed to sustain income and employment levels amidst the threat of the international economic crisis. Within this framework, new measures were implemented in the pension system, including the creation of the Integrated Pension System and Pension Mobility (SIPA - Sistema Integrado Previsional Argentino y Movilidad Jubilatoria). These measures eliminated the capitalization system and officially recognized the mobility of benefits within the public pension regime.

Lastly, the creation of the AUH is noteworthy. This program expanded the benefits of the child allowance provided by the government to include children whose parents work in the informal sector or as domestic workers and earning an income below the minimum wage. Additionally, unemployed individuals who do not receive unemployment benefits are also eligible for this allowance.

This process is complemented by the creation of programs such as PUAM, a lifelong benefit provided by the National Social Security Administration (ANSES - Administración Nacional de la Seguridad Social) to individuals over the age of 65 who do not receive any other benefits.

In quantitative terms, Argentina's public expenditure across jurisdictional levels increased from 26% to 47% of GDP between 2004 and 2015. With a tax burden of around 31% of GDP, the remaining gap needs to be filled through money or debt issuance, which can lead to inflationary pressures and a depletion of international reserves.

Focusing on the period between 2009 and 2015, both total social expenditure and monetary transfers experienced significant growth in Argentina. In this period, social expenditure as a

percentage of GDP increased from 26% to 30.8%, while monetary transfers rose from 12% to 15%.[4] Additionally, economic services (tariff subsidies) have played a significant role in the overall increase in public expenditure, averaging between 5% and 6% of GDP between 2012 and 2015. These expenditures were initially designed to maintain stable rates, primarily for transportation and energy, in the Greater Buenos Aires Metropolitan Area.

Public expenditures in social programs and economic services included in this study represented 36% of GDP in 2016 (Table 2). The most significant category is represented by the pension system, which accounts for approximately one-third of these expenditures (11.6% of GDP). Expenditures on healthcare, education, and economic services accounted for around 6% of GDP, with the latter experiencing a slight decrease compared to 2015 (6.7% of GDP).

3. Previous Research for Argentina

Several previous studies have focused on the impact of taxes and transfers, both jointly and separately, on income distribution. However, only a limited number of studies have examined the impact of public expenditures on poverty (some have attempted to capture the effects of specific social programs), and even fewer have estimated the impact of taxes on poverty. This study employs the CEQ methodology (Lustig and Higgins, 2013; Lustig and Pessino, 2013,0) to disaggregate and analyze the effects of taxes and public expenditures on income distribution and poverty reduction in Argentina.

Among the most recent studies, Gasparini (1998) conducted an analysis of the distributive impact of the tax system for 1996, using income and per capita consumption (a proxy for permanent income) as indicators of well-being. The incidence of taxes was found to be highly regressive or moderately progressive, depending on whether income or per capita consumption, respectively, was used as an indicator of well-being. Gómez Sabaini, Santiere, and Rossignolo (2002) analyzed the impact of taxes on income distribution in 1997, considering income per capita adjusted for underreporting as an indicator of well-being. Tax incidence was found to be regressive in this case, mainly due to the effect of VAT and indirect taxes.

Rossignolo and Sabaini (2009) examined the incidence of taxes for 2006, once again using income per capita adjusted for underreporting. The findings indicate a moderately progressive impact, primarily driven by export duties and the increased contribution of personal income tax and social security resources, as measured by the Gini index. However, as the gaps between extremes (such as the ratio between the 10th and 1st deciles) widen, the authors conclude that the system exhibits regressive tendencies. Rossignolo et al. (2013) arrived at similar conclusions based on tax information for 2008.

SPE (2001) and SPER (1999) conducted various estimations on the effects of public spending on income distribution in Argentina, indicating a clear reduction in inequality. Gasparini (1999) arrived at similar conclusions, showing that the benefits of public spending are predominantly received by lower-income segments. Additionally, several studies have analyzed the impact of

[4] When making the comparison, it should be kept in mind that the PJyJHD and the IDH program still existed in a residual form in 2009.

Table 2

Consolidated Public Social Spending and Economic Services Expenditure Percentage of GDP

PURPOSE / FUNCTION	2016**
I. PUBLIC SOCIAL SPENDING	**30.1**
I.1. Education, culture, and science and technology	6.4
I.1.1. Basic education	4.0
I.1.2. Higher and university education	1.2
I.1.3. Science and technology	0.3
I.1.4. Culture	0.2
I.1.5. Education and culture	0.7
I.2. Health	6.8
I.2.1. Public health care	2.8
I.2.2. Social works - Health care	3.1
I.2.3. INSSJyP - Health care	1.0
I.3. Drinking water and sewage	0.5
I.4. Housing and urban planning	0.8
I.5. Promotion and social assistance	1.6
I.5.1. Public promotion and social assistance	1.2
I.5.2. Social works - Social benefits	0.2
I.5.3. INSSJyP - Social benefits	0.3
I.6. Social security	11.6
I.7. Labor	1.4
I.7.1. Employment programs and unemployment insurance	0.2
I.7.2. Family allowances	1.3
I.8. Other urban services	0.9
II. PUBLIC SPENDING ON ECONOMIC SERVICES	**6.3**
II.1. Primary production	0.4
II.2. Energy and fuel	3.2
II.3. Industry	0.2
II.4. Services	2.3
II.4.1. Transport	2.1
II.4.2. Communications	0.2
II.5. Other expenses in economic services	0.3
PUBLIC SOCIAL SPENDING (excluding Social Security)	**18.5**
PUBLIC SOCIAL SPENDING AND ECONOMIC SERVICES	**4.2**
PUBLIC SOCIAL SPENDING AND ECONOMIC SERVICES (excluding Social Security)	**24.8**

Source: MECON.

specific programs on poverty reduction. For instance, Maurizio (2009) explored the impact of cash transfer programs, and Marchionni et al. (2008) examined the effects of various tariff schemes.

Numerous studies have analyzed the impact of AUH on income distribution and poverty (Maurizio, 2008; (Alvarez and Panigo, 2010), as well as on fertility and labor supply (Garganta and Gasparini, 2012; Garganta et al., 2015,0; Edo et al., 2015).

A range of studies, including Gasparini (1999), SPE (2002), Gaggero and Rossignolo (2011),

and Gómez Sabaini, Harriague and Rossignolo (2013), have endeavored to calculate the net effect of taxes and public spending on income distribution, i.e., the net budgetary effect. (Cont and Porto, 2017) have studied the comprehensive impact of the public budget on personal and regional income distribution over multiple periods.

Although methodologies vary slightly (e.g., some consider a balanced budget, while others use actual revenue), all aforementioned studies find that the two highest income quintiles transfer resources via the budgetary system to those with fewer resources. Despite variations in the relative magnitudes of the redistributive effect, all prior studies indicate significant equalizing effects.

Following the CEQ methodology, Lustig and Pessino (2014) reported on the growing importance of non-contributory pensions in Argentina over the last decade, emphasizing the role of public policies such as the implementation of AUH and the Pension Inclusion Plan, albeit without adjusting for underreported income. Rossignolo (2016) presented results on the impact of spending and taxes using this methodology and based on ENGHo 2012-2013 data, finding a significant reduction in both poverty and inequality.

The analysis presented here sets itself apart from most of its predecessors (with the exception of the last mentioned) by measuring the impact of taxes and public spending on not just inequality, but also poverty, incorporating an adjustment for underreported income. Additionally, while most existing studies rely on decile information instead of the entire distribution, and only a few (Gaggero and Rossignolo, 2011; Rossignolo, 2016) include the impact of economic subsidies (although some recent works, such as Lakner et al. (2016), focus on the distributive impact of these subsidies), this work differs. Another key difference is that while existing studies generally assume a context of a balanced budget and rescale incomes or expenditures to achieve this balance, this work, following the CEQ methodology, neither rescales total expenditures and taxes nor assumes a balanced budget.

4. Methodological Considerations

The process of identifying the characteristics of the tax burden and the impact of public spending facilitates a comparison of income distribution before and after fiscal interventions. This highlights the importance of understanding income concentration and poverty in studies of this nature.

This section is divided into four parts. Firstly, we describe the approach applied for incidence analysis. Secondly, we present relevant considerations for the analysis of the data sources, EPH and ENGHo; specifically, the aspects to consider for harmonizing the surveys used to calculate the impact on the uses and sources of income and adjustment for underreporting. Finally, we detail the formal procedure for addressing various fiscal interventions.

4.1 The Incidence Approach

There are several alternatives for measuring the impact of taxes and estimating tax incidence. In most studies on this topic, a set of transfer criteria is established based on incidence

assumptions within a partial equilibrium framework. This is the most widely used method, yet we acknowledge the challenges associated with validating such hypotheses, particularly the limitations compared to other allocation mechanisms. This method begins with a partial equilibrium analysis, assuming that each sector is small compared to the rest of the economy. From this, the tax burdens on various sectors are aggregated to generate total revenue.

The methodology used to estimate the incidence of taxes and spending incorporates various assumptions to determine who bears the tax burden or who benefits from increased spending. This is crucial because, in many cases, the legal obligors or beneficiaries do not correspond to those experiencing an income reduction or increase, respectively.

For direct taxes, the standard assumption is that the burden of personal income tax and other income-related taxes falls on the legal obligor. However, information on direct taxes paid is seldom available in surveys as, for example, formal wage earners report post-tax income. For informal workers, employers, self-employed individuals, rentiers, and beneficiaries of monetary transfers and pensions, pre-tax income is reported. To calculate tax revenue, it is necessary to determine the tax paid across all income sources. Like most studies based on a partial equilibrium approach, this study assumes that the burden of taxes on goods and services is fully transferred to consumers through higher prices.

On the expenditure side, we assume that the beneficiaries of a program are its users and their families, who receive public goods for free or at a subsidized rate. This approach assumes that potential benefits falling on production factors are disregarded, such as externalities that might emerge from the consumption of publicly provided goods (to capture total incidence, the equivalent variation would need to be calculated).

A controversial aspect of transfer criteria is the sensitivity of incidence analysis results to the chosen criteria for accounting distributive impacts. The transfer criteria for corporate income tax and social security contributions show the most variation in the literature, unlike the rest of the considered levies. However, given the basic trend, marginal changes in incidence criteria—especially for taxes without explicitly defined transfer—do not result in a substantial change in the impact of the system on income distribution. Gómez Sabaini et al. (2002) show that the distributive effects of the aforementioned taxes do not significantly change despite alterations in allocation criteria.

Therefore, the approach of transfer assumptions has been chosen as the basic criterion, not only for its simplicity, but also for its wider application, which facilitates comparative analysis. This approach implicitly considers evaluations of the demand elasticity for taxed and non-taxed goods, the substitution elasticity between capital and labor, the proportion of factors in the production function, and the marginal propensity to consume.

The transfer criteria employed in the reference studies for this work are relatively consistent for taxes whose allocation is uncontroversial, varying only in scope due to the availability of information.

As a result, this study assumes that direct taxes are borne by income recipients, while in the case of consumption taxes, it is presumed that the tax impact is transferred to the price of the goods and absorbed by consumers. As for public expenditures related to monetary transfers,

they are received by the legal beneficiaries, resulting in an increase in their income. Meanwhile, the users of health and education services receive the benefits based on the per capita budgetary amount distribution among beneficiaries, similar to the subsidies incorporated into the tariffs.

4.2 Considerations on Original Data and Survey Data Harmonization

The estimates conducted in this document primarily draw on information from two surveys: EPH and ENGHo.[5]

The EPH is Argentina's main household survey, initiated in the early 70s and continued to the present day. This survey only covers the country's major agglomerations (more than 100,000 inhabitants), representing approximately 63% of the population (around 27.5 million people). It collects information on income, occupation and formal status, and education level, among others. The ENGHo is a large-scale survey providing detailed responses from 20,960 households nationwide (around 36.1 million people) conducted by the National Institute of Statistics and Censuses of Argentina (INDEC). The survey records incomes but emphasizes and delves into the identification of family expenditures. It was carried out between March 2012 and February 2013. It can be concluded that both surveys share the surveyed population universes, even though ENGHo covers a broader spectrum in terms of the information gathered.

The source used for income analysis, as anticipated, is INDEC's EPH. To facilitate comparison with other studies on this subject, and to provide the required data for the rest of the study, we used the "wave" (onda or continuous survey) of the fourth quarter of 2016, the results of which were annualized for the remainder of the period.

As mentioned before, the EPH does not collect information on consumption but does on income. Consequently, two estimations were made in this work. The first one started from EPH information and used ENGHo information, extrapolating the consumption tendencies from ENGHo to EPH. The second one, conducted as a comparative exercise, and the results of which are referred to in the Annex, started from ENGHo data and updated them with EPH information. As evidenced by the results of both estimations, the calculated values are very similar.

With the aim of harmonizing ENGHo and EPH information, the income values from the ENGHo were updated by the average income variation by source between the EPH of the third quarter of 2012 (middle value of the ENGHo sample) and the fourth quarter of 2016. This revision serves as a basis for calculating consumption amounts, indirect taxes, and economic subsidies. To utilize this, specific estimates were made to align with a more recent consumption pattern. The Annex provides a detailed outline of the methodology employed for indirect taxes and subsidies in the ENGHo, and how this was extrapolated to the EPH.

4.3 Adjustment for Income Underreporting

Within the boundaries of the represented urban area, both the ENGH and EPH surveys suffer from an underreporting of income that should be rectified to construct the definitive distribu-

[5] Additionally, and as will be discussed later, the Annual Household Survey of the City of Buenos Aires was used, which records the use of health services and appointments for the allocation of the respective costs. This survey is, at the time of the exercise, the only one that records this type of information.

tion. This underreporting can be divided into two parts: underreporting due to under-capturing respondents (i.e., partial, or total non-response to the survey), and income underreporting.

In the first case, to correct for non-response, it is common to adjust through income imputation procedures, setting income simulations based on certain household parameters; these adjustments are carried out in the most recent surveys.

As for the second, the necessity for adjustment becomes apparent when comparing National Accounts or administrative records with survey totals. It can be verified that the extent of underreporting varies significantly depending on the income source of the respondents. If underreporting were proportional to actual income for all individuals, the distribution of welfare and incidence would not be affected. However, since the participation of these categories (wage earners, retirees, employers, self-employed, rentiers) varies across income levels, category-based adjustment naturally leads to adjustment by income brackets.

Based on a joint study comparing EPH with social security registry data, differential underreporting adjustment coefficients by source were developed. These were used for registered wage earners and retirees, while for the rest of the sources, the coefficients presented in Gómez Sabaini, Santiere, and Rossignolo (2002) were employed (using the latest available information to correct the underreporting problem). These adjustment coefficients were calculated in comparison with National Accounts information. The coefficients were applied to EPH income for percentile income adjustment.

Table 3
Differential Underreporting Coefficients by Source

Income source	Average coefficient	1	2	3	4	5
Wage earners	1.167	0.898	1.028	1.180	1.285	1.355
Self-employed	1.986	1.870	1.933	1.956	2.028	2.100
Employers	2.928	2.760	2.850	2.870	2.982	3.099
Retirees	1.020	1.095	1.000	1.000	1.000	1.008
Rentiers	5.275	4.969	5.135	5.149	5.429	5.553

Source: Gómez Sabaini, Santiere and Rossignolo (2002), op. cit.; MECON and author's own calculations.

4.4 Procedure for Incorporating Fiscal Interventions

The CEQ methodology used in this work is innovative in relation to conventional estimates as it calculates separately the impact of each fiscal intervention on inequality and poverty. The calculation starts by considering market income (i.e., income from production factors) as the baseline upon which all these policies operate.

Two alternatives are examined: the benchmark case, where pensions are considered part of market income, and a sensitivity analysis, where pensions are viewed as transfers (i.e., they

are deducted from market income), thereby enhancing the impact of public policy. While in Argentina the second case could be considered as a public policy tool, it is important to consider both scenarios. As will be seen later, when pensions are removed from market income, the lowest income brackets appear with null income, which distorts the proportional impact of monetary transfers on these income brackets.

Net market income is obtained by subtracting income taxes and social security contributions and adding monetary transfers, which results in disposable income. Subtracting indirect taxes and adding economic subsidies results in consumable income. Finally, adding the monetized value of education and health services results in final income. The methodology is summarized in Lustig (2018).

5. Analyzed Taxes and Transfers

This section explains the characteristics of direct/indirect taxes and transfers/economic subsidies under scrutiny. The direct taxes accounted for include the personal income tax, social security contributions, and the Monotributo. Indirect taxes encompass VAT, provincial gross income, excise taxes (alcoholic beverages; beers; non-alcoholic beverages; automobiles, boats, and aircraft; insurance; telephony; and electronic products), and fuel tax. Together, these taxes constituted around 80% of total national and provincial tax revenue in 2016.

Regarding these taxes, it is normally assumed that the burden of personal income tax and related income taxes falls on the legal obligor.[6] However, for corporate income tax and contributions to social security, incidence criteria are not so straightforward. To calculate incidence, a general equilibrium model would be needed that considers all the effects generated by taxes of this nature.

Specifically, for social security, for example, a general equilibrium model would allow determining how the burden is distributed between employees and employers; and for corporate income tax, how much is borne by capitalists or employers and how much by consumers via higher prices of the goods they consume. As the latter is very complex to calculate with survey information, it was not included in the analysis, but the former can be calculated if we assume that the burden is borne by wage earners.

Due to both the absence of relevant information (basically, data related to the magnitude of the decrease in suppliers' disposable income from foreign trade levies) and the need to establish heroic assumptions, unresolved theoretically, to establish a hypothesis regarding the transfer of the burden from export duties, the latter have been excluded from the incidence analysis. A similar argument can be applied to the case of the tax on bank debits and credits, which is why

[6]For direct taxes and social security contributions, although nominal rates were applied (as discussed later), tax bases were adjusted to consider an "effective rate" estimate, accounting for estimated tax revenue loss. For instance, for independent personal income, a 49% tax evasion was assumed (Cetrángolo and Gómez Sabaini, 2010), while for personal social security contributions, non-compliance rates of 25.6% and 24.2% were assumed for employer contributions (Cont and Susmel, 2006). There are no studies about different evasion patterns based on income. Implicitly, patterns vary along income brackets due to different income compositions by source. For VAT, the effective tax rate was considered, and the tax was not included in expenses made in informal businesses.

this tax could not be included in the analysis. The absence of information on wealth taxes in the surveys also prevents their inclusion in the analysis.

It is important to note that, for indirect taxes, the concept of "tax productivity" was used as a proxy for their effective rate, in the absence of more reliable estimates. This is calculated as the quotient of effective collection to private family consumption and calculating the differential rates as a proportion of the effective general rate. While the tax impacts family consumption, it is acknowledged that there are other components that do not make up consumption but generate VAT, such as consumption or investment of exempt goods, although these would not be possible to calculate from survey information.

On the public spending side, the transfers included were AUH, contributory Family Allowances (AAFF – Asignaciones Familiares), Pension Inclusion Plan (Pension Moratorium and Early Retirement, PUAM), Pensions, SCE, student scholarships, the Jóvenes con Más y Mejor Trabajo program, unemployment insurance, and school and community dining rooms. In addition, we included estimates of economic subsidies for transportation, fuel, electricity, and gas, as well as spending on education and healthcare. The expenses included comprise around 87% of total social expenses and economic services and are the most representative of the sectors under analysis.

5.1 Direct Taxes

Personal Income Tax: Calculated by comparing whether the income reported in the survey was greater than the deductions allowed by law. The income from the main occupation reported in the survey was divided among its sources: formal and informal salaried workers, employers, and self-employed individuals. The survey data allowed us to distinguish between monetary transfers, pensions and annuities, and rentiers, who were excluded from the tax base. The survey reports net income for salaried workers and gross income for independent workers, employers, and pensioners. Therefore, it was necessary to reconstruct the pre-tax income and contributions to social security by increasing the income reported by the taxes assumed to have been paid.

The calculation of pre-tax income starts by "increasing" the income reported in the survey by the tax assumed to be paid by formal workers, calculating the tax paid as the difference between income before and after taxes. Self-employed individuals and employers with an annual income of less than $600,000 were also excluded and included in the Monotributo regime. Salaried employees whose employers reported having made pension contributions were considered formal salaried employees.

Once taxable income was calculated, the structure of income brackets and applicable rates was applied to obtain the resulting tax. For independent workers and retirees, the procedure was similar, although starting from gross income. The total tax was obtained by adding up the taxes paid for each source of income.

Monotributo: Replaces Income Tax and VAT for small taxpayers with a fixed monthly amount that covers tax contributions, social security, and health insurance. It is based on the taxpayer category according to annual income brackets.

Social security: Includes taxes on labor borne by workers and employers. The incidence criterion applied is that the economic incidence falls entirely on workers' salaries. Additionally, pension contributions made by self-employed workers and employers not covered by the Monotributo scheme, were also considered.

For formal workers, the items considered are contributions to the social security system (11%), health insurance (3%), and the national pension fund (3%), up to a maximum salary of $63,995.73 per month (maximum tax base). This yields a total rate of 17%. For employers, the items considered are the Social Security System (12.71%), healthcare (6%), Pension Fund (1.62%), AAFF Fund (5.56%), and National Employment Fund (1.11%), totaling 27% for employers in the service sector, while for the rest of the employers the rate is 23%.[7]

In estimating incidence, we use legal rates, which were applied to the income reported in the survey, net of income tax for salaried workers.[8] The collection results from the sum of the tax amounts calculated for employees and employers. For independent workers, the items considered were contributions to the social security system (27%) and the national pension fund (5%). These rates are applied to a bracket structure that increases with income and discriminates between professionals and merchants, identified in the survey using years of education as a proxy (in the same way as in the case of monotributistas).

5.2 Indirect taxes

Value Added Tax: The VAT is a national levy, collected at a provincial level, with the revenue then transferred to the national government. The VAT taxes consumption through a mechanism that operates at all stages of the production and distribution of goods and services. The tax is not accumulative and adopts a system referred to as "tax against tax", where fiscal debits (from sales) and fiscal credits (from purchases) are offset, and the balance between the two is paid on a monthly basis. This process essentially applies the tax on the value added at each stage of production. It applies to imports in the same way as it does to domestic production but exempts exports.

Among the taxable events, the general rate of 21% prevails. Exceptions are constituted by cases taxed at rates of 27% and 10.50%. The 27% primarily pertains to the invoicing of public services provided to businesses that are tax-liable (unlike home service provisions to non-tax-liable entities, which pay the general rate). The exemptions are gradually being phased out in recent reforms,[9] and the 10.5% rate is applied to a limited list of goods and services.[10]

[7] Differential tax regimes, with few exceptions, refer to towns or cities that cannot be represented in the survey data, so they were not calculated in this work. Additionally, the differential rates are considered as a VAT prepayment and it would be impossible to link the reduction of the contribution rate with the VAT paid by companies.

[8] Adjusted for non-compliance as previously discussed.

[9] Books, brochures, and similar printed materials; newspapers, magazines, and periodicals, at the retail sales stage; natural water, milk without additives, when the buyers are final consumers or exempt subjects; medications, when they are resold and have been taxed at the importation or production stage.

[10] The lower tax rate includes some basic foods (fruits, vegetables, bread); grains—cereals and oilseeds, excluding rice—and dry legumes—beans, peas, and lentils—; passenger transportation services (terrestrial, aquatic, or aerial) performed in the country, except for taxis and remises on routes shorter than 100 km (exempt); medical

To estimate the VAT contribution made by each household in the ENGHo sample, the process begins by adjusting the relevant rates for each taxable or exempt item from the survey according to the consumption pattern of each household, with the assumption that the tax is fully reflected in the final price.

The VAT includes specific taxes, fuels, and provincial gross income in its tax base, which is included in the consumption amount identified by the survey. Consequently, to calculate the tax amount paid for each levy, it was necessary to determine the amount of consumption without taxes using the effective tax rates.[11] As discussed earlier, we used an estimation of the effective rate, obtained by dividing the total tax revenue by macroeconomic private consumption, a calculation known as "tax productivity." For the general VAT rate in 2016, this equated to an effective rate of approximately 11% in relation to consumption.

Internal Taxes: These excise taxes apply to the domestic sale and imports of a specific set of goods, services, and transactions: alcoholic beverages (20%); beer (8%); non-alcoholic beverages (4%-8%); automobiles, boats, and aircraft (10% on a sliding scale depending on their value), insurance (2.5%), electronic products (17%) and telephony (4%).

In all cases, the tax base includes the tax itself. The tax base is the net price defined as the price after the deduction of discounts, financing interest, and the VAT generated by the operation. In the case of cigarettes, the tax base is the final sale price, excluding the VAT; for insurance, the tax base does not include the tax, which is the only case in domestic sales where the legal or nominal rate is applied to the tax base. In this case the effective rates were also calculated based on the tax "productivity."

Fuel Tax: In 2016, the tax rates for liquid fuels and compressed natural gas ranged from 55.8% to 62%. This tax covers various fuel types including all forms of gasoline, solvents, turpentine, gas oil, diesel oil, and kerosene. With regards to compressed natural gas, the tax is applied to gas distributed through networks for use in vehicles. The tax is imposed at one single stage of distribution, regardless of whether the product is domestically produced or imported. This tax is levied on importers and companies that refine or commercialize liquid fuels. For their part, entities that distribute gas before it enters the network are taxed. In contrast, exports are exempt. When tax-liable entities transact among themselves, a prepayment mechanism can be used to avoid the cumulative effect, adhering to the single-stage principle. Agricultural producers can offset the diesel tax paid on their purchases against their income tax. However, this mechanism does not account for any potential tax credits or overpayments that the producer might accumulate. Additionally, fiscal benefits derived from exporting solvents can be applied to sales within the domestic market.

The tax calculation required two separate analyses. Firstly, the tax rate was applied to the total expenditure on fuels to ascertain the total tax paid. Additionally, given that the tax is

and paramedical healthcare services provided or contracted by cooperatives, mutual entities, and prepaid medicine systems, which are not exempt.

[11] To obtain an estimate (although outdated) of the impact of the VAT contained in inputs for exempt goods, we used a 1997 input-product matrix. It contained data about the amount of VAT included in the inputs of goods exempted up to that date. The proportion of VAT included in exempt goods on total VAT was used to expand the simulated VAT revenue. No information about reduced rates was available.

imposed based on the quantities consumed, we separated the quantity from total fuel expenditure. We then applied the minimum per-liter tax amounts to the liters of fuel consumed and multiplied this by the quantities consumed to arrive at the total tax incurred.[12]

The tax paid, calculated ad valorem cannot be less than what would result from the unit-based tax. Hence, we compared the results from both methods, and generally selected the ad valorem tax, except in cases where the flat-rate tax was higher. This tax was deducted from the total consumption expenditure, and the difference was subjected to the appropriate VAT rate.

Alternatively, while there are no definitive studies in Argentina to determine the proportion of fuel costs that make up the part of transportation costs passed onto consumers—largely due to transportation and fuel subsidies distorting relative values—it was hypothesized that 30% of the tax cost is passed on (Grown and Komatsu, 2010).

Provincial Gross Income: This is a crucial element within the tax system, currently levied by all twenty-four provinces. It is a multi-stage tax; i.e., it is levied at every stage of production and distribution of goods and services. It falls under the category of cascade taxes, which tax gross income without deducting the tax already paid and accrued on purchases.

Because this tax is applied up to the final sale, it tends to disproportionately burden lower-income sectors. It disrupts neutrality, encouraging companies' vertical integration and favoring imports, which are not taxed on inputs. Adopting this form of accumulative, multi-stage tax also imposes considerable restrictions on applying the "destination country" principle since it exempts exports but does not provide a refund at the border for the tax included in the prices up to the previous stage.

Despite tax rates being broadly similar across the country, there is noticeable variability due to the number of activities and jurisdictions. Originally, the rates were tiered from highest to lowest in commerce and services, manufacturing, and the primary sector.

To calculate tax incidence, provincial rates were applied to the consumption data reported in the survey. According to several authors,[13] the effective rates are at least twice the rates imposed on final consumption.[14] The methodology used is the same as for VAT, internal taxes, and fuel taxes. This tax is closely associated with input costs and must be included in the tax base for other taxes. In this study, we used estimated effective rates obtained by calculating the ratio of each province's revenue collection to its respective consumption. We based this on the ratio of consumption to the average GDP, which was extrapolated to each province from their GDPs.

5.3 Direct Transfers (Monetary and In-Kind)

These transfers are considered to be received by their lawful recipients, leading to an increase in market income by the amount of the transfers. While the survey pinpoints some of these transfers, others are simulated according to legal stipulations. It is implied that beneficiaries

[12]Inconsistent tax values greater than expenses (representing less than 5% of total reported expenses) were equated to 50% of consumption expenses (Rossignolo, 2017b).

[13]Rossignolo (2014) presents a calculation of the effective rate for this tax.

[14]Consequently, gross income-to-retail sales rates should be increased by at least 150% to capture the effects at each stage of the production chain in each province.

are those who qualify for each program, suggesting potential over-coverage as the program is presumed to reach all its potential beneficiaries.

Universal Child Allowance

This allowance targets families with children under 18 and/or pregnant women who are either unemployed or engaged in informal economy jobs that pay less than the formal sector's minimum wage. It also targets domestic workers earning less than the minimum wage and social monotributistas. In 2016, the program expanded to include common monotributistas (self-employed workers and employers). The program provided a cash transfer of $966 per child as of March 2016, which increased to $1,103 in September 2016. Each family could receive benefits for up to five children.

The AUH is a national program. Targeting is carried out using a proxy means test. To qualify, children aged between 5 and 18 must regularly attend a formal educational institution recognized by the Ministry of Education. Children aged between 6 and 18 must also have a complete or ongoing vaccination schedule appropriate to their age and complete health check-ups.

The survey does not identify households that receive AUH. Therefore, potential beneficiaries had to be simulated based on legal regulations. To prevent duplicating the aggregated cash transfers reported in the survey, the AUH assigned to each household was subtracted from the aggregated cash transfers. Any remaining amount was added to the transfers received by households under the "other cash transfers" category.

Pension Inclusion Plan (Pension Moratorium and Early Retirement)

The government implemented this policy to extend pension coverage. It targets (1) unemployed older adults who have fulfilled the legally required thirty years of service but are five years shy of the standard retirement age (55 for women/60 for men) (Early Retirement); and (2) individuals of retirement age who lack formal contributions to the system (Pension Moratorium).

Under Early Retirement, the transfer equals 50% of the benefit the individual would have received upon reaching the full retirement age, but it cannot be less than the minimum pension. Under the Pension Moratorium, recipients would receive a net transfer after deducting a certain amount corresponding to the years during which they did not contribute to the pension system.

The surveys do not specify whether households have been incorporated into the program. Thus, the received amount was estimated by considering the contributory pensions reported in the survey that do not exceed the minimum pension. This approach is consistent with that used by Lustig and Pessino (2014) and Rossignolo (2016). It also implies that the potential recipients include those who have received the PUAM or the non-contributory pension for older adults.

Family Allowances

The current AAFF system is fully contributory and primarily targets the children of formal salaried workers in the private sector with a nominal salary less than $36,804 per month. Except for the marriage benefit, all monetary benefits are linked to children under 18 years old, school attendance status, and, if present, any disability. Moreover, the amount of the benefits varies by income brackets and is updated at discretion. This system is funded with an employer's contribution of 7.5% on total remunerations, and while it was initially executed via a compensation system, it is now primarily administered through ANSES.

AAFF are received by private company and National Public Sector workers, unemployment benefit recipients, retirees and/or pensioners, monotributistas, and recipients of the honorary pension for veterans of the South Atlantic War.

Recipients receive benefits according to their income level and the number of beneficiaries they declare. The amounts vary by geographic area, being higher in the southern region. For the payment of these allowances, the "Family Group Income" (IGF - Ingreso del Grupo Familiar), which consists of the sum of all incomes of the family members, is considered.

Since the survey does not identify AAFF recipient households, a procedure similar to the one carried out for AUH was implemented, again netting from the reported transfers the AAFF amount assigned to each household.

Training and Employment Insurance

This integrated, non-contributory unemployment benefits scheme is designed to assist various target groups in their active job search, by enhancing their employment skills and facilitating their integration into quality jobs. The scheme provides a non-remunerative monthly monetary allowance for 24 months ($900 for the first 18 months, which is then reduced over the remaining months). To qualify for these benefits, recipients are required to attend courses aimed at improving their employability.

The survey does not explicitly identify the beneficiaries of this program, so potential beneficiaries had to be simulated according to the characteristics of the program (unemployed heads of households not receiving unemployment insurance with incomplete secondary education, who neither study nor work), assuming annual perception.

Student Scholarships

Up until 2007, the National University Scholarship Program (PNBU - Programa Nacional de Becas Universitarias) was the sole university scholarship program administered by the Ministry of Education, including degree programs and technical courses offered at National Universities and other higher education institutions.

At the end of 2008, following the creation of the National Bicentennial Scholarship Program (PNBB - Programa Nacional de Becas Bicentenario) and the National ICT Scholarship Program (PNBTIC - Programa Nacional de Becas de Grado TIC), programs were differentiated based on disciplinary branches.

The PNBB is aimed at students pursuing scientific and technical careers, including undergraduate degrees (licenciaturas), engineering programs (ingenierías), teacher training programs (profesorados), and technical programs (tecnicaturas). These programs are offered at National Universities, National University Institutes, and Institutes affiliated with the National Institute of Technical Education (INET - Instituto Nacional de Educación Técnica) and the National Institute of Teacher Training (INFD - Instituto Nacional de Formación Docente).

The PNBTIC targets undergraduate students pursuing ICT-related programs. A single open call was made in 2009, and the benefit was subsequently renewed with no new registrations. The PNBU encompasses degree programs that are not included in the PNBB and PNBTIC programs.

The National Scientific and Technical Research Council (CONICET - Consejo Nacional de Investigaciones Científicas y Técnicas), in turn, offers three types of scholarships: PhD scholarships,

designed to support individuals pursuing PhD studies; completion scholarships, intended for applicants who have initiated their PhD with scholarships from other institutions and demonstrate the ability to defend their doctoral thesis during the tenure of this scholarship; and postdoctoral scholarships, aimed at supporting research activities for individuals who have completed their PhD degree. The scholarships include a monthly stipend, workers' compensation coverage, and, where applicable, additional provisions for medical care and family support.

The Ministry of Education, through the Secretariat of Educational Management, offers financial assistance to students in order to ensure the individual and social right to education. Scholarships are available for students at all educational levels, including those participating in programs such as "Presidential Sponsorship" (Padrinazgo Presidencial), "Veteranos de Malvinas," and indigenous communities, among others. These scholarships provide an annual payment. The recipients were identified through the EPH survey.

Jóvenes con Más y Mejor Trabajo

This program is targeted at young individuals aged 18 to 24 who live in the country, have not completed their primary or secondary education, and are unemployed. Upon turning 25, beneficiaries exit the program.

The program is part of the Más y Mejor Trabajo Employment Plan, which aims to promote active job creation policies and transform welfare programs into initiatives that foster social and productive integration for the unemployed population. The program offers various benefits organized under a "Local Scheme of Support for Training and Job Placement." Monetary transfers from this program cannot be received concurrently with AUH or SCE.

The amount provided is $450 per month for a duration of 2 to 18 months. Beneficiaries can also receive additional transfers of $4,000 per project upon submission. Potential beneficiaries were simulated based on the program's regulations.

Unemployment Insurance

The unemployment insurance, which is a contributory program, is available to registered salaried workers who have been legally terminated without just cause and have made the minimum required contributions to the National Employment Fund. It provides monthly payments, AAFF, and medical coverage during periods of temporary unemployment. The maximum duration of the benefit is 36 months.

The transfer amount varies between $1,875 and $3,000, calculated as a percentage of the highest previous salary. Beneficiaries were identified through the EPH survey.

Contributory Retirement and Pensions

Since 2008, Argentina has implemented an Integrated Pension System (SIPA - Sistema Integrado Previsional Argentino). This public, solidarity-based, and comprehensive pension system is financed primarily through contributions from active workers. All employed individuals contribute 11% of their monthly earnings, which will eventually enable them to receive their pension benefits.

To receive old-age retirement benefits, the eligibility criteria are primarily age-related: men must be 65 years old and have contributed for at least 30 years of work (as an employee or self-employed worker); and women must be between 60 and 65 years old and have contributed

for at least 30 years of work. There is an option to retire at the age of 60, but with a pension equivalent to a percentage of the total benefit, gradually increasing each year until it reaches 100% at the age of 65. If a person surpasses the required age at the time of retirement, they can compensate for each year of service by two years of excess age.

The pension system includes a mobility mechanism that adjusts pension amounts twice a year (March and September) based on social security contributions and the minimum wage. In March 2016, the minimum pension amount was $4,958.57, which was increased to $5,661 in September 2016. The beneficiaries were identified through the survey, excluding those who benefited from the Pension Moratorium.

School and Community Dining Programs

An estimate of non-monetary transfers related to the provision of meals in school and community dining facilities, as well as support programs for household vegetable gardens for self-consumption, has been included. These programs provide funding to schools or organizations that offer meals to children or unemployed individuals.

The value of the transfer is based on the cost of providing a cup of milk or a basic food basket to individuals living below the poverty line. To calculate the amounts, we utilized data from ENGHo 2012-2013, which includes information on attendees at school and community dining facilities, as well as self-consumption from household vegetable gardens. Per capita amounts were determined by considering the national per capita expenditure on food programs, in addition to estimates of expenditure by provinces and municipalities as a proportion of total public spending on Social Promotion and Assistance (Rossignolo et al., 2013). The estimated amounts were then allocated based on market income deciles.

5.4 Economic Subsidies

Economic subsidies are targeted towards sectors such as transportation, communications, energy, and fuels. The most significant subsidies are concentrated in the transportation, energy, and fuels sectors, although the current administration has focused on reducing and targeting them. Transportation subsidies primarily focus on supply, while energy and fuel subsidies target both supply and demand. Energy subsidies include gas and electricity, while transportation subsidies support the income and cost gap in train and subway fares, air travel, and passenger road transportation.

After being a net oil exporter in the 1990s and early 2000s, Argentina has become a net oil importer. The price of imported fuel is subsidized through a trust fund, and consumers receive the difference between the international fuel price and the value set in the local market.

In this study, direct fuel subsidies were estimated by multiplying the reported quantities of diesel consumption from the survey by the difference between the local and international prices. Indirect subsidies were calculated by weighting the subsidies for diesel and electricity based on their respective shares in the energy balance and their utilization by other economic sectors, considering the intermediate demand from the 1997 input-output matrix.

Regarding natural gas, there are two types of subsidies: for those receiving piped gas, the subsidy is included in the reduced cost of imported gas, which is reflected in the tariff. The

total amount spent by households depends on the variation in consumption compared to the previous period, which also applies to electricity. For their part, those purchasing bottled gas pay a subsidized price where the government compensates producers for the difference between the market price and the subsidized amount. For electricity, a trust fund was created to subsidize tariffs for households.

In 2016, the government decided to gradually reduce these subsidies, which exhibited significant regional disparities in their design, with the majority concentrated in the Greater Buenos Aires Metropolitan Area. For example, in 2015, 46% of total energy subsidies and 60% of transportation subsidies were concentrated in this geographic region (Castro and Barafani, 2015)). This resulted in substantial differences in the costs of services for residents across different geographic areas. As mentioned, the government has reduced subsidies for lower consumption categories and aimed to focus their allocation on beneficiaries of the "social tariff."

The methodology employed for subsidies involved allocating the current budget expenditure on electricity and gas subsidies[15] to the respective users. A weighting factor was devised to determine the proportion of electricity and gas subsidy received by each household in relation to the total subsidized consumption. This methodology is explained in detail in the Appendix. For transportation, the subsidy per user was calculated and distributed based on their respective consumption quantities.

5.5 Education and Healthcare

The Education Financing Law, enacted in 2006, extended compulsory education until the completion of secondary school. Data shows that although school attendance increased after the extension of compulsory education, students continue to drop out at the same ages as before the law was passed (Rossignolo et al., 2013).

At each level, there are two educational systems: a public and free system and a private system subsidized by the state. Municipalities are responsible for primary education, provinces manage secondary education, and the nation administers university education (with some exceptions at all levels). Public education accounted for approximately 73% of total students in 2015, with around 28% enrolled in public primary schools. Public universities enrolled about 79% of university students in 2015.

The distributive impact in education covers expenditures on basic education (including early childhood, primary, and secondary) and higher education (university and tertiary). The average expenditure per province, student, and educational level was allocated to attendees at each educational level.

Argentina's healthcare system is fragmented into different sectors as different population groups can access different providers. One component of the health insurance system provides coverage for formal salaried workers or formal retirees and pensioners. The uncovered population can access the public health system, while high-income individuals have access to the private system.

[15] In the rate tables corresponding to each province's providers, the subsidy included in the variable cost of the rates is not separately recorded.

For formal workers, health coverage benefits are provided through union healthcare systems (sistemas de salud sindicales), both in the private and public sectors, at the national and provincial levels. These beneficiaries represent the majority of the population. Pensioners have access to coverage provided by the National Institute of Social Services for Retirees and Pensioners (INSSJP - Instituto Nacional de Servicios Sociales para Jubilados y Pensionados, also known as PAMI), a subsystem that finances private providers. The public system provides coverage for individuals who do not have health insurance through hospitals.

It is important to note that the population covered by the private system also receives benefits from the public system. Public healthcare spending exceeded 7% of GDP in 2015, with 3% of that expenditure corresponding to health insurance systems. Low-complexity hospitals were decentralized to provinces and municipalities in the 1990s, while high-complexity hospitals remain under the jurisdiction of the nation.

Given that neither ENGHo nor EPH provide information on households' healthcare utilization, it was necessary to turn to the Annual Household Survey of the City of Buenos Aires. This survey contains the required information, specifically the most updated version that includes detailed disaggregated data.[16] Additionally, we utilized data on the valuation of equivalent consultations provided by the Ministry of Health. To estimate healthcare subsidies, net market income deciles were simulated, and coefficients were generated for each income bracket. These coefficients were then applied to the income brackets of the base surveys, and the respective total healthcare expenditure was expanded to approximate the allocation by income bracket.

6. Inequality and Poverty

This section presents selected findings from the analysis of the impact of direct and indirect taxes, monetary transfers, and economic subsidies on poverty and inequality in Argentina. The calculation of the effects of different public sector interventions is based on considering market income as the gross remuneration of production factors, which serves as the base income on which these policies operate.

In this context, given the quantitative importance of contributory pensions in the region, particularly for individuals with lower incomes, pensions are alternatively considered as part of market income. Deductions from direct taxes and social security contributions lead to net market income, and the addition of direct monetary transfers results in disposable income. By subtracting indirect taxes and adding economic subsidies, consumable income is obtained. The last step is reaching final income by including the valuation of education and health expenditures.[17] The welfare indicator used is the per capita family income.

[16] In this case, the 2012 version was used since the subsequent surveys did not have the necessary disaggregation (for example, dental consultations, among others). The survey's income by source information was updated to account for the gap with the income by source information in the EAH 2016 to calculate income deciles.

[17] It should be noted that as the average incomes calculated from the EPH are lower than those of the ENGHo, when applying the budgetary expenditure data for education and health weighted by disposable income, they proportionally represent a larger improvement in the EPH than in the ENGHo. This can be seen in the poverty analysis results.

The findings in this section are presented in the following manner. First, we will present the values of inequality and poverty indicators for various fiscal interventions, allowing an examination of how these indicators vary with fiscal policy and whether fiscal interventions effectively reduce or increase inequality and poverty.

Second, we will present the results of the analysis on the impact of taxes and public expenditures on market income inequality. The analysis by market income decile will allow us to evaluate, firstly, how fiscal interventions alter the share of each income bracket, and secondly, how income concentration is shaped after fiscal measures are taken.

The incidence tables present the effect of the considered taxes and expenditures. For each decile, starting from market income, the tables display the income reductions due to taxes and the income increases resulting from the expenditures targeting each income bracket. The effects are presented as percentage changes by income bracket, relative to market income. Negative values indicate decreases in market income due to taxes, while positive values demonstrate the growth in the relative share of income brackets resulting from the impact of the expenditures considered. This section on progressivity also enables an evaluation (pro-poorness and progressivity) of the concentration of the public expenditures considered.

Third, it is noteworthy that the sections assessing the impact of fiscal policy on poverty classify population groups into income brackets based on international poverty lines using market income. Taxes and public expenditures, collectively, should result in increased/decreased population share in higher/lower income brackets if they effectively reduce the proportion of people in poverty.

6.1 Impact on Inequality and Poverty

Table 4 and 5 present the evolution of the Gini index, headcount ratio, and poverty gap using the international poverty line of US$2.50 PPP, US$4 PPP, and US$10 PPP per day (2011 international lines), as well as national poverty measures[18] and alternative scenarios for the baseline and sensitivity analysis. Figure 1 and Figure 2 depict the Gini inequality indices and variations in the headcount ratio for international and national poverty lines.[19]

The aforementioned tables show that the Gini index for market income is higher than that for net market income, indicating that direct taxes reduce inequality. In terms of poverty, the effect is inverse; i.e., a reduction in income due to direct taxation causes a larger number of households to fall below the poverty line.

When direct transfers (monetary and in-kind) are included to calculate disposable income, the reduction in inequality and poverty becomes evident. The Gini index for disposable income decreases by approximately 14% and 20% for the baseline and sensitivity scenarios, respectively. The headcount ratio significantly decreases when considering monetary and in-kind transfers for

[18] In Argentina, there are two official estimates of monetary poverty: the indigence line (extreme poverty), which considers the cost of a basic food basket, and the poverty line proper, which adds non-food expenses to the former (INDEC, 2016).

[19] The Annex presents the statistical significance of changes in inequality and poverty, as well as inequality indicators that serve as alternatives to the Gini index, such as the Theil index and the income ratio (decile 10/decile 1).

international poverty lines, as well as the poverty gap and severity indicators.[20]

The addition of indirect taxes and economic subsidies reduces inequality (it should be noted that the impact on inequality is mitigated as, according to the methodology employed, the impact of indirect taxes is weighted by disposable income).[21] However, this is offset by the pro-rich nature of economic subsidies, primarily in terms of electricity and gas tariffs.

The decline in inequality is particularly pronounced when the valuation of education and health expenditures is added to calculate the final income. The decrease in the Gini index for market income is 32% and 39%, respectively.

However, the impact on poverty shows that the headcount ratio indicator increases when considering international poverty measurements, mainly due to the fact that although subsidies are progressive in relative terms (i.e., pro-rich), households with lower incomes bear a larger proportion of indirect taxes. This can be observed in more detail in the distribution tables of taxes and subsidies by poverty bracket and income distribution.

Considering national poverty lines, two similar behaviors can be observed whether pensions are weighted as part of market income or evaluated as transfers. In the case where pensions are considered as income from production factors, moderate poverty initially increases due to the impact of direct taxes but decreases significantly when considering the impact of transfers and rises when considering the impact of indirect taxes and subsidies.

Additionally, extreme poverty increases with direct taxes and decreases with monetary transfers. However, unlike moderate poverty, it remains approximately constant when considering indirect taxes net of subsidies. This distinction is important, as it implies that moderate poverty increases when considering indirect taxes. The valuation of education and health expenditures decreases the proportion of people below the poverty line.

[20] The poverty gap shows the distance between household income and the poverty line defined for each household, while the severity of poverty elevates the previous indicator squared.

[21] See Lustig and Higgins (2013)), Lustig (2016).

Table 4

Gini, Headcount Index, and Poverty Gap for Different Income Concepts Baseline Scenario (pensions as part of market income)

	Market income	Net market income	Disposable income	Consumable income	Final income
Gini Baseline Scenario	0.475	0.457	0.406	0.394	0.320
Headcount Index					
Baseline Scenario $2.5 PPP	6.2%	6.3%	0.9%	0.9%	
Baseline Scenario $4 PPP	9.8%	10.7%	3.3%	3.3%	
Baseline Scenario $10 PPP	27.9%	31.5%	22.6%	25.8%	
Extreme Poverty Line Baseline (INDEC)	14.0%	14.8%	6.1%	6.0%	
Moderate Poverty Line Baseline (INDEC)	36.9%	42.1%	35.1%	39.0%	
Other Extreme Poverty Line Baseline (FIEL)	13.0%	13.9%	5.6%	5.5%	
Other Moderate Poverty Line Baseline (FIEL)	32.7%	37.9%	29.6%	33.7%	
Poverty Gap					
Baseline Scenario $2.5 PPP	3.6%	3.8%	0.3%	0.3%	
Baseline Scenario $4 PPP	5.3%	5.5%	1.0%	1.0%	
Baseline Scenario $10 PPP	13.4%	14.6%	7.5%	8.1%	
Extreme Poverty Line Baseline (INDEC)	7.0%	7.4%	2.0%	1.9%	
Moderate Poverty Line Baseline (INDEC)	17.8%	19.8%	12.5%	13.7%	
Other Extreme Poverty Line Baseline (FIEL)	6.7%	7.1%	1.8%	1.8%	
Other Moderate Poverty Line Baseline (FIEL)	15.9%	17.5%	10.2%	11.2%	
Severity of Poverty					
Baseline Scenario $2.5 PPP	3.0%	3.1%	0.2%	0.2%	
Baseline Scenario $4 PPP	3.9%	4.0%	0.5%	3.9%	
Baseline Scenario $10 PPP	8.8%	9.4%	3.6%	3.7%	
Extreme Poverty Line Baseline (INDEC)	5.0%	5.2%	0.9%	0.9%	
Moderate Poverty Line Baseline (INDEC)	11.6%	12.7%	6.2%	6.7%	
Other Extreme Poverty Line Baseline (FIEL)	4.8%	5.0%	0.9%	0.8%	
Other Moderate Poverty Line Baseline (FIEL)	10.4%	11.3%	5.0%	5.3%	

Note: Author's own calculations based on EPH and ENGHo.

Table 5

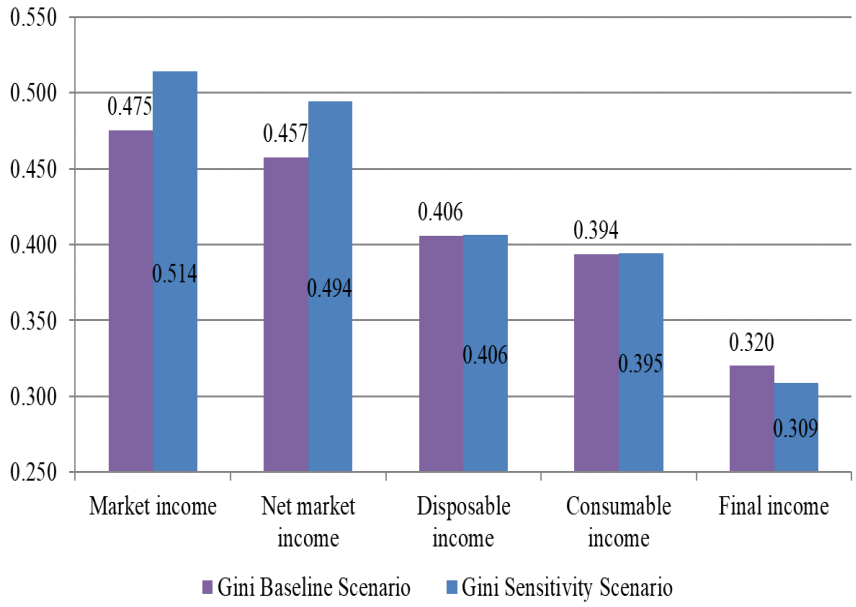
Gini, Headcount Index, and Poverty Gap for Different Income Concepts Sensitivity Scenario (pensions as part of market income)

	Market income	Net market income	Disposable income	Consumable income	Final income
Gini Baseline Scenario	0.514	0.494	0.406	0.395	0.309
Headcount Index					
Sensitivity Scenario $2.5 PPP	12.0%	12.2%	1.1%	1.0%	
Sensitivity Scenario $4 PPP	15.9%	16.7%	3.5%	3.5%	
Sensitivity Scenario $10 PPP	34.7%	39.3%	22.5%	25.9%	
Extreme Poverty Line Sensitivity (INDEC)	20.5%	21.7%	6.2%	6.2%	
Moderate Poverty Line Sensitivity (INDEC)	43.9%	49.8%	35.1%	39.0%	
Other Extreme Poverty Line Sensitivity (FIEL)	19.4%	20.7%	5.9%	5.8%	
Other Moderate Poverty Line Sensitivity (FIEL)	40.1%	45.4%	29.6%	33.8%	
Poverty Gap					
Sensitivity Scenario $2.5 PPP	8.6%	8.8%	0.4%	0.4%	
Sensitivity Scenario $4 PPP	10.6%	10.9%	1.2%	1.1%	
Sensitivity Scenario $10 PPP	19.5%	21.0%	7.6%	8.2%	
Extreme Poverty Line Sensitivity (INDEC)	12.6%	13.1%	2.1%	2.1%	
Moderate Poverty Line Sensitivity (INDEC)	24.1%	26.5%	12.6%	13.8%	
Other Extreme Poverty Line Sensitivity (FIEL)	12.3%	12.7%	2.0%	1.9%	
Other Moderate Poverty Line Sensitivity (FIEL)	22.1%	24.2%	10.4%	11.4%	
Severity of Poverty					
Sensitivity Scenario $2.5 PPP	7.6%	7.8%	0.2%	0.2%	
Sensitivity Scenario $4 PPP	8.9%	9.1%	0.5%	0.5%	
Sensitivity Scenario $10 PPP	14.5%	15.3%	3.7%	3.8%	
Extreme Poverty Line Sensitivity (INDEC)	10.2%	10.4%	1.0%	1.0%	
Moderate Poverty Line Sensitivity (INDEC)	17.5%	18.8%	6.3%	6.8%	
Other Extreme Poverty Line Sensitivity (FIEL)	10.0%	10.2%	1.0%	0.9%	
Other Moderate Poverty Line Sensitivity (FIEL)	16.2%	17.3%	5.2%	5.4%	

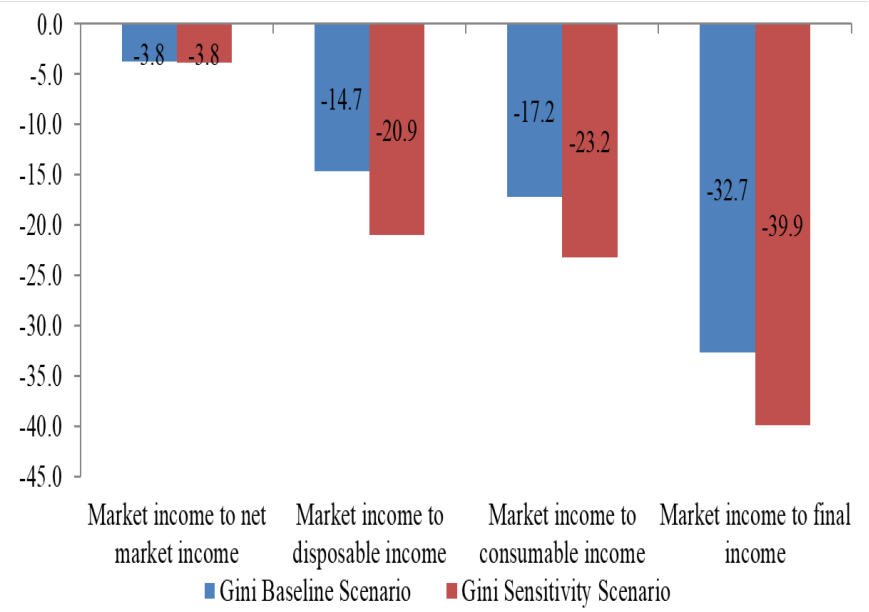
Note: Author's own calculations based on EPH and ENGHo.

Figure 1. Inequality Evolution Across Different Income Concepts

(a) Gini Coefficient



(b) Percent Change in the Gini Coefficient



Source: Author's own calculations based on EPH and ENGHo.

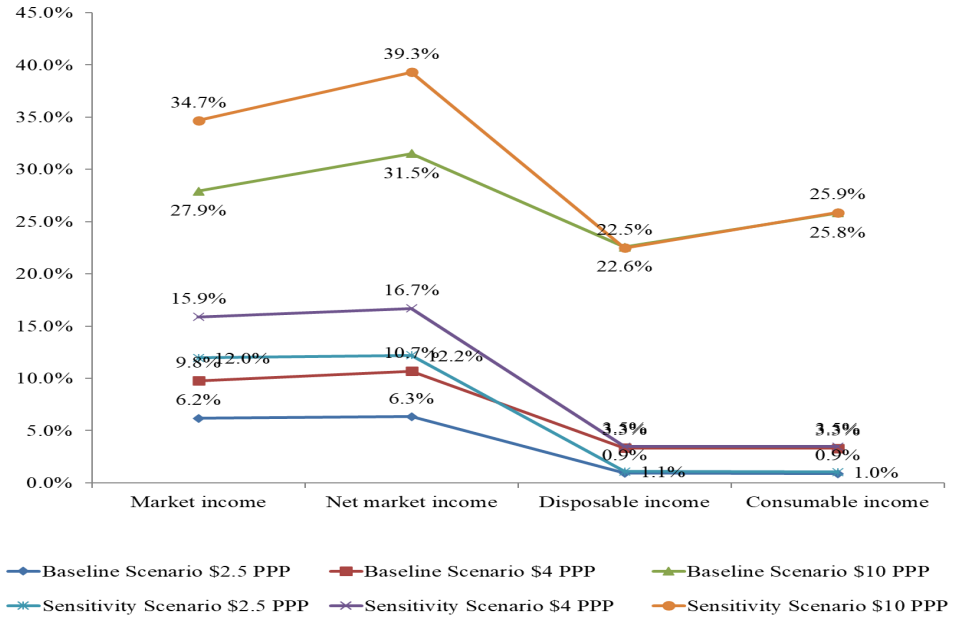
6.2 Incidence Analysis

The incidence analysis was performed by calculating the ratio of benefits and taxes to market income, considering deciles of market income. The effect of direct taxes and transfers results in a reduction in inequality, with the highest income decile bearing the highest burden of direct

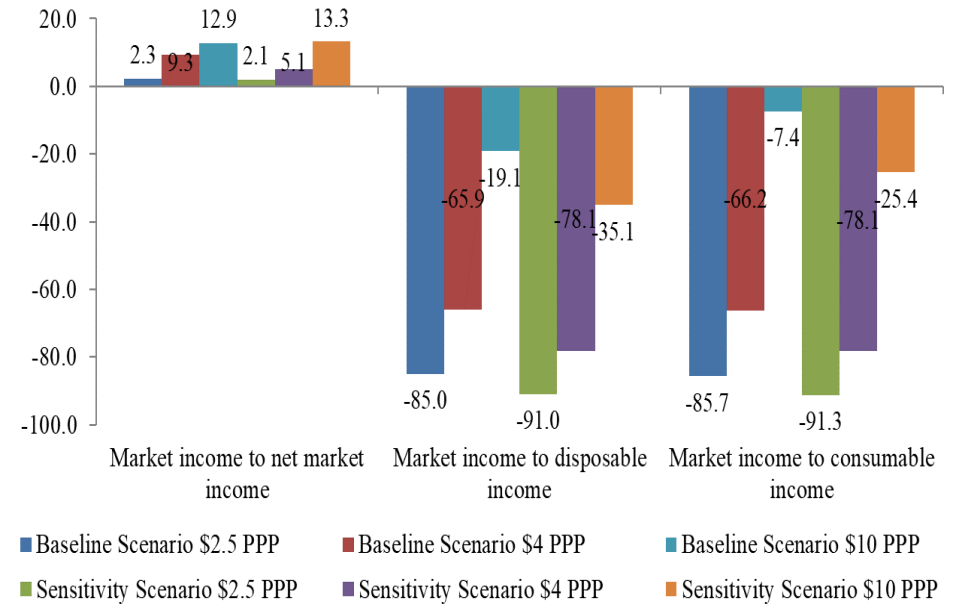
Figure 2. Poverty Evolution Across Different Income Concepts

International Poverty Lines

(a) Headcount Index



(b) Percent Change in the Headcount Index

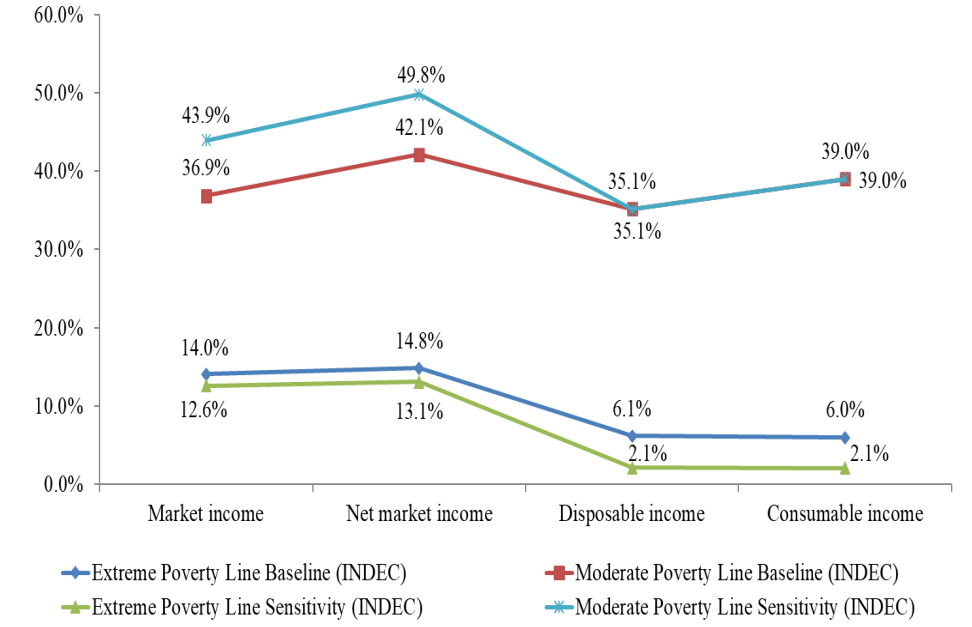


taxes. Conversely, in the case of direct transfers (monetary and in-kind), the effect is inverse, as the lowest income decile receives the highest proportion of transfers.

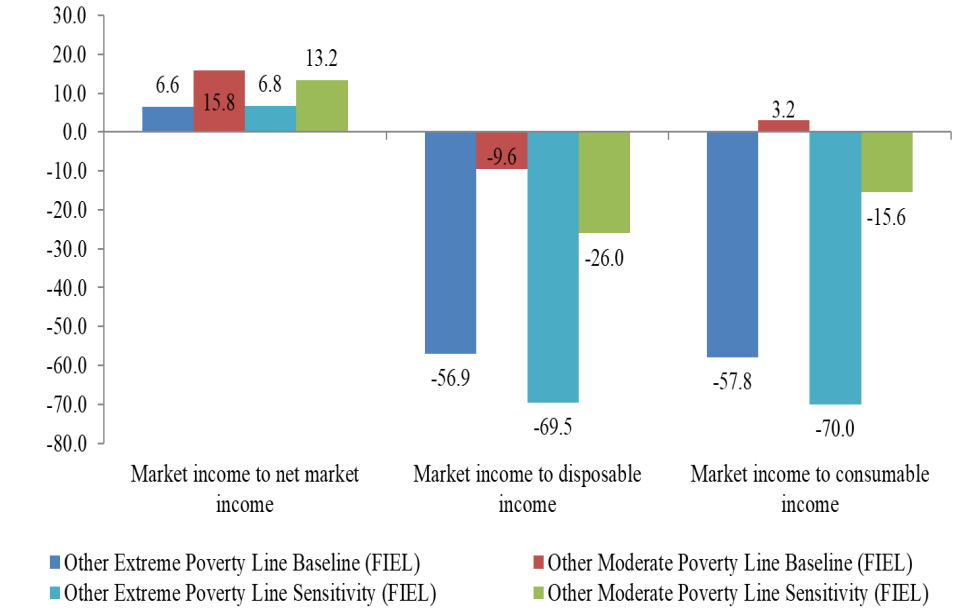
As expected, when pensions are considered as transfers, the impact is particularly significant for the lowest income deciles, and the effect is notably higher than in the baseline case. It is important to note that once monetary transfers and pensions are deducted from the income

National Poverty Lines

(c) Headcount Index



(d) Percent Change in the Headcount Index



Source: Author's own calculations based on EPH and ENGHo.

reported in the survey to reflect market income, individuals in the first decile do not concentrate income when using the EPH as the basis for calculations, consequently making it impossible to calculate the corresponding ratios for market income.

Regarding the introduction of indirect taxes and subsidies, a significant increase in the share of income within the first bracket can be observed, particularly in the sensitivity scenario. This is evident when both concepts, along with pensions considered as transfers, are included, and

when considering consumable income. The effect is less pronounced in the baseline case.

When the impact of education and health expenditures is added, the share of all income brackets increases compared to the initial market income, particularly for lower incomes. Final income increases significantly relative to market income, as this is not a balanced budget exercise, especially when pensions are considered as transfers.[22]

[22]If all the expenses analyzed in this work are considered with their budgetary values, they exceed the revenue discussed in the analysis by around 6.5% of GDP. However, if social security spending is excluded, the revenue would exceed budgetary expenditure by approximately 5% of GDP.

Table 6

Incidence of Taxes, Transfers, and Economic Subsidies on Income Distribution in Percentages Baseline Scenario

Deciles	Total Direct Taxes	Net Market Income	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Spending	Health Spending	Final Income
1	-3.6%	96.4%	336.6%	433.0%	42.3%	-62.2%	413.1%	98.4%	201.5%	712.9%
2	-5.9%	94.1%	36.8%	130.9%	11.1%	-19.1%	122.9%	30.7%	35.0%	188.6%
3	-8.8%	91.2%	20.1%	111.3%	7.9%	-16.2%	103.0%	17.3%	13.6%	133.9%
4	-11.6%	88.4%	13.6%	102.0%	6.1%	-14.5%	93.6%	12.0%	10.8%	116.4%
5	-12.4%	87.6%	7.8%	95.4%	5.3%	-13.6%	87.1%	8.5%	8.0%	103.6%
6	-12.9%	87.1%	5.1%	92.2%	4.5%	-13.1%	83.7%	6.1%	13.2%	102.9%
7	-12.9%	87.1%	3.2%	90.3%	3.6%	-13.0%	81.0%	4.8%	5.9%	91.7%
8	-14.8%	85.2%	2.0%	87.2%	2.9%	-12.4%	77.7%	3.0%	5.6%	86.4%
9	-15.9%	84.1%	1.2%	85.4%	2.4%	-12.0%	75.8%	1.9%	4.3%	82.1%
10	-20.3%	79.7%	0.5%	80.2%	1.8%	-10.9%	71.1%	0.9%	1.5%	73.5%
Total	-15.7%	84.3%	6.0%	90.4%	3.6%	-12.7%	81.2%	5.0%	7.1%	93.4%

Notes: Author's own calculations based on EPH and ENGHo.

Table 7

Incidence of Taxes, Transfers, and Economic Subsidies on Income Distribution in Percentages Sensitivity Scenario

Deciles	Total Direct Taxes	Net Market Income	Pension Contributions	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Spending	Health Spending	Final Income
1											
2	-4.4%	95.6%	168.8%	281.4%	377.0%	31.0%	-54.3%	353.6%	78.0%	116.9%	548.5%
3	-7.1%	92.9%	35.6%	68.9%	161.9%	12.4%	-23.8%	150.5%	28.0%	49.6%	228.1%
4	-10.6%	89.4%	27.4%	45.8%	135.3%	8.2%	-19.6%	123.9%	16.0%	20.4%	160.4%
5	-13.7%	86.3%	14.8%	26.0%	112.3%	6.2%	-16.3%	102.3%	12.5%	14.1%	129.0%
6	-15.4%	84.6%	9.9%	16.5%	101.0%	5.1%	-14.3%	91.9%	8.5%	11.3%	111.7%
7	-15.4%	84.6%	8.6%	12.6%	97.2%	4.4%	-13.8%	87.8%	6.6%	6.5%	100.9%
8	-16.5%	83.5%	6.6%	9.0%	92.5%	3.3%	-13.1%	82.8%	4.1%	3.9%	90.7%
9	-19.0%	81.0%	5.2%	6.4%	87.5%	2.6%	-12.3%	77.8%	2.5%	2.3%	82.6%
10	-22.5%	77.5%	2.2%	2.7%	80.2%	1.8%	-10.9%	71.1%	1.1%	0.9%	73.2%
Total	-18.2%	81.8%	17.0%	24.1%	105.9%	4.2%	-14.9%	95.2%	5.9%	8.4%	109.5%

Notes: Author's own calculations based on EPH and ENGHo. Note: In this case, total transfers include contributory pensions, although they are reported separately.

6.3 Progressivity

Table 8 shows the income distribution by deciles for the baseline case, while Table 9 displays it for the sensitivity analysis. For example, in the baseline case, the first two deciles account for 2.8% of market income, whereas when pensions are considered as transfers, they represent 1.0% of market income. After public intervention (i.e., considering disposable income), the first quintile comprises 6.0% and 13.1% of disposable income, respectively, highlighting the significant impact when pensions are treated as transfers. Annex Table A.1 and A.2 show the detailed results of the progressivity analysis for each tax and monetary transfer.

With the inclusion of indirect taxes and economic subsidies, the first quintile accounts for 6.3% of total income in the former case, while in the sensitivity analysis, it represents 13.2% of total income.

The inclusion of education and health expenditures increases the percentage of income concentrated in the lower brackets. In the baseline case, the bottom 20% accounts for 8.9% of final income, while in the sensitivity analysis, the poorest quintile represents 14.8% of final income.

The top decile concentrates 33.1% of market income in the baseline case, and 36.4% in the sensitivity analysis. Direct taxes and monetary transfers reduce their share to 29.4% and 27.5% of disposable income, respectively. Indirect taxes and economic subsidies decrease the share of the wealthiest decile to 29% and 27.2%, while the inclusion of education and health expenditures further reduces these percentages to 26.1% and 24.3%, respectively.

Figure 3 presents social public expenditures by expenditure category, total public expenditure, and economic subsidies, ranked by their degree of progressivity calculated in this case based on ENGHo data. The concentration coefficient of social expenditures shows absolute progressivity (a pro-poor characteristic when the coefficient is negative).

Monetary transfers, public education expenditures, and healthcare expenditures are progressive in absolute terms. Expenditures on tertiary and university education are pro-rich because they benefit more affluent households in absolute terms than those with lower incomes. Expenditures on economic subsidies exhibit a pro-rich behavior, meaning they are concentrated to a greater extent in higher income brackets in absolute terms. Targeting economic subsidies for electricity and gas tariffs to AUH and minimum pension recipients, along with implementing a consumption cap in the lowest category, seek to mitigate the pro-rich nature of these subsidies.

Consistent with the concentration coefficients, Figure 4 presents concentration curves for economic service expenditures compared to the income concentration curve. It can be observed that expenditures on bottled gas are pro-poor, while the majority of economic subsidies are progressive in relative terms (pro-rich). Expenditures on airfare are regressive.

Table 10 presents the percentage of taxes calculated as a proportion of the average market income by decile for the baseline and sensitivity scenarios. In both cases, direct taxes increase as a percentage of market income as income rises, while indirect taxes decrease, with a more pronounced decline in the sensitivity scenario. This is due to the fact that, when pensions are deducted from market income, the lowest income decile pays taxes in a significantly higher proportion relative to their market income.

Table 8

Income Distribution, Taxes, Transfers, and Economic Subsidies by Income Decile Baseline Scenario

Deciles	Market Income - Includes Pension Contributions	Total Direct Taxes	Net Market Income	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Spending	Health Spending	Final Income
1	0.6%	0.1%	0.7%	32.7%	2.8%	7.0%	2.9%	3.0%	11.5%	16.5%	4.5%
2	2.2%	0.8%	2.4%	13.3%	3.2%	6.8%	3.3%	3.3%	13.4%	10.7%	4.4%
3	3.5%	2.0%	3.8%	11.8%	4.4%	7.9%	4.5%	4.5%	12.2%	6.7%	5.1%
4	4.9%	3.6%	5.1%	11.1%	5.5%	8.4%	5.6%	5.6%	11.8%	7.4%	6.1%
5	6.4%	5.1%	6.6%	8.3%	6.8%	9.6%	6.9%	6.9%	10.8%	7.1%	7.1%
6	8.1%	6.6%	8.4%	6.8%	8.3%	10.3%	8.4%	8.3%	9.8%	14.9%	8.9%
7	10.2%	8.4%	10.5%	5.4%	10.2%	10.4%	10.4%	10.2%	9.8%	8.4%	10.0%
8	13.1%	12.4%	13.3%	4.3%	12.7%	10.7%	12.8%	12.6%	7.9%	10.4%	12.1%
9	17.8%	18.1%	17.8%	3.7%	16.9%	12.2%	16.9%	16.7%	6.9%	10.8%	15.7%
10	33.1%	42.9%	31.3%	2.7%	29.4%	16.7%	28.4%	29.0%	5.9%	7.0%	26.1%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Author's own calculations based on EPH and ENGHo.

Table 9

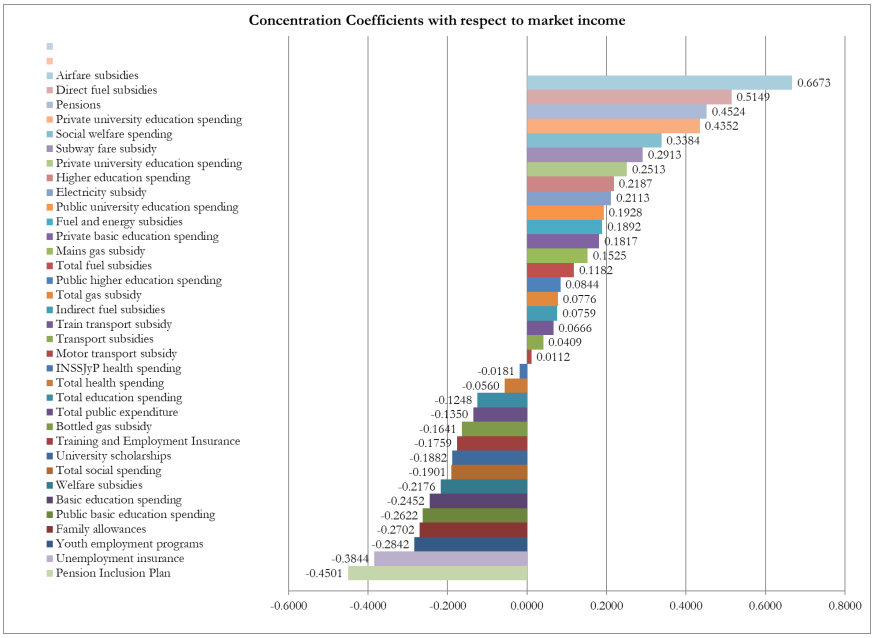
Income Distribution, Taxes, Transfers, and Economic Subsidies by Income Decile Sensitivity Scenario

Deciles	Market Income - Excludes Pension Contributions	Total Direct Taxes	Net Market Income	Pension Contributions	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Spending	Health Spending	Final Income
1	0.0%	0.0%	0.0%	47.8%	42.1%	9.6%	9.6%	9.7%	9.6%	3.7%	17.1%	9.8%
2	1.0%	0.2%	1.2%	9.9%	11.6%	3.5%	7.4%	3.6%	3.7%	13.2%	13.9%	5.0%
3	2.6%	1.0%	3.0%	5.5%	7.5%	4.0%	7.8%	4.2%	4.2%	12.6%	15.6%	5.5%
4	4.2%	2.4%	4.5%	6.7%	7.9%	5.3%	8.2%	5.5%	5.4%	11.4%	10.1%	6.1%
5	5.8%	4.3%	6.1%	5.0%	6.2%	6.1%	8.6%	6.3%	6.2%	12.3%	9.7%	6.8%
6	7.7%	6.5%	8.0%	4.5%	5.3%	7.3%	9.5%	7.4%	7.4%	11.1%	10.4%	7.9%
7	10.1%	8.6%	10.5%	5.1%	5.3%	9.3%	10.6%	9.4%	9.3%	11.4%	7.8%	9.3%
8	13.5%	12.2%	13.7%	5.2%	5.0%	11.8%	10.8%	11.9%	11.7%	9.4%	6.2%	11.2%
9	18.8%	19.6%	18.6%	5.8%	5.0%	15.5%	11.6%	15.5%	15.4%	8.1%	5.1%	14.2%
10	36.4%	45.1%	34.4%	4.6%	4.1%	27.5%	16.0%	26.6%	27.2%	6.9%	4.0%	24.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

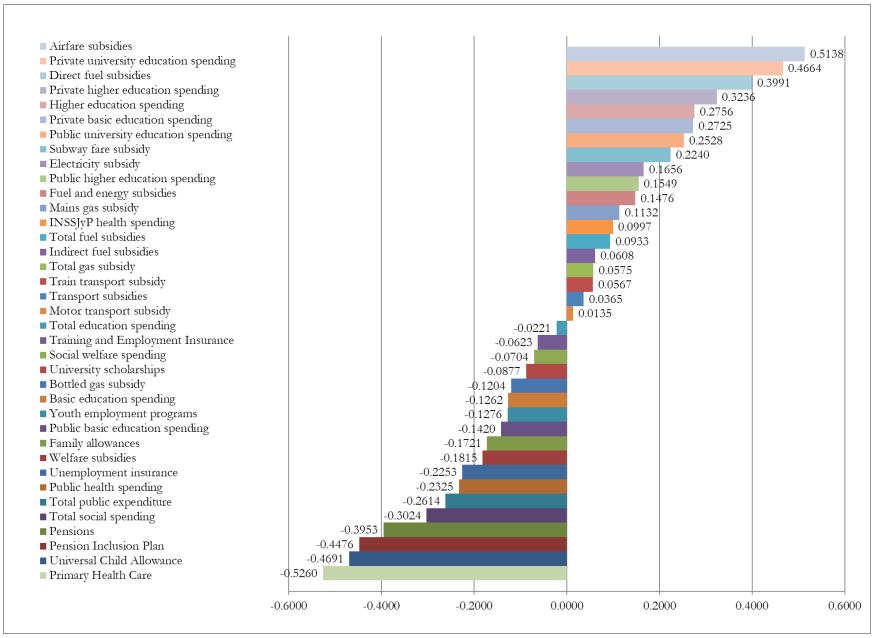
Notes: Author's own calculations based on EPH and ENGHo.

Figure 3. Concentration Coefficients by Expenditure Category Relative to Market Income

(a) Baseline Scenario



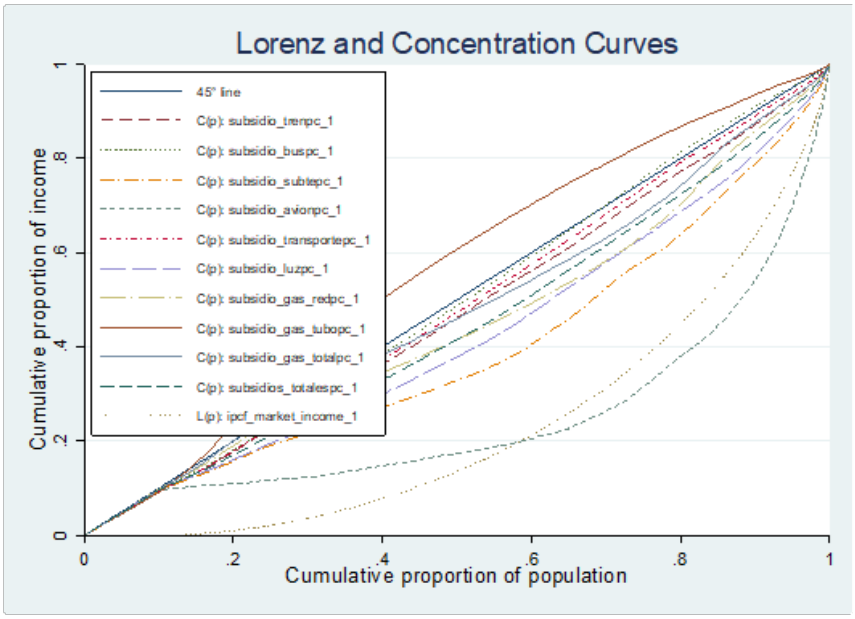
(b) Sensitivity Scenario



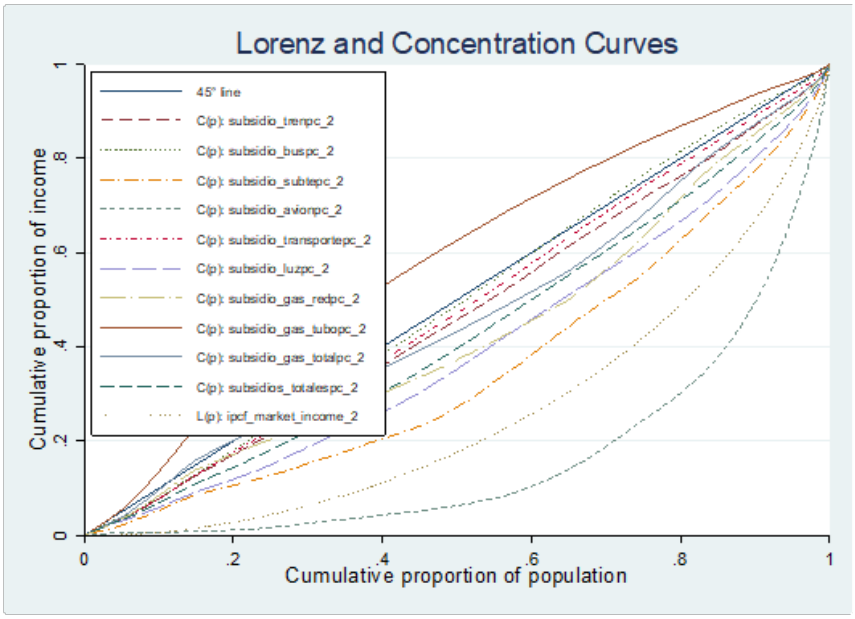
Source: Author's own calculations based on EPH and ENGHo.

Figure 4. Economic Subsidies Concentration Curves

(a) Baseline Scenario



(b) Sensitivity Scenario



Source: Author's own calculations based on EPH and ENGHo.

Table 10

Taxes as a Percentage of Market Income

Deciles	Total Direct Taxes Baseline	Total Indirect Taxes Baseline	Direct and Indirect Taxes Baseline	Total Direct Taxes Sensitivity Scenario	Total Indirect Taxes Sensitivity Scenario	Direct and Indirect Taxes Sensitivity Scenario
1	3.58	62.22	65.81%	-	-	-
2	5.88	19.07	24.95%	4.44	54.35	58.78
3	8.76	16.21	24.97%	7.06	23.76	30.82
4	11.55	14.54	26.09%	10.56	19.56	30.12
5	12.42	13.60	26.01%	13.71	16.25	29.96
6	12.85	13.10	25.95%	15.41	14.32	29.72
7	12.86	12.96	25.82%	15.39	13.79	29.18
8	14.79	12.38	27.17%	16.47	13.11	29.58
9	15.85	11.99	27.85%	18.97	12.28	31.25
10	20.27	10.89	31.16%	22.51	10.87	33.39
Total poopulation	15.66	12.69	28.35%	18.17	14.88	33.06

Notes: Author's own calculations based on EPH and ENGHo.

Table 11

Taxes as a Percentage of Different Income Concepts

Deciles	Direct Taxes (Baseline)/ Net Market Income	Indirect Taxes (Baseline)/ Net Disposable Income	Total Taxes (Baseline)/ Net Consumable Income	Direct Taxes (Sensitivity)/ Net Market Income	Indirect Taxes (Sensitivity)/ Net Disposable Income	Total Taxes (Sensitivity)/ Net Consumable Income
1	3.58	14.37	15.93%	-	14.23	15.86
2	5.88	14.57	20.30%	4.44	14.42	16.62
3	8.76	14.56	24.23%	7.06	14.68	20.49
4	11.55	14.24	27.87%	10.56	14.46	24.31
5	12.42	14.25	29.85%	13.71	14.47	29.29
6	12.85	14.20	31.02%	15.41	14.17	32.36
7	12.86	14.35	31.88%	15.39	14.18	33.23
8	14.79	14.20	34.96%	16.47	14.17	35.74
9	15.85	14.05	36.72%	18.97	14.04	40.19
10	20.27	13.57	43.82%	22.51	13.56	46.93
Total poopulation	15.66	14.04	34.90%	18.17	14.05	34.72

Notes: Author's own calculations based on EPH and ENGHo. Note: The columns for direct plus indirect taxes should not be calculated by simple addition, as the denominators are different.

Lambert (1993) demonstrates that analyzing the impact of a specific fiscal intervention requires considering the entire system and comparing the situation with and without the intervention. This is because, for example, a regressive tax could make the overall tax system more equalizing (a case referred to as "Lambert's conundrum"). As an application of this concept, the previous table is presented, but considering as denominator the income on which taxes are paid, which includes received transfers in several cases. Specifically, indirect taxes are calculated as a percentage of disposable income (including monetary transfers), and the sum of both types of taxes is calculated as a percentage of consumable income, including economic subsidies. It is interesting to note that indirect taxes lose their regressive nature when evaluated relative to market income and become nearly proportional (only decreasing in the highest decile) when compared to disposable income.

6.4 Poverty

Table 12 and 13 show the results in terms of poverty. We use the international poverty lines defined by the World Bank. These include income below US$1.25 PPP per day, between US$1.25 PPP and US$2.50 PPP per day, between US$2.50 PPP and US$4 PPP per day, between US$10 PPP and US$50 PPP per day, and above US$50 PPP per day. The objective is to evaluate whether taxes and public expenditures, collectively, are effective in reducing the proportion of people in poverty by increasing the population share in higher income brackets and decreasing it in lower income brackets.

This mirrors the patterns identified in our inequality analysis: the poorest households derive significant benefits from monetary transfers. The wealthiest households receive a substantially smaller slice of these benefits, while the impact is markedly more pronounced on the less impoverished segments when pensions are factored in as a transfer.

Given poor households' low-income levels, the impact of the received transfers—as a proportion to this same average income—is very high, often surpassing their own market income. This pattern persists when taxes and economic subsidies are factored in, though the burden that consumption taxes place on the poorer segments becomes noticeable.

Notably, when considering education and health expenditures, we see significant percentage increases for lower-income segments. This holds true whether pensions are considered as monetary transfers or part of market income.

In parallel with the analysis of income distribution by deciles, Table 14 and 15 present the distribution of taxes and transfers by socioeconomic group, based on poverty analysis. The largest proportion falls within the fifth bracket (between US$10 and US$50), while the fiscal system reduces income concentration across all groups, even in the highest bracket. The detailed results of the progressivity analysis for each direct tax and monetary transfer, broken down by socioeconomic group, can be found in Table A.3 and A.4 in the Appendix.

This pattern is also apparent when considering the impact of indirect taxes and economic subsidies, resulting in a decreased share for the wealthiest segment and an increased share for the lowest-income one. This remains true even when the impact of education and health spending is factored in.

In the baseline case, those earning more than $50 PPP per day concentrated 33% of market income. When considering disposable income, this figure drops to 29.3%. In a sensitivity analysis, the population above $50 PPP concentrated roughly 32.4% of market income, dropping to 24.9% when considering disposable income. When using consumable income, these proportions further decrease to 27.2% and 23.3%, respectively. When utilizing final income, these figures stand at 25.4% and 21.3%, respectively.

As previously stated, the poorer segments hold a larger portion of total income when comparing their share of consumable, disposable, and final income to their share of market income before the implementation of direct taxes, transfers, economic subsidies, indirect taxes, and expenditures on education and health.

Table 16 presents the calculated tax percentages based on the average market income for each poverty segment, under both the baseline and sensitivity scenarios. Direct taxes bear down more heavily on the higher-income segments, while indirect taxes disproportionately impact the lower-income ones. Comparing taxes paid relative to previous income reveals that indirect taxes are less regressive when compared to disposable income than market income.

Table 12

Incidence of Taxes and Transfers on Poverty in Percentages (Baseline Scenario)

Groups	Total Direct Taxes	Net Market Income	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Expenditure	Health Expenditure	Final Income
y<1.25	-4.6%	95.4%	3737.7%	3833.3%	273.2%	-530.4%	3576.0%	422.2%	1352.1%	5350.3%
1.25 <= y < 2.50	-3.0%	97.0%	112.8%	209.7%	15.6%	-15.8%	209.5%	53.0%	87.3%	349.7%
2.50 <= y < 4.00	-3.9%	96.1%	65.2%	161.3%	10.7%	-12.6%	159.4%	32.5%	47.2%	239.2%
4.00 <= y < 10.00	-8.3%	91.7%	24.4%	116.1%	6.4%	-10.2%	112.3%	15.8%	18.2%	146.3%
10.00 <= y < 50.00	-14.0%	86.0%	3.9%	89.9%	3.4%	-10.7%	82.6%	5.1%	6.6%	94.2%
50.00 <= y	-20.3%	79.7%	0.5%	80.2%	2.8%	-16.1%	66.9%	1.7%	3.3%	71.9%
Total Population	-15.7%	84.3%	6.0%	90.4%	3.6%	-12.7%	81.2%	5.0%	7.1%	93.4%

Notes: Author's own calculations based on EPH and ENGHo.

Table 13

Incidence of Taxes and Transfers on Poverty in Percentages (Sensitivity Scenario)

Groups	Total Direct Taxes	Net Market Income	Pension Contributions	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Expenditure	Health Expenditure	Final Income
y<1.25	-5.9%	94.1%	10719.9%	13663.7%	13757.8%	564.3%	-1940.3%	12381.8%	432.6%	2045.1%	14859.5%
1.25 <= y < 2.50	-3.6%	96.4%	114.0%	214.8%	311.2%	18.9%	-32.5%	297.6%	51.0%	78.9%	427.5%
2.50 <= y < 4.00	-4.4%	95.6%	42.9%	96.1%	191.7%	12.2%	-19.1%	184.8%	32.5%	45.1%	262.2%
4.00 <= y < 10.00	-9.9%	90.1%	20.5%	42.9%	133.0%	6.8%	-13.0%	126.8%	15.4%	25.2%	167.5%
10.00 <= y < 50.00	-16.9%	83.1%	8.1%	11.6%	94.8%	3.6%	-11.8%	86.6%	5.7%	6.3%	98.7%
50.00 <= y	-22.9%	77.1%	3.8%	4.3%	81.4%	2.8%	-15.8%	68.4%	1.9%	1.6%	71.9%
Total Population	-18.2%	81.8%	17.0%	24.1%	105.9%	4.2%	-14.9%	95.2%	5.9%	8.4%	109.5%

Notes: Author's own calculations based on EPH and ENGHo. Note: In this case, total transfers include contributory pensions, although they are reported separately.

Table 14

Percentage Share of Each Income Bracket Defined According to International Poverty Lines (Baseline Scenario)

Groups	Market Income - Includes Pension Contributions	Total Direct Taxes	Net Market Income	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Spending	Health Spending	Final Income
y<1.25	0.0%	0.0%	0.0%	23.9%	1.6%	3.0%	1.6%	1.7%	3.3%	7.3%	2.2%
1.25 <= y < 0.2	0.0%	0.3%	4.2%	0.5%	1.0%	0.3%	0.6%	2.4%	2.7%	0.8%	
2.50 <= y < 4.00	0.6%	0.2%	0.7%	6.6%	1.1%	1.8%	0.6%	1.2%	4.0%	4.0%	1.6%
4.00 <= y < 10.00	5.8%	3.1%	6.3%	23.5%	7.5%	10.4%	4.7%	8.0%	18.3%	14.8%	9.1%
10.00 <= y < 50.00	60.3%	54.0%	61.5%	39.1%	60.0%	57.5%	50.9%	61.3%	60.9%	55.8%	60.9%
50.00 <= y	33.0%	42.8%	31.2%	2.7%	29.3%	26.3%	41.9%	27.2%	11.2%	15.4%	25.4%
Total Population	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Author's own calculations based on EPH and ENGHo.

Table 15

Percentage Share of Each Income Bracket Defined According to International Poverty Lines (Sensitivity Scenario)

Groups	Market Income - Excludes Pension	Total Direct Taxes	Net Market Income	Pension Contributions	Total Direct Transfers	Disposable Income	Indirect Subsidies	Indirect Taxes	Consumable Income	Education Spending	Health Spending	Final Income
	Pension Contributions											
y<1.25	0.1%	0.0%	0.1%	52.1%	46.9%	10.7%	11.2%	10.8%	10.8%	6.1%	20.2%	11.2%
1.25 ≤ y < 2.50	0.3%	0.1%	0.4%	2.3%	3.1%	1.0%	1.6%	0.8%	1.1%	3.0%	3.3%	1.4%
2.50 ≤ y < 4.00	0.8%	0.2%	0.9%	1.9%	3.0%	1.4%	2.2%	1.0%	1.5%	4.2%	4.1%	1.8%
4.00 ≤ y < 10.00	7.1%	3.8%	7.8%	8.5%	12.6%	8.9%	11.5%	6.2%	9.4%	18.5%	21.3%	10.8%
10.00 ≤ y < 50.00	59.4%	55.1%	60.3%	28.1%	28.7%	53.1%	51.8%	47.0%	54.0%	57.8%	44.9%	53.5%
50.00 ≤ y	32.4%	40.8%	30.5%	7.2%	5.8%	24.9%	21.7%	34.4%	23.3%	10.4%	6.3%	21.3%
Total Population	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Author's own calculations based on EPH and ENGHo.

Table 16

Taxes as a Percentage of Market Income

Groups	Total Direct Taxes Baseline	Total Indirect Taxes Baseline	Direct and Indirect Taxes Baseline	Total Direct Taxes Sensitivity Scenario	Total Indirect Taxes Sensitivity Scenario	Direct and Indirect Taxes Sensitivity Scenario
y<1.25	4.56	530.41	534.97	5.94	1,940.34	1,946.28
1.25 <= y < 2.50	3.04	15.82	18.86	3.59	32.51	36.10
2.50 <= y < 4.00	3.92	12.57	16.49	4.40	19.08	23.47
4.00 <= y < 10.00	8.28	10.17	18.45	9.86	12.96	22.83
10.00 <= y < 50.00	14.00	10.71	24.71	16.87	11.77	28.64
50.00 <= y	20.30	16.13	36.43	22.89	15.80	38.69
Total Population	15.66	12.69	28.35	18.17	14.88	33.06

Notes: Author's own calculations based on EPH and ENGHo.

Table 17

Taxes as a Percentage of Different Income Concepts

Groups	Direct Taxes (Baseline)/ Net Market Income	Indirect Taxes (Baseline)/ Net Disposable Income	Total Taxes (Baseline)/ Net Consumable Income	Direct Taxes (Sensitivity)/ Net Market Income	Indirect Taxes (Sensitivity) /Net Disposable Income	Total Taxes (Sensitivity)/ Net Net Consumable Income
y<1.25	4.56	13.84	14.96	5.94	14.10	15.72
1.25 <= y < 2.50	3.04	7.54	9.00	3.59	10.44	12.13
2.50 <= y < 4.00	3.92	7.79	10.34	4.40	9.95	12.70
4.00 <= y < 10.00	8.28	8.76	16.43	9.86	9.75	18.00
10.00 <= y < 50.00	14.00	11.91	29.92	16.87	12.42	33.06
50.00 <= y	20.30	20.12	54.46	22.89	19.41	56.57
Total Population	15.66	14.04	34.90	18.17	14.05	34.72

Notes: Author's own calculations based on EPH and ENGHo.

7. Closing Remarks

The aim of this study was to quantify the impact of various fiscal interventions, public expenditures, and taxes on income distribution and poverty, using the CEQ methodology along with data from the EPH (fourth quarter of 2016) and ENGHo (2012-2013) surveys.

The outcomes, evident from the decreases in inequality indices and the proportions of the population below the moderate and extreme poverty lines, demonstrate that fiscal policy has had a significant impact in reducing income disparities and alleviating poverty. This effect is particularly notable in the case of extreme poverty since moderate poverty is affected by indirect taxes. Economic subsidies and programs such as the formal sector's AAFF and AUH, as well as pension coverage plans, are vital tools in achieving these results.

These findings, while consistent with recent literature on the subject (Rossignolo, 2016,0), show that the policies implementedâlike the targeting of economic subsidies, the generalization of AUH, and the establishment of PUAM—have strengthened the pro-poor nature of expenditures and the progressive redistributive impact of the fiscal policy analyzed in this study.

In this research, EPH information was used to update ENGHo with income and consumption data. The survey data was then used to compute the distributive and poverty impact of a relevant subset of taxes and public spending (over 80%). Hence, these results should be interpreted as indicative. The availability of more updated information would enable more precise estimation of these results, paving the way for future lines of research.

Appendix

1. Adjustments on Income Information in Both Surveys

As previously stated, EPH was used to update ENGHo income data. This was done by adjusting the average income per source between the EPH in the third quarter of 2012 (the median value of the ENGHo sample) and the fourth quarter of 2016 in order to construct incomes equivalent to those of the EPH with which the work was carried out.

It should be clarified that both for consumption and income, in order to make equivalent regional comparisons, a regional price adjustment was applied based on price differentials arising from the average values of the basic food basket in the second half of 2006. In this case, the index corresponding to Greater Buenos Aires was taken as the base with a value of one, so the consumption and income corresponding to other regions were multiplied by a factor reflecting the price differential. The values for the Northwest (NOA) region were adjusted by 16% and those of Cuyo by 15%. Prices in the Northeast (NEA) region were increased by 16%; and those of the Pampas and Patagonia regions by 10% and 5%, respectively. Additionally, the "sale of durable goods" was eliminated from the consumption data.

The calculation methodologies used to harmonize the income in both surveys can be summarized as follows:

(a) The procedure begins by calculating, for both surveys, the pre-fiscal action income. To do this, the reported income in both surveys is deducted from the public transfers for scholarships and employment plans and the personal contributions made to the Social Security System.

(b) Calculation of income by source and delimitation of their totals: salaried workers, self-employed workers, employers, rentiers (i.e., earners of dividends, rents, interests, etc.), and retirees, before fiscal action.

(c) Calculation of income deciles pre-fiscal action and pre-adjustments of individuals ordered by per capita family income, calculating the average and total income per household of each decile.

(d) Annualizing the adjusted income data calculated from the survey (this involves multiplying wages and pensions by 13, and all other sources by 12). This procedure is necessary since the EPH has a rotating panel; therefore, the income of the sampling units is not surveyed annually. Furthermore, the adjusted income sources constitute the most relevant ones, thereby reducing the scope of income seasonality.

(e) Correction of underreporting detected in the surveys, starting from the adjustment for underreporting of income whose coefficients are shown in the subsequent table. The income per recipient is multiplied by the differential adjustment coefficients per income source.

(f) Total family incomes and per capita family incomes are recalculated, now adjusted for underreporting using coefficients that differ by decile.

(g) Individuals are re-ordered based on the adjusted income defined in the previous point. Deciles of individuals with per capita family income adjusted for underreporting are generated, and the corresponding inequality indicator (Gini) is re-estimated.

2. Adjustments on Consumption Information in ENGHo 2012/2013

The allocation of taxes that affect goods and services, either directly or indirectly linked to consumption, was conducted through ENGHo 2012/2013 (INDEC).

The survey does not allow an adjustment of expenditures similar to that done with incomes; any transformation or adjustment for underreporting of specific consumption would have been arbitrary, not to mention the operational difficulties it would entail. However, it would be hardly plausible for decile groups to adjust their incomes differentially for underreporting without their consumption increasing to some degree; asserting otherwise would suggest that the additional income added to the original survey was entirely saved.

To tackle this issue, we decided to utilize the tax-to-household consumption ratio from the ENGHo, by type of tax, and apply this quotient to the available household incomes for each of the alternatives. This process yields a "tax paid per household" that is extrapolated to the EPH.

Regarding economic subsidies, these were calculated in relation to the expenses reported in the ENGHo. This data enabled us to generate a subsidy amount per household and per decile of market income. The percentage of subsidy to income per decile was applied to each average income per decile of the EPH to generate a subsidy amount per income bracket.

3. Breakdown of Direct Taxes and Cash and In-Kind Transfers

This section presents the disaggregated results of the concentration analysis of direct taxes and cash and in-kind transfers, both for the distributive and poverty analyses.

Direct taxes, particularly the personal income tax and social security contributions, are strongly concentrated in the highest income brackets. Cash and in-kind transfers (particularly AUH, the social inclusion plan, and contributory pensions) are mainly concentrated in the lowest 40% of incomes.

In the poverty analysis, taxes are borne by the most affluent brackets while the AUH, the social inclusion plan, and contributory pensions are received by the lowest income brackets.

Table A.1

Direct Taxes and Monetary Transfers by Income Decile (Baseline Scenario)

Deciles	Personal Income Tax	Monotributo	Social Security Contributions & Payments	Family Allowances	Universal Child Allowance	Pension Inclusion Plan	Unemployment Insurance	Training and Employment Insurance	Student Scholarships	Training & Employment Programs Programs	Other Direct Transfers (targeted or not)
1	0.0%	2.2%	0.1%	7.9%	37.4%	44.0%	13.2%	16.6%	15.0%	14.0%	22.7%
2	0.0%	4.0%	0.8%	14.6%	28.3%	9.2%	22.2%	16.0%	8.3%	14.5%	16.6%
3	0.0%	5.9%	2.1%	19.4%	13.8%	8.7%	19.6%	8.6%	16.0%	23.7%	12.0%
4	0.0%	7.6%	3.9%	18.1%	8.3%	9.5%	20.2%	7.4%	13.3%	14.6%	9.9%
5	0.1%	7.5%	5.6%	17.0%	5.5%	5.7%	5.4%	5.2%	13.8%	5.3%	9.1%
6	0.4%	10.8%	7.3%	9.6%	3.8%	5.9%	11.1%	13.0%	9.2%	5.1%	8.2%
7	1.1%	12.7%	9.1%	6.3%	1.7%	5.3%	1.5%	21.4%	7.2%	7.8%	6.3%
8	5.1%	14.4%	13.2%	4.4%	0.8%	3.8%	1.7%	10.2%	8.9%	12.7%	6.9%
9	14.1%	16.8%	18.6%	2.4%	0.5%	4.3%	0.0%	1.2%	3.1%	1.8%	4.9%
10	79.2%	18.0%	39.3%	0.3%	0.0%	3.6%	5.1%	0.4%	5.3%	0.5%	3.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Author's own calculations based on EPH and ENGHo. Note: The "Other Transfers" column includes monetary transfers reported in the survey net of those simulated in this work, to which in-kind transfer programs were added.

Table A.2

Direct Taxes and Monetary Transfers by Income Decile (Sensitivity Scenario)

Deciles	Personal Income Tax	Monotributo	Social Security Contributions & Payments	Family Allowances	Universal Child Allowance	Pension Inclusion Plan	Unemployment Insurance	Training and Employment Insurance	Student Scholarships	Training & Employment Programs	Other Direct Transfers (targeted or not)	Pension Contributions
1	0.0%	0.0%	0.0%	3.5%	7.3%	46.1%	9.8%	10.9%	7.2%	4.0%	12.6%	47.8%
2	0.0%	3.2%	0.2%	14.3%	37.6%	11.8%	4.7%	6.8%	14.0%	11.9%	18.8%	9.9%
3	0.0%	4.6%	1.0%	13.8%	25.5%	8.5%	23.0%	16.0%	8.1%	12.9%	16.0%	5.5%
4	0.0%	6.7%	2.5%	16.7%	11.9%	8.4%	18.3%	12.0%	14.2%	25.8%	11.4%	6.7%
5	0.0%	7.8%	4.7%	18.6%	6.9%	6.2%	20.5%	7.6%	12.1%	12.5%	9.6%	5.0%
6	0.3%	9.3%	7.1%	15.3%	5.6%	3.8%	14.3%	5.2%	13.4%	5.5%	9.4%	4.5%
7	0.6%	14.5%	9.2%	8.5%	3.6%	4.3%	2.4%	17.6%	14.2%	7.6%	8.1%	5.1%
8	3.1%	17.2%	13.0%	5.5%	1.0%	4.5%	2.0%	21.3%	4.4%	8.9%	5.7%	5.2%
9	14.8%	18.0%	20.2%	3.2%	0.6%	3.1%	0.0%	1.9%	7.0%	9.4%	4.6%	5.8%
10	81.1%	18.6%	42.0%	0.6%	0.1%	3.3%	5.1%	0.8%	5.4%	1.5%	3.7%	4.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Author's own calculations based on EPH and ENGHo. Note: The "Other Transfers" column includes monetary transfers reported in the survey net of those simulated in this work, to which in-kind transfer programs were added.

Table A.3

Direct Taxes and Monetary Transfers by Socioeconomic Group (Baseline Scenario)

Groups	Personal Income Tax	Monotributo	Social Security Contributions & Payments	Family Allowances	Universal Child Allowance	Pension Inclusion Plan	Unemployment Insurance	Training and Employment Insurance	Student Scholarships	Training & Employment Programs	Other Direct Transfers (targeted or not)
y < 1.25	0.0%	0.3%	0.0%	0.7%	12.7%	38.9%	11.4%	11.2%	7.9%	7.0%	9.3%
1.25 ≤ y < 2.50	0.0%	0.9%	0.0%	3.0%	13.6%	2.3%	1.8%	5.4%	4.9%	5.6%	5.8%
2.50 ≤ y < 4.00	0.0%	1.6%	0.1%	6.3%	17.3%	4.3%	9.7%	0.0%	3.7%	2.6%	8.4%
4.00 ≤ y < 10.00	0.0%	9.5%	3.2%	34.1%	36.3%	17.2%	32.1%	24.6%	26.5%	39.4%	24.7%
10.00 ≤ y < 50.00	20.8%	69.7%	57.5%	55.6%	20.0%	33.8%	39.9%	58.5%	51.7%	44.9%	48.3%
50.00 ≤ y	79.2%	18.0%	39.2%	0.3%	0.0%	3.6%	5.1%	0.4%	5.3%	0.5%	3.6%
Total population	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Author's own calculations based on EPH and ENGHo. Note: The "Other Transfers" column includes monetary transfers reported in the survey net of those simulated in this work, to which in-kind transfer programs were added.

Table A.4

NUEVO: Direct Taxes and Monetary Transfers by Socioeconomic Group (Baseline Scenario)

Groups	Personal Income Tax	Monotributo	Social Security Contributions & Payments	Family Allowances	Universal Child Allowance	Pension Inclusion Plan	Unemployment Insurance	Training and Employment Insurance	Student Scholarships	Training & Employment Programs	Other Direct Transfers (targeted or not)	Pension Contributions
y < 1.25	0.0%	0.8%	0.0%	7.9%	16.3%	53.1%	12.7%	12.2%	11.7%	7.5%	16.8%	52.1%
1.25 ≤ y < 2.50	0.0%	1.1%	0.0%	4.7%	15.4%	2.8%	1.8%	5.4%	5.1%	6.2%	6.0%	2.3%
2.50 ≤ y < 4.00	0.0%	1.7%	0.1%	6.3%	17.0%	2.7%	9.7%	0.0%	5.7%	3.2%	8.1%	1.9%
4.00 ≤ y < 10.00	0.0%	11.2%	4.0%	31.6%	34.1%	16.5%	32.1%	28.0%	24.9%	39.9%	24.4%	8.5%
10.00 ≤ y < 50.00	23.1%	70.1%	58.1%	49.2%	17.2%	21.8%	38.7%	54.0%	47.4%	42.6%	41.5%	28.1%
50.00 ≤ y	76.9%	15.0%	37.7%	0.3%	0.0%	3.0%	5.1%	0.4%	5.2%	0.5%	3.2%	7.2%
Total population	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Notes: Author's own calculations based on EPH and ENGHo. Note: The "Other Transfers" column includes monetary transfers reported in the survey net of those simulated in this work, to which in-kind transfer programs were added.

4. Allocation of Expenditures in Economic Sectors

Since EPH does not include consumption information, ENGHo 2012-2013 was used to calculate the impact of subsidies on income distribution and poverty. As a result, the respective allocations were made on ENGHo, and then the coefficients were extrapolated by decile of available income for each type of subsidy. A similar procedure was carried out for indirect taxes since EPH does not collect consumption information and their impact had to be calculated from ENGHo.

The calculation methodology for economic subsidies, particularly for electricity and gas, consisted of using the consumption quantities reported in ENGHo, cleared of outliers. Subsequently, the existing 2016 tariff structures were fully applied for each province.

For electricity, given that from 2016 provincial regulatory entities no longer separately report the subsidy included in the tariff, the percentage rate of change for the variable charge for each tariff structure of each province and their respective consumption brackets existing in 2015 was applied to the variable costs in force in 2016, assuming that they contain the subsidy. This provides a counterfactual tariff structure, without subsidies.

Once the subsidy was estimated, a weighting factor was built that identified the proportion of electricity and gas consumption of each household in relation to the total consumption in each region. However, the subsidy to electricity tariffs also includes the compensation to the wholesale distribution (CAMMESA - Compañía Administradora del Mercado Mayorista Eléctrico), as explained in Lakner et al. (2016) and Cont (2007). Consequently, using the data from the budget execution of current transfers to CAMMESA (adjusted by the available income and the population gap with the ENGHo sample), the subsidies were initially regionally distributed according to Castro and Barafani (2015), and then the amounts of provincial subsidies were assigned according to the percentage weights defined according to the proportion of simulated subsidy in the survey, as explained in the previous paragraph.

In the case of gas, it must be divided between piped and bottled gas under "Programa Hogar" (2016). For the former, a procedure similar to the case of electricity was followed; i.e., constructing the subsidy from "augmenting" the tariffs reported in the respective tariff tables by the regulatory entities by the subsidy to the variable cost, and assigning the budgetary current expense (which includes transfers to ENARSA - Energía Argentina Sociedad Anónima and the Trust Fund for Subsidizing Residential Gas Consumption, Law 25565) distributed regionally according to the percentage of simulated subsidy for each household and province.

In addition to the aforementioned subsidies, the social tariff subsidy was added. In the case of electricity, this subsidy covers the cost of the fixed charge and a null variable charge for the initial consumption bracket, with an 85% discount applied to any excess consumption. For gas, the social tariff consists of a reduced variable charge, which is specified in each tariff table provided by the respective regulatory entities.

To the aforementioned subsidies, we added the social tariff subsidy, whose cost, in the case of electricity, consists of the payment of the fixed charge plus a null variable charge for the first consumption bracket, and a discount of 85% for excess consumption. In the case of gas, the social tariff consists of a reduced and typified variable charge in each tariff table by the respective

regulatory entities.

Under current regulations, potential beneficiaries of the social tariff are identified as salaried workers, retirees, or monotributistas (self-employed taxpayers) who earn an income equivalent to the minimum wage and own fewer than two vehicles. This group also includes recipients of social plans such as AUH, the Social Inclusion Plan, and AAFF, among others. According to the ENGHo survey, these criteria identify around 2.8 million potential beneficiaries. When this figure is extrapolated to the total population, it amounts to approximately 3.4 million individuals.

As previously stated, from the above information we obtained a percentage of subsidies over the net available income by income decile from the ENGHo. This percentage was then used to adjust the average net available income per decile from the EPH, allowing us to determine the per capita subsidy per decile. A similar methodology was employed for the calculation of indirect taxes.

5. Results from the ENGHo

Table A.5 and A.6 present the evolution of the Gini index, the headcount ratio, and the poverty gap using the international poverty measure of US$2.50 PPP, US$4 PPP, and US$10 PPP per day (2011 international lines) and the national and alternative poverty measures for the baseline scenario and the sensitivity analysis.

Compared to the results presented with regard to the EPH, poverty levels are higher because the incomes calculated for the ENGHo are higher. It is worth noting that the impact of indirect taxes increases not only moderate poverty but also extreme poverty. Therefore, spending on education and healthcare, which is equivalent in budgetary terms to that applied in the EPH, results in lower levels of poverty and destitution in the latter case.

However, in general terms, the results in terms of the ENGHo are qualitatively similar to those achieved through the EPH. Even though poverty is more reduced, the inequality analysis shows almost equivalent values for final income, even though the EPH begins with higher initial inequality values for market income.

6. Significance Results for Inequality and Poverty Estimates

Table 4 and 5 are reproduced below, incorporating the significance values for the changes in the inequality and poverty index values (Table A.7 and A.8). Meanwhile, Table A.9 and A.10 include alternative inequality indicators, such as the Theil index and the ratio between the 10th and 1st income deciles.

Table A.5

Gini, Headcount Index, and Poverty Gap for Different Income Concepts Baseline Scenario (pensions as part of market income)

	Market income	Net market income	Disposable income	Consumable income	Final income
Gini Baseline Scenario	0.457	0.440	0.411	0.406	0.321
Headcount Index					
Baseline Scenario $2.5 PPP	3.3%	3.5%	0.9%	1.1%	
Baseline Scenario $4 PPP	7.9%	8.9%	3.4%	4.2%	
Baseline Scenario $10 PPP	28.8%	32.8%	27.8%	32.5%	
Extreme Poverty Line Baseline (INDEC)	12.8%	14.3%	8.0%	9.9%	
Moderate Poverty Line Baseline (INDEC)	38.6%	43.9%	40.5%	45.0%	
Other Extreme Poverty Line Baseline (FIEL)	11.9%	13.5%	7.2%	8.8%	
Other Moderate Poverty Line Baseline (FIEL)	34.4%	39.6%	35.9%	40.1%	
Poverty Gap					
Baseline Scenario $2.5 PPP	1.3%	1.4%	0.3%	0.3%	
Baseline Scenario $4 PPP	2.9%	3.1%	1.0%	1.2%	
Baseline Scenario $10 PPP	12.2%	13.6%	9.4%	11.2%	
Extreme Poverty Line Baseline (INDEC)	4.8%	5.4%	2.2%	2.7%	
Moderate Poverty Line Baseline (INDEC)	17.2%	19.4%	15.3%	17.6%	
Other Extreme Poverty Line Baseline (FIEL)	4.5%	5.0%	2.0%	2.4%	
Other Moderate Poverty Line Baseline (FIEL)	15.0%	17.0%	12.7%	14.9%	

Notes: Author's own calculations based on EPH and ENGHo.

Table A.6

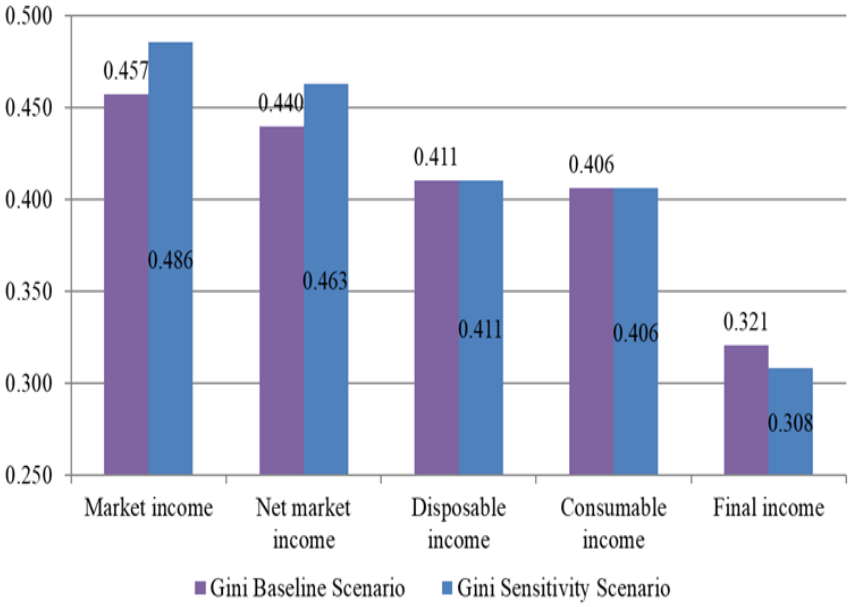
Gini, Headcount Index, and Poverty Gap for Different Income Concepts Sensitivity Scenario (pensions as monetary transfer)

	Market income	Net market income	Disposable income	Consumable income	Final income
Gini Sensitivity Scenario	0.486	0.463	0.411	0.406	0.308
Headcount Index					
Sensitivity Scenario $2.5 PPP	7.0%	7.3%	0.9%	1.1%	
Sensitivity Scenario $4 PPP	12.8%	14.3%	3.4%	4.2%	
Sensitivity Scenario $10 PPP	36.1%	40.6%	27.8%	32.5%	
Extreme Poverty Line Sensitivity (INDEC)	18.8%	20.8%	8.0%	9.9%	
Moderate Poverty Line Sensitivity (INDEC)	46.1%	52.0%	40.5%	45.0%	
Other Extreme Poverty Line Sensitivity (FIEL)	17.8%	19.6%	7.2%	8.8%	
Other Moderate Poverty Line Sensitivity (FIEL)	41.7%	47.4%	35.9%	40.1%	
Poverty Gap					
Sensitivity Scenario $2.5 PPP	4.1%	4.3%	0.3%	0.3%	
Sensitivity Scenario $4 PPP	6.2%	6.6%	1.0%	1.2%	
Sensitivity Scenario $10 PPP	17.4%	19.2%	9.4%	11.2%	
Extreme Poverty Line Sensitivity (INDEC)	8.8%	9.5%	2.2%	2.7%	
Moderate Poverty Line Sensitivity (INDEC)	22.8%	25.5%	15.3%	17.6%	
Other Extreme Poverty Line Sensitivity (FIEL)	8.4%	9.1%	2.0%	2.4%	
Other Moderate Poverty Line Sensitivity (FIEL)	20.5%	22.8%	12.7%	14.9%	

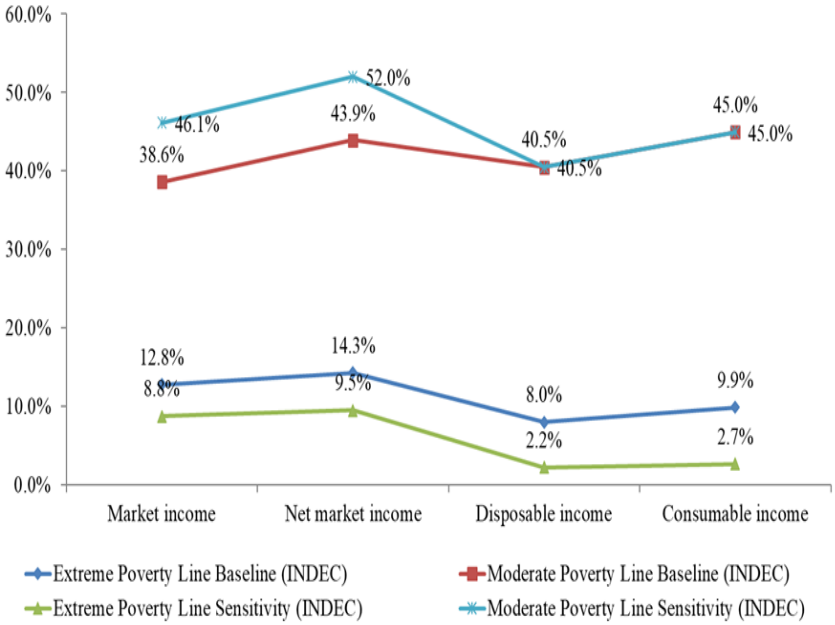
Notes: Author's own calculations based on EPH and ENGHo.

Figure A.1. Impact of fiscal interventions on inequality and poverty according to ENGHo

(a) Gini Coefficient



(b) Headcount Index



Source: Author's own calculations based on EPH and ENGHo.

Table A.7

Gini, Headcount Index, and Poverty Gap for Different Income Concepts Baseline Scenario (pensions as part of market income)

	Market Income	Net Market Income	Disposable Income	Consumable Income	Final Income
Gini Baseline Scenario	0.475	0.457	0.406	0.394	0.320
(p-value relative to market income)	–	0.00	0.00	0.00	0.000
Headcount Index					
Baseline Scenario $2.5 PPP	6.2%	6.3%	0.9%	0.9%	
(p-value relative to market income)	–	0.02	0.00	0.00	
Baseline Scenario $4 PPP	9.8%	10.7%	3.3%	3.3%	
(p-value relative to market income)	–	0.01	0.00	0.00	
Baseline Scenario $10 PPP	27.9%	31.5%	22.6%	25.8%	
(p-value relative to market income)		0.00	0.00		
Extreme Poverty Line Baseline (INDEC)	14.0%	14.8%	6.1%	6.0%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Moderate Poverty Line Baseline (INDEC)	36.9%	42.1%	35.1%	39.0%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Extreme Poverty Line Baseline (FIEL)	13.0%	13.9%	5.6%	5.5%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Moderate Poverty Line Baseline (FIEL)	32.7%	37.9%	29.6%	33.7%	
(p-value relative to market income)	–	0.00	0.00	0.09	
Poverty Gap					
Baseline Scenario $2.5 PPP	3.6%	3.8%	0.3%	0.3%	
(p-value relative to market income)	–	0.01	0.00	0.00	
Baseline Scenario $4 PPP	5.3%	5.5%	1.0%	1.0%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Baseline Scenario $10 PPP	13.4%	14.6%	7.5%	8.1%	
(p-value relative to market income)		0.00	0.00		
Extreme Poverty Line Baseline (INDEC)	7.0%	7.4%	2.0%	1.9%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Moderate Poverty Line Baseline (INDEC)	17.8%	19.8%	12.5%	13.7%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Extreme Poverty Line Baseline (FIEL)	6.7%	7.1%	1.8%	1.8%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Moderate Poverty Line Baseline (FIEL)	15.9%	17.5%	10.2%	11.2%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Severity of Poverty					
Baseline Scenario $2.5 PPP	3.0%	3.1%	0.2%	0.2%	
(p-value relative to market income)	–	0.01	0.00	0.00	
Baseline Scenario $4 PPP	3.9%	4.0%	0.5%	3.9%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Baseline Scenario $10 PPP	8.8%	9.4%	3.6%	3.7%	
(p-value relative to market income)		0.00	0.00	0.00	

Notes: Author's own calculations based on EPH and ENGHo.

Table A.8

Gini, Headcount Index, and Poverty Gap for Different Income Concepts Sensitivity Scenario (pensions as monetary transfer)

	Market Income	Net Market Income	Disposable Income	Consumable Income	Final Income
Gini Sensitivity Scenario	0.514	0.494	0.406	0.395	0.309
(p-value relative to market income)	–	0.00	0.00	0.00	0.00
Headcount Index					
Sensitivity Scenario $2.5 PPP	12.0%	12.2%	1.1%	1.0%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Sensitivity Scenario $4 PPP	15.9%	16.7%	3.5%	3.5%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Sensitivity Scenario $10 PPP	34.7%	39.3%	22.5%	25.9%	
(p-value relative to market income)		0.00	0.00	0.00	
Extreme Poverty Line Sensitivity (INDEC)	20.5%	21.7%	6.2%	6.2%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Moderate Poverty Line Sensitivity (INDEC)	43.9%	49.8%	35.1%	39.0%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Extreme Poverty Line Sensitivity (FIEL)	19.4%	20.7%	5.9%	5.8%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Moderate Poverty Line Sensitivity (FIEL)	40.1%	45.4%	29.6%	33.8%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Poverty Gap					
Sensitivity Scenario $2.5 PPP	8.6%	8.8%	0.4%	0.4%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Sensitivity Scenario $4 PPP	10.6%	10.9%	1.2%	1.1%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Sensitivity Scenario $10 PPP	19.5%	21.0%	7.6%	8.2%	
(p-value relative to market income)		0.00	0.00	0.00	
Extreme Poverty Line Sensitivity (INDEC)	12.6%	13.1%	2.1%	2.1%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Moderate Poverty Line Sensitivity (INDEC)	24.1%	26.5%	12.6%	13.8%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Extreme Poverty Line Sensitivity (FIEL)	12.3%	12.7%	2.0%	1.9%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Moderate Poverty Line Sensitivity (FIEL)	22.1%	24.2%	10.4%	11.4%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Severity of Poverty					
Sensitivity Scenario $2.5 PPP	7.6%	7.8%	0.2%	0.2%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Sensitivity Scenario $4 PPP	8.9%	9.1%	0.5%	0.5%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Sensitivity Scenario $10 PPP	14.5%	15.3%	3.7%	3.8%	
(p-value relative to market income)		0.00	0.00	0.00	
Extreme Poverty Line Sensitivity (INDEC)	10.2%	10.4%	1.0%	1.0%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Moderate Poverty Line Sensitivity (INDEC)	17.5%	18.8%	6.3%	6.8%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Extreme Poverty Line Sensitivity (FIEL)	10.0%	10.2%	1.0%	0.9%	
(p-value relative to market income)	–	0.00	0.00	0.00	
Other Moderate Poverty Line Sensitivity (FIEL)	16.2%	17.3%	5.2%	5.4%	
(p-value relative to market income)	–	0.00	0.00	0.00	

Notes: Author's own calculations based on EPH and ENGHo.

Table A.9

Changes in inequality in alternative indicators. Baseline scenario

	Market Income	Net Market Income	Disposable Income	Consumable Income	Ingreso Final
Gini	0.475	0.457	0.406	0.394	0.320
(p-value relative to market income)	–	0.000	0.000	0.000	0.000
Theil Index	0.370	0.340	0.284	0.268	0.179
(p-value relative to market income)	–	0.000	0.000	0.000	0.000
90/10	13.562	12.011	6.869	6.052	3.992
(p-value relative to market income)	–	0.210	0.118	0.101	0.059

Notes: Author's own calculations based on EPH and ENGHo.

Table A.10

Changes in inequality in alternative indicators. Sensitivity scenario

	Market Income	Net Market Income	Disposable Income	Consumable Income	Ingreso Final
Gini	0.514	0.494	0.406	0.395	0.309
(p-value relative to market income)	–	0.000	0.000	0.000	0.000
Theil Index	0.401	0.366	0.285	0.269	0.169
(p-value relative to market income)	–	0.000	0.000	0.000	0.000
90/10	25.205	21.971	6.890	6.089	3.770
(p-value relative to market income)	–	0.233	0.077	0.065	0.040

Notes: Author's own calculations based on EPH and ENGHo.

References

Alvarez, E., and Panigo, D. (2010). El impacto de la Asignación Universal por Hijo en Argentina.

Castro, L., and Barafani, M. (2015). Buscando la diagonal. cómo reducir los subsidios protegiendo a los sectores vulnerables. Buenos Aires: CIPPEC.

Cetrángolo, O., and Gómez Sabaini, J. C. (2010). Argentina: un análisis de los tributos directos y cálculo de evasión. *Evasión y equidad en América Latina* , 97-134.

Cont, W. (2007). Estructuras tarifarias en el servicio de electricidad para usuarios residenciales. el caso de las provincias argentinas. Fundación de Investigaciones Económicas Latinoamericanas.

Cont, W., and Porto, A. (2017). Política fiscal y distribución personal y regional del ingreso en Argentina.

Cont, W., and Susmel, N. (2006). Evasión impositiva en impuestos directos personales: ganancias de las personas y seguridad social. *La presión tributaria sobre el sector formal de la economía*.

Edo, M., Marchionni, M., and Garganta, S. (2015). Conditional cash transfer programs and enforcement of compulsory education laws: The case of asignación universal por hijo in Argentina. CEDLAS-Universidad Nacional de La Plata.

Garganta, L., Gasparini, M., and Marchionni, S. (2015). Social policy and female labor force participation.

Garganta, S., and Gasparini, L. (2012). El impacto de un programa social sobre la informalidad laboral: El caso de la auh en argentina. CEDLAS-Universidad Nacional de La Plata.

Garganta, S., Gasparini, L., Marchionni, M., and Tappatá, M. (2017). The effect of cash transfers on fertility: Evidence from argentina. *Population Research and Policy Review 36*, 1-24.

Grown, C., and Komatsu, H. (2010). Methodology and comparative analysis. In C. Grown and I. Valodia (Eds.), *Taxation and Gender Equity* (pp. 23–63). London, Great Britain: Routledge International Studies in Money and Banking.

INDEC (2016). La medición de la pobreza y la indigencia en la Argentina.

Lakner, C., Lugo, M., Puig, J., Salinardi, L., and Viveros, M. (2016). The incidence of subsidies to residential public services in Argentina: The subsidy system in 2014 and some alternatives. CEDLAS-Universidad Nacional de La Plata.

Lambert, P. (1993). *The distribution and redistribution of income: A Mathematical Analysis*. Manchester University Press.

Lustig, N. (2016). *Commitment to Equity Handbook. A Guide to Estimating the Impact of Fiscal Policy on Inequality and Poverty*. Tulane University, Department of Economics.

Lustig, N., and Higgins, S. (2013). Commitment to Equity Assessment (CEQ): Estimating the Incidence of Social Spending, Subsidies and Taxes Handbook. *Subsidies, and Taxes-Handbook (September 1, 2013) (1219)*.

Lustig, N., and Pessino, C. (2013). ¿Es la Argentina un modelo de políticas redistributivas? *Bastión Digital Argentina*.

Lustig, N., and Pessino, C. (2014). Social spending and income redistribution in Argentina during

the 2000s: The increasing role of noncontributory pensions. *Public Finance Review 42(3)*, 304-325.

Maurizio, R. (2009). Políticas de transferencias monetarias en argentina: evaluación de su impacto sobre la pobreza y la desigualdad, y evaluación de sus costos. In C. Grown and I. Valodia (Eds.), *Reflexiones y propuestas para mejorar la distribución del ingreso en Argentina* Buenos Aires, Argentina: Oficina de la OIT en Argentina.

Rossignolo, D. (2016). Taxes, expenditures, poverty, and income distribution in Argentina. Tulane University, Department of Economics.

Rossignolo, D. (2017). The impact of direct taxes and monetary transfers on income distribution and poverty in Argentina. Tulane University, Department of Economics.

Rossignolo, D., and Sabaini, J. (2009). *Argentina. Análisis de la situación tributaria y propuestas de reformas impositivas destinadas a mejorar la distribución del ingreso*. 99-180.

Rossignolo, D., Sabaini, J., and Harriague, M. (2013). La situación fiscal en argentina y sus efectos sobre la distribución del ingreso. una estimación para el año 2008. *Desarrollo Económico 52(207-208)*, 339–380.

SPE (2001). Caracterización y evolución del gasto público social: 2000. Last accessed 23 November 2023.

SPER (1999). El impacto redistributivo del gasto público en los sectores sociales. Resultados provisorios. Last accessed 23 November 2023.