The effects of fiscal policy on inequality and poverty in Senegal

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with

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Outline

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  - CEQ Methodology
  - Allocation Methods
  - Methodological Limitations

- Main Results
  - Is the system equalizing?
  - Is the system poverty reducing?

Methodology

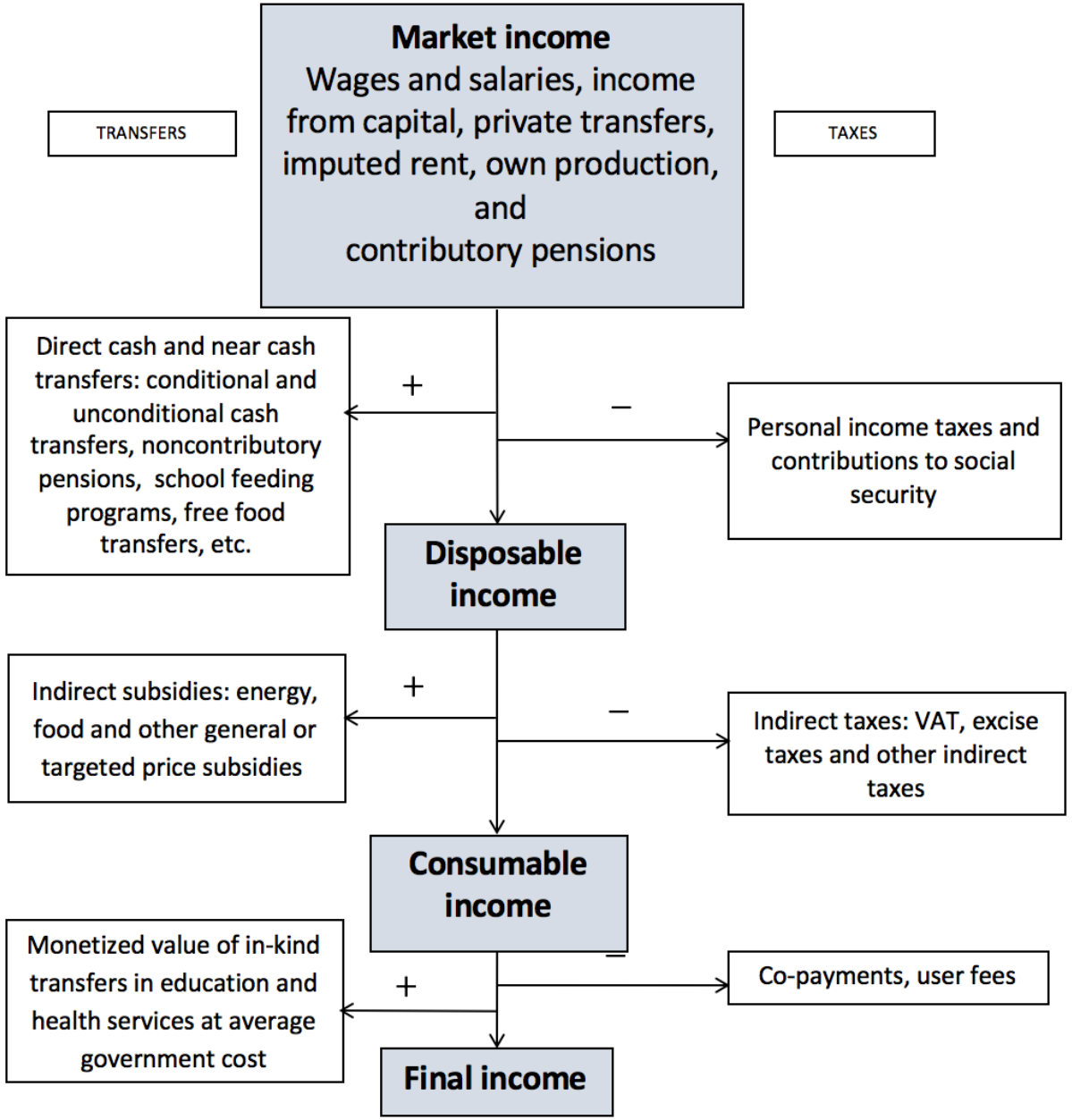
Data

- Poverty Monitoring Survey 2011 (*Enquête de Suivi de la Pauvreté au Sénégal*)
  - ESPS contains, among others, data on income, expenditures, auto-consumption, and the use of educational and health services.
- Expenditure and transfers from the 2015 executed budget
- Revenues collected in 2015 based on administrative accounts

CEQ methodology

The analysis follows the so-called CEQ methodology (Lustig and Higgins 2013*) which consists of constructing income concepts through the allocation of taxes, social contributions, subsidies and public social spending to individuals included in a household survey in a consistent and methodologically sound way, so that it is possible to compare incomes and income-based measures of wellbeing before and after taxes and public transfers.

* Lustig, Nora and Sean Higgins. 2013. Commitment to Equity Assessment (CEQ): Estimating the Incidence of Social Spending, Subsidies and Taxes. Handbook. CEQ Working Paper 1, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue, September.



Source: adapted from Lustig and Higgins 2013.

Allocation methods

- The main methods described include:
  - Direct identification: the survey reports who receives the benefit (or who are the taxpayers) and the amount received (or paid);
  - Imputation: the survey reports who receives the benefit (or who are taxpayers), but does not report the amount received (or paid);
  - Simulation: the survey does not report who receives the benefit (or who are the taxpayers), and does not report the amount received (or paid).

Lustig, N, editor. 2017. *Commitment to Equity Handbook. Estimating the Impact ofFiscal Policy on Inequality and Poverty* (Brookings Institution Press and CEQ Institute, Tulane University).

Revenue side: taxes included in the analysis

Structure of Senegal's government revenues, 2015

Taxes	Included in Analysis	2015Millions CFA	percentage of total	percentage of GDP	Allocation method
Total Revenue		**2,026.0**	**100 %**	**21.0**	
Taxes		**1,602.1**	**79 %**	**19.6**	
Direct Taxes		455.7	22 %	5.4	
Personal Income Tax	Yes	257.9	13 %	3.2	Simulation
Payroll Tax	Yes	20.3	1 %	0.3	Simulation
Corporate Income Tax	No	147.2	7 %	1.8	-
Other Direct Taxes	No	30.3	1 %	0.4	-
VAT and Other Indirect Taxes		1,142.3	56 %	14.1	Simulation
VAT	Yes	617.0	30 %	7.6	Simulation
Excises on Alcoholic Beverages	Yes	9.3	0 %	0.1	Simulation
Excises on Non-Alcoholic Beverages	Yes	0.9	0 %	0.0	Simulation
Excises on Tobacco	Yes	22.9	1 %	0.3	Simulation
Excises on Oil Derivates	Yes	61.5	3 %	0.8	Simulation
Excises on Fatty Foods	Yes	2.4	0 %	0.0	Simulation
Excises on Comestic Products	Yes	2.5	0 %	0.0	Simulation
Tax on Financial Activities	No	47.7	2 %	0.6	-
Import Taxes	No	297.0	15 %	3.7	-
Royalty on Telecomunications	Yes	20.2	1 %	0.3	Simulation
Other Indirect Taxes	No	81.1	4 %	1.0	-
Other Taxes	No	4.1	0 %	0.1	-
Contributions to social security	Yes	81		1.0	Imputation
TOTAL	Part	2,026.0		21.0	

Source: Author's elaboration based on the 2015 revenues provided by the Ministry of Finance.

Expenditure side: benefits included in the analysis

Structure of Senegal's government spending, 2015

Expenditure	Included in the analysis	2015Millions CFA	percentage of total expenditure	percentage of GDP	Allocation Method
Total Expenditure (Dépenses totales et prêts (net))		2,413	100%	29.3%	
Social Spending		**561**	**23.23%**	**6.8%**	
Social Assistance *of which*		**16**	**0.67%**	**0.2%**	
Conditional or Unconditional Cash Transfers		15	0.62%	0.2%	
Programme National de Bourses de Sécurité Familiale	Yes	15	0.62%	0.2%	Simulation
Non-contributory Pensions	No		0.00%	0.0%	
Near Cash Transfers		1	0.06%	0.0%	
Cantines scolaires	Yes	0.75	0.03%	0.0%	Simulation
Contribution to CMU	Yes	0.608	0.03%	0.0%	Simulation
Transfers in-kind		**544**	**22.56%**	**6.6%**	
Education *of which*	Yes	457	18.93%	5.5%	
Pre-school	Yes	0.582	0.02%	0.0%	Imputation
Primary Secondary	Yes	335	13.86%	4.1%	Imputation
Tertiary	Yes	122	5.04%	1.5%	Imputation
Health *of which*	Yes	88	3.63%	1.1%	
General Health	Yes	81	3.36%	1.0%	Imputation
CMU Programs	Yes	**7**	0.27%	0.1%	Simulation
Enfants de moins de 5 ans	Yes	3	0.12%	0.0%	Simulation
Césariennes	Yes	0.969	0.04%	0.0%	Simulation
Personnes âgées de 60 ans et plus (Plan Sésame)	Yes	1	0.05%	0.0%	Simulation
Other CMU expenditure	Yes	1	0.05%	0.0%	Simulation
Subsidies *of which*		**51**	**2.12%**	**0.6%**	
Electricity	Yes	15	0.62%	0.2%	Simulation
On Inputs for Agriculture	Yes	36	1.50%	0.4%	Imputation

Source: Author's elaboration based on the 2015 executed budget provided by the Ministry of Finance, Education, and Health.
Notes: The figures shown do not necessarily coincide with those published by multilateral organizations due to differences in concepts and definitions. It is important to note that in 2015 the subsidy to electricity was zero. For simulation purposes, the most recent figure available was used and this was for 2013.

Main methodological limitations

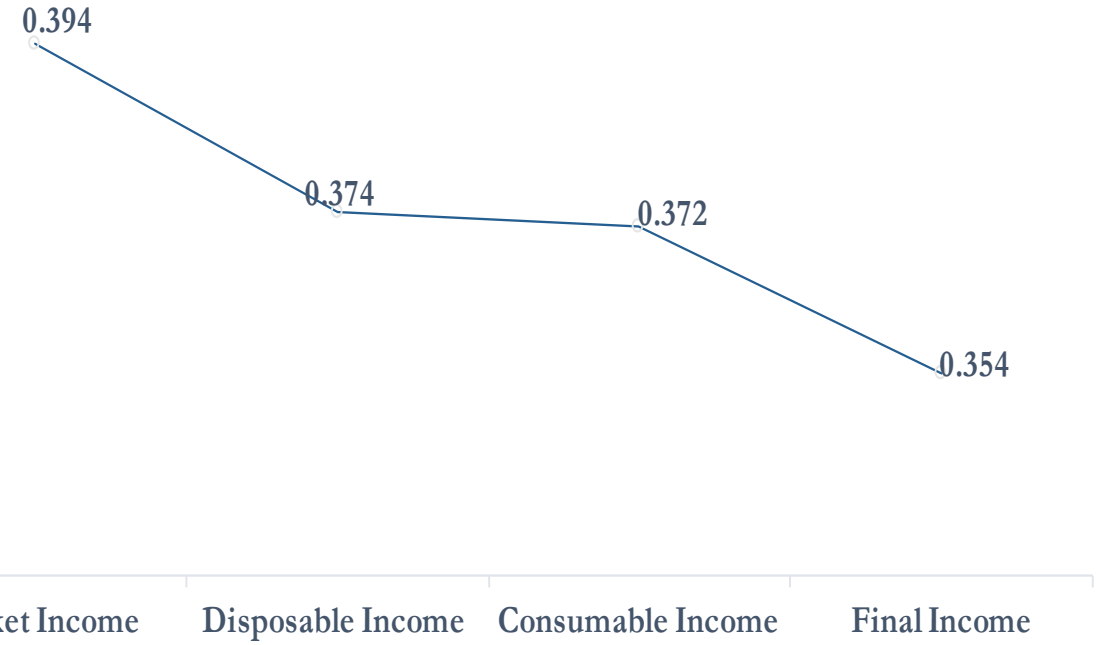
- The CEQ methodology:
  - does not incorporate behavioral or general equilibrium effects.
  - is point-in-time rather than lifecycle which limits the ability to capture the long-term effects of fiscal policy on welfare indicators (Lustig, ed. 2017).

Main Results

The system is equalizing

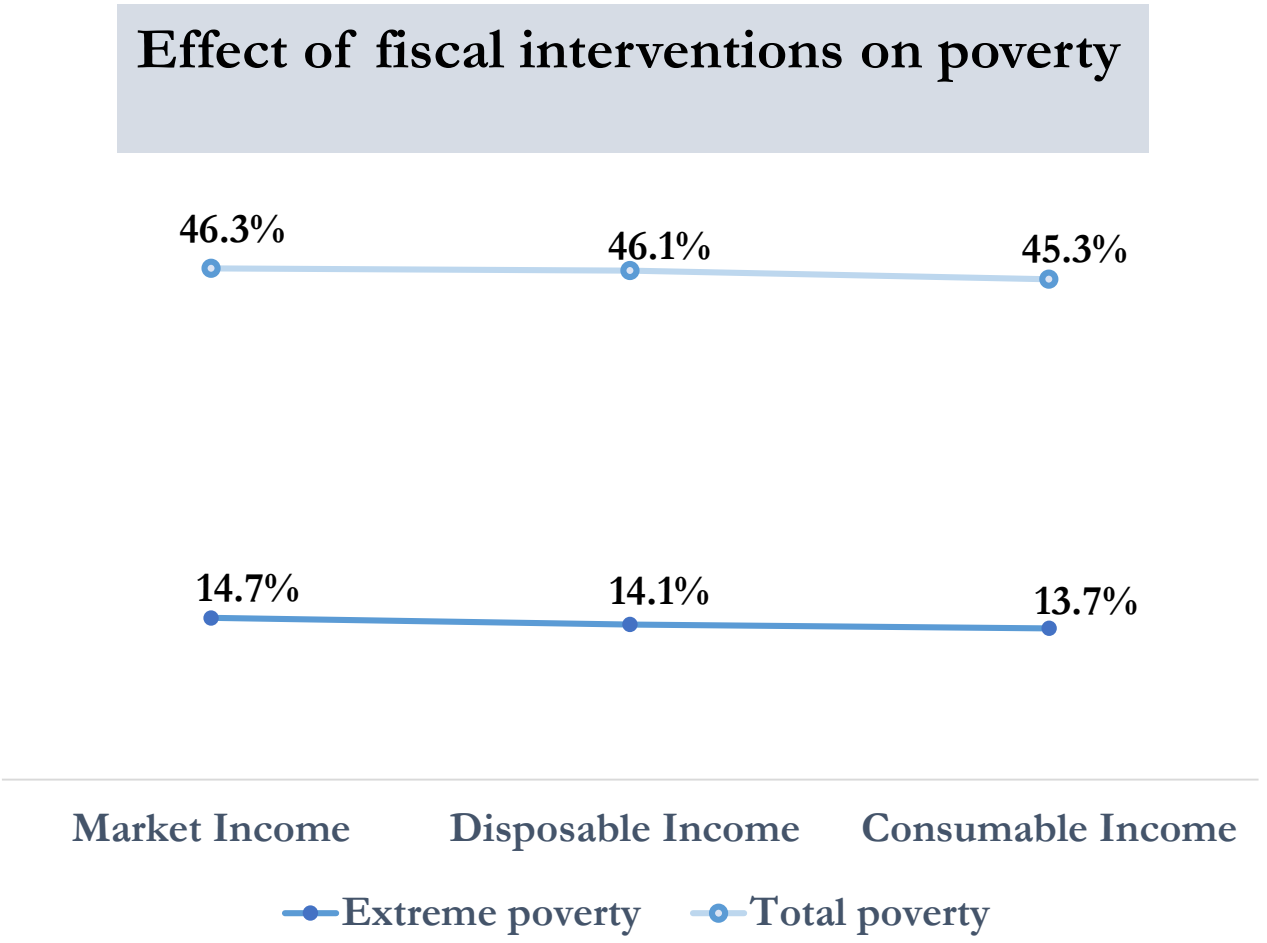
- The net effect on inequality reduction exerted by contributions to social security, direct taxes and direct transfers is positive, as well as the net effect of subsidies and indirect taxes and the effect of transfers in-kind.

Effects of fiscal interventions on income inequality
(Gini Index)

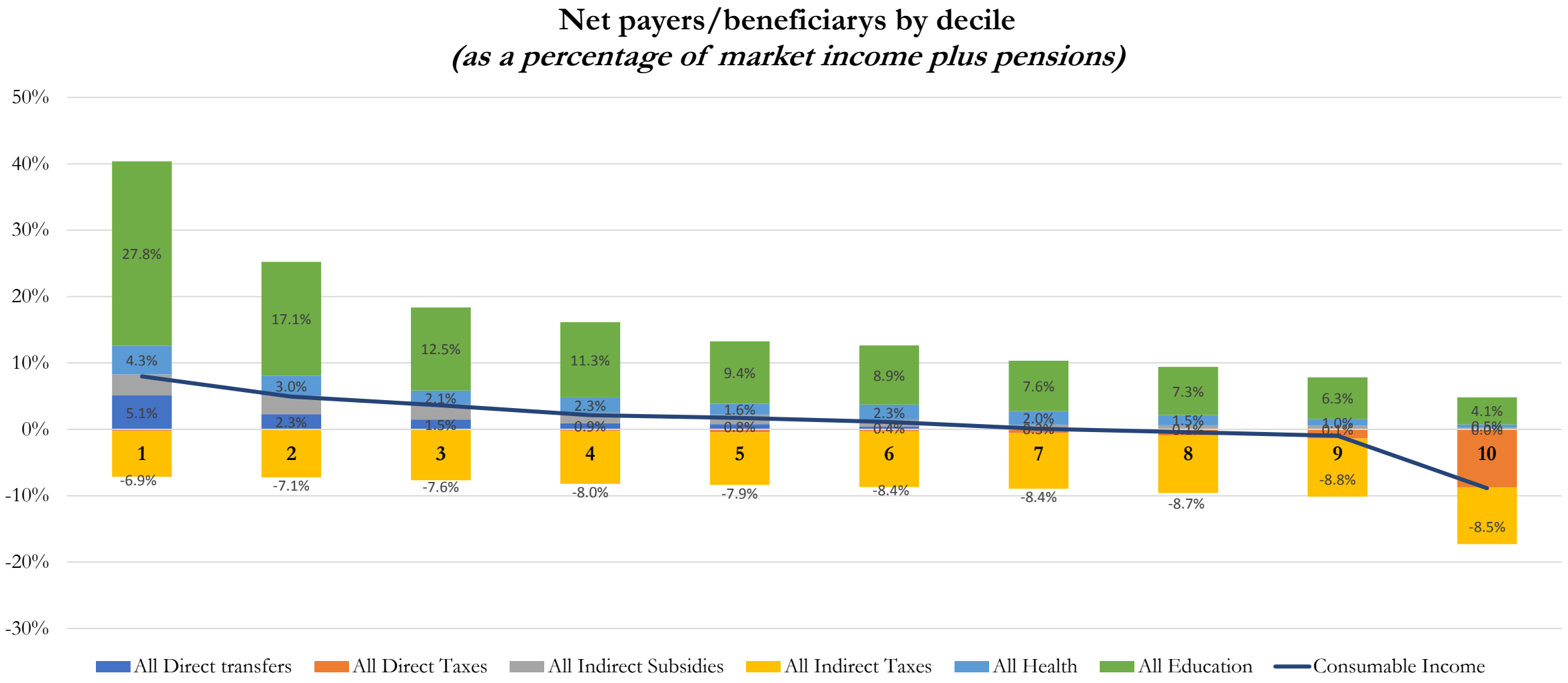


The system is poverty reducing

The net effect on poverty reduction exerted by contributions to social security, direct taxes and direct transfers is positive, as well as the net effect of subsidies and indirect taxes.



The tax system as a whole is in favor of the poorest half of the population



Marginal Contributions

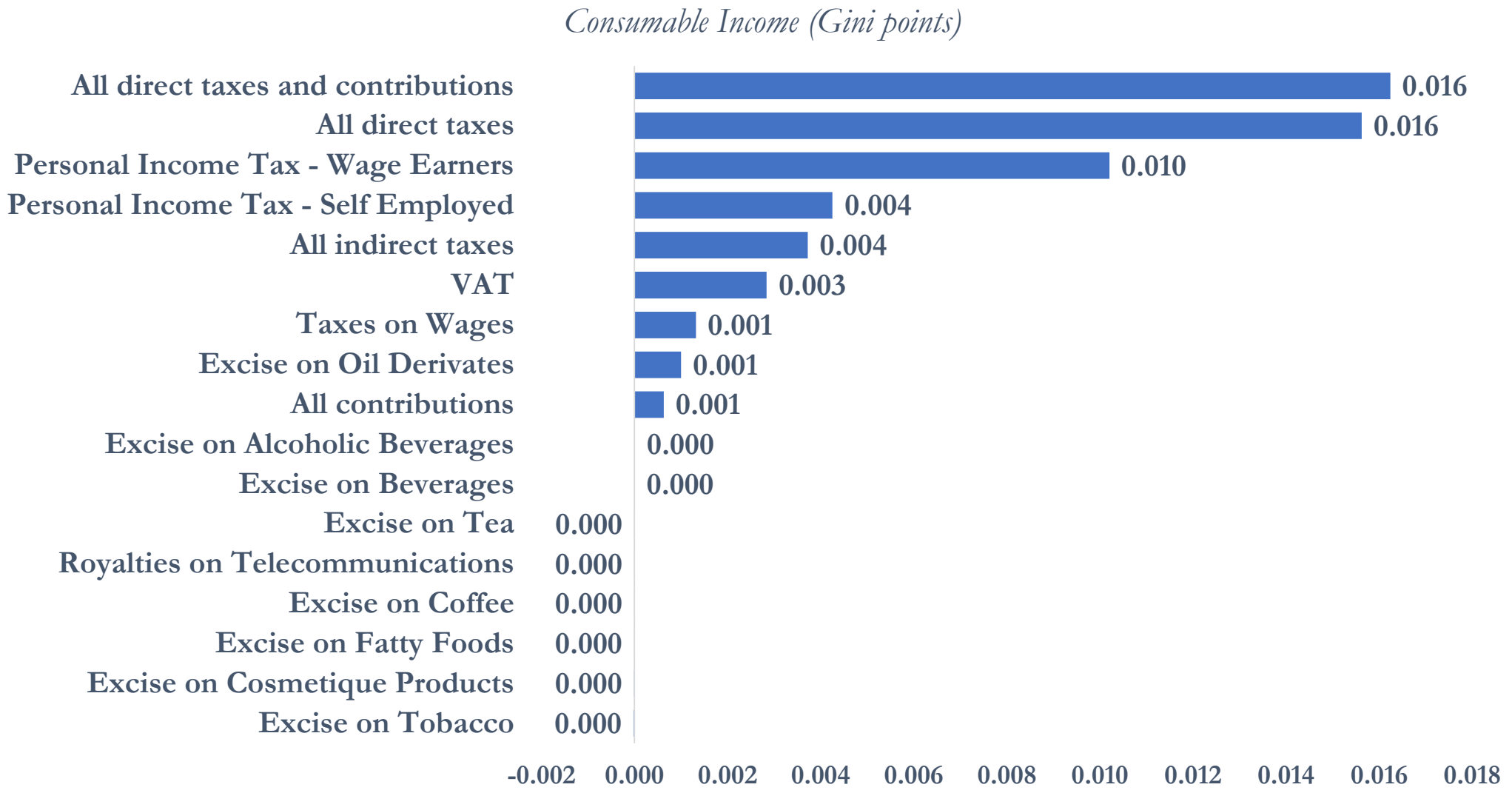
- The marginal contribution of a tax (transfer) to inequality or poverty is calculated by taking the difference between the Gini coefficient or the poverty headcount of the relevant end income concept without the tax (transfer) and the Gini coefficient or poverty headcount of the relevant end income concept with the tax (transfer).

MC to ineq=Gini (Income without intervention)-Gini(with the intervention)

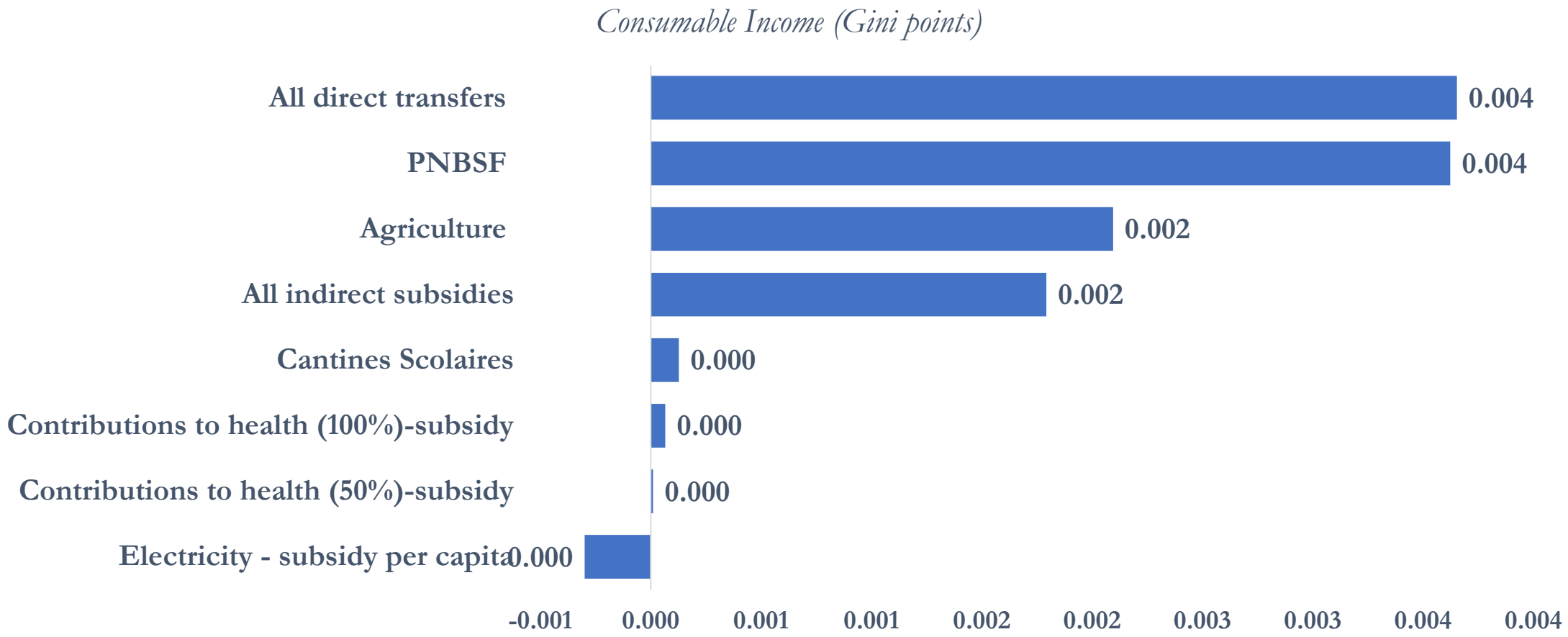
Enami, Ali, Nora Lustig, and Rodrigo Aranda. 2017. "Analytical Foundations: Measuring the Redistributive Impact of Taxes and Transfers." Chapter 2 in Nora Lustig (editor), Commitment to Equity Handbook. A Guide to Estimating the Impact of Fiscal Policy on Inequality and Poverty. Brookings Institution Press.

Marginal contributions to inequality

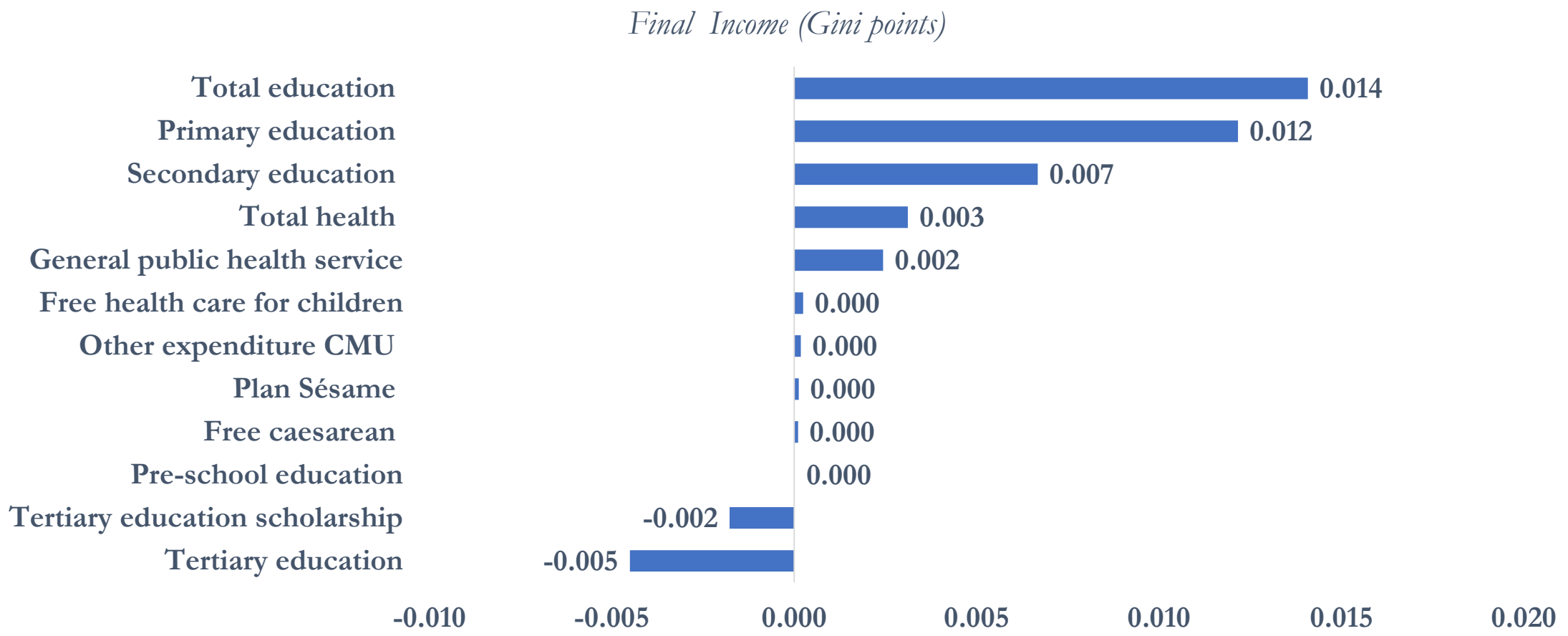
Personal income tax is the tax with largest impact on inequality



PNBSF is the transfer with higher contribution to inequality

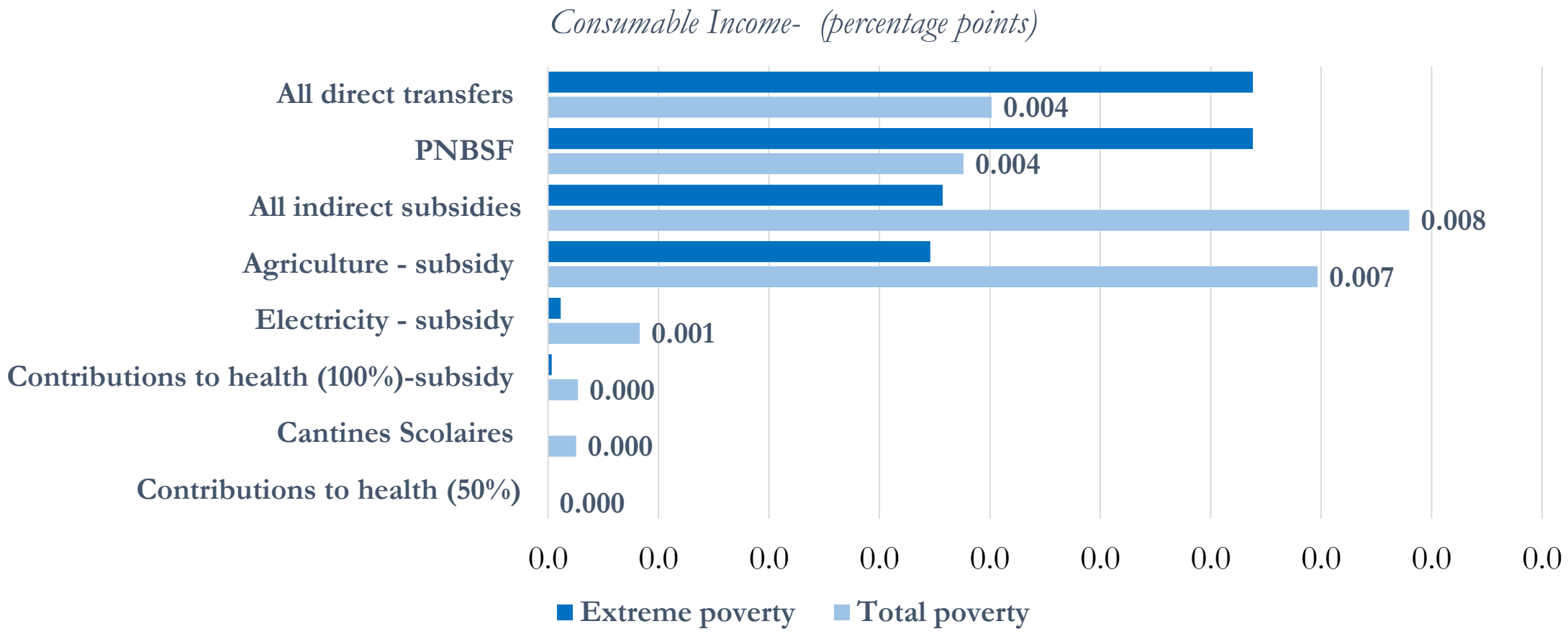


Tertiary education expenditure has a negative effect on inequality



Marginal contributions to poverty

PNBSF is the direct transfer with larger impact on poverty



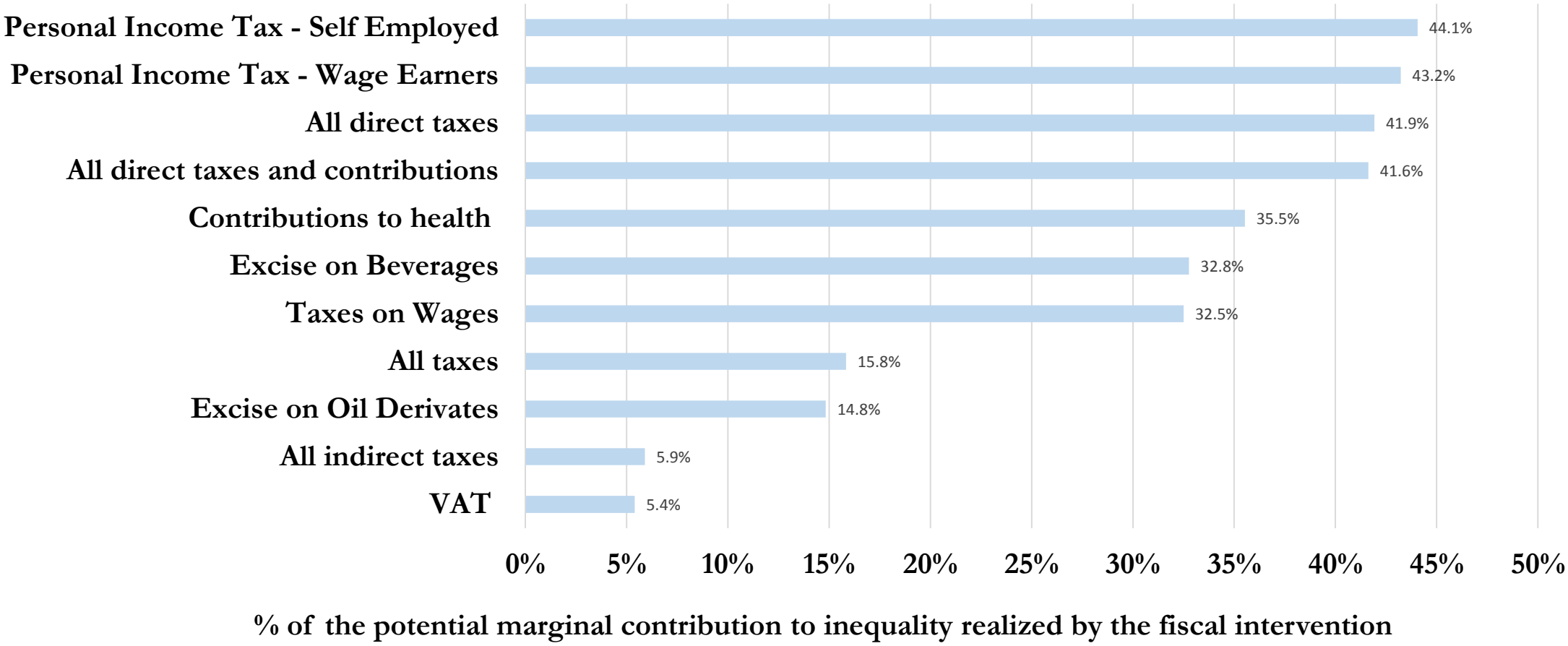
CEQ impact effectiveness indicators

- Is defined as the ratio between the Marginal Contribution of a transfer (tax) and the maximum possible Marginal Contribution if the same amount of the transfer (tax) were distributed maximizing its inequality or poverty reducing impact.

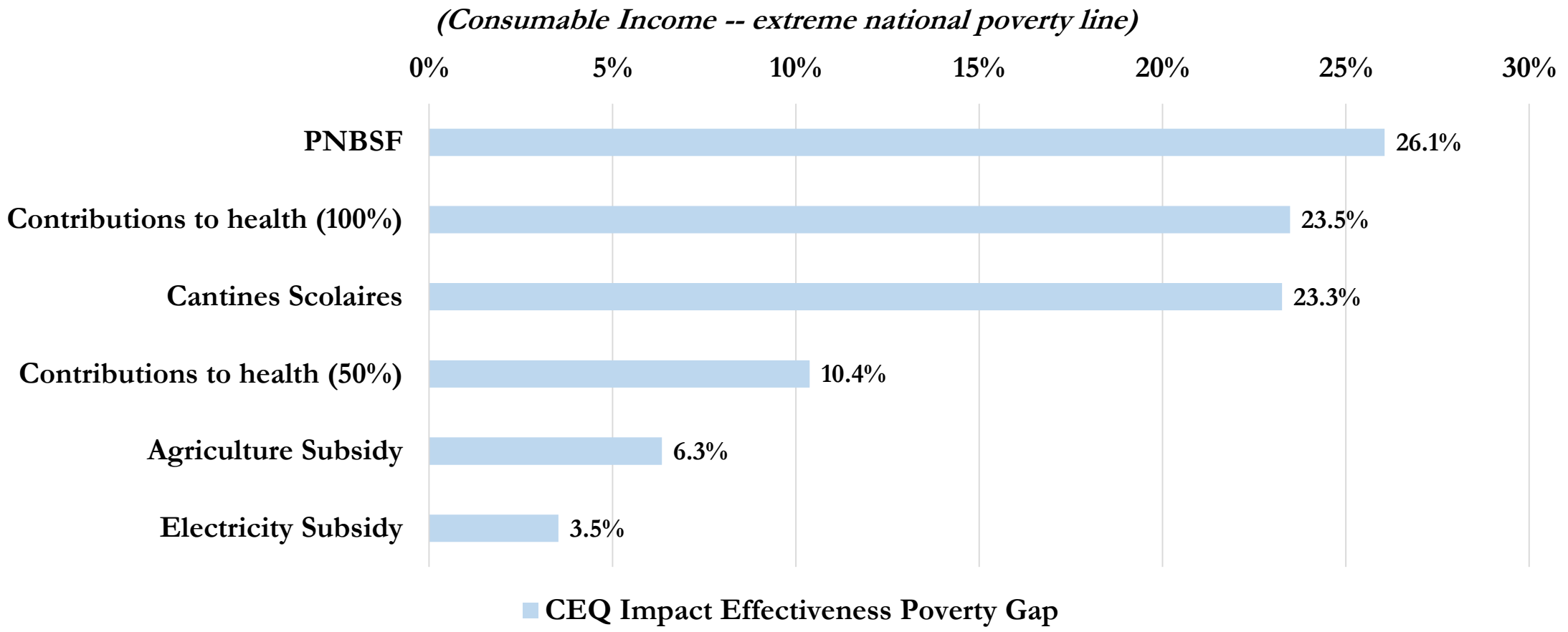
$$\text{IEI} = \frac{effective\ MC}{potential\ MC}$$

Enami, Ali. 2017. "Measuring the Effectiveness of Taxes and Transfers in Fighting Poverty and Reducing Inequality in Iran," Chapter 14 in Commitment to Equity Handbook. Estimating the Impact of Fiscal Policy on Inequality and Poverty, edited by Nora Lustig (Brookings Institution Press and CEQ Institute, Tulane University).

Personal income tax is the most efficient tax reducing inequality



PNBSF is the most efficient direct transfer reducing the poverty gap

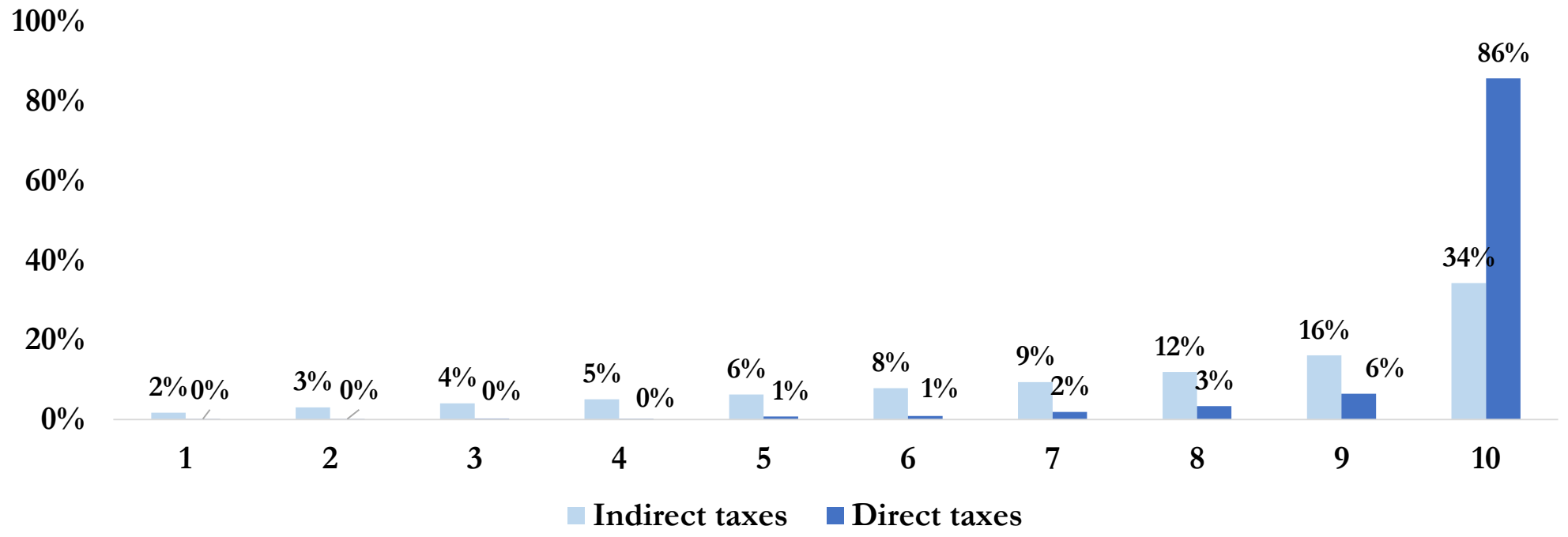


Conclusions

- Though the system is inequality and poverty reducing, the effect on poverty is small.
- The low effect on poverty might be due to several reasons including:
  - the composition of social spending (0.2% of the GDP on CCT)
  - weak targeting poverty interventions (non poor people receive benefits)
  - size of the CCT (5% of market income)
- Better results might be achieved spending the same, but differently.
  - Subsidy to electricity and PNBSF have the same size (0.2% of the GDP).
    - Subsidy to electricity increases inequality while PNBSF reduces inequality,
    - Subsidy to electricity is the least effective reducing the poverty gap while PNBSF is the most effective.
  - Tertiary education increases inequality and it is 7 times the size of the flagship.
- Direct taxes may play a bigger role in reducing inequality and poverty
  - Increase the tax base of personal income tax
    - Neutral in terms of poverty
    - Positive in terms of inequality reduction

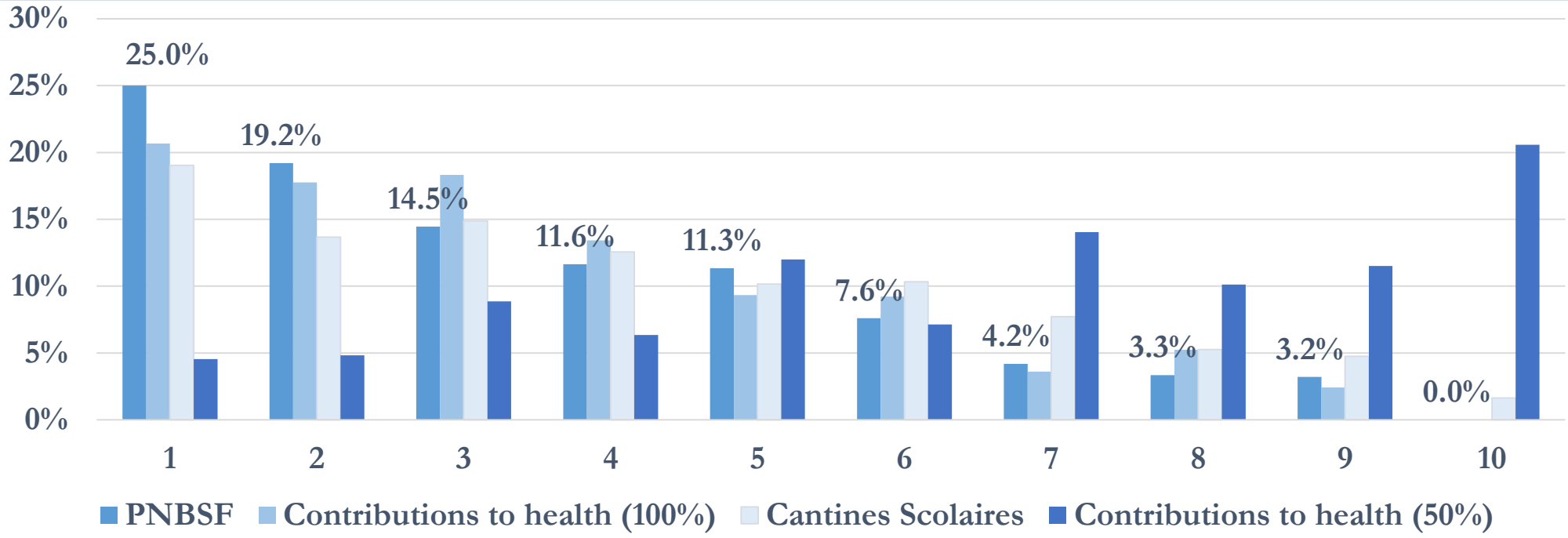
Direct taxes are paid mainly by the top 10% of the distribution while indirect taxes by the top 20%

Direct and indirect taxes paid by each decile as a proportion of the total tax collection

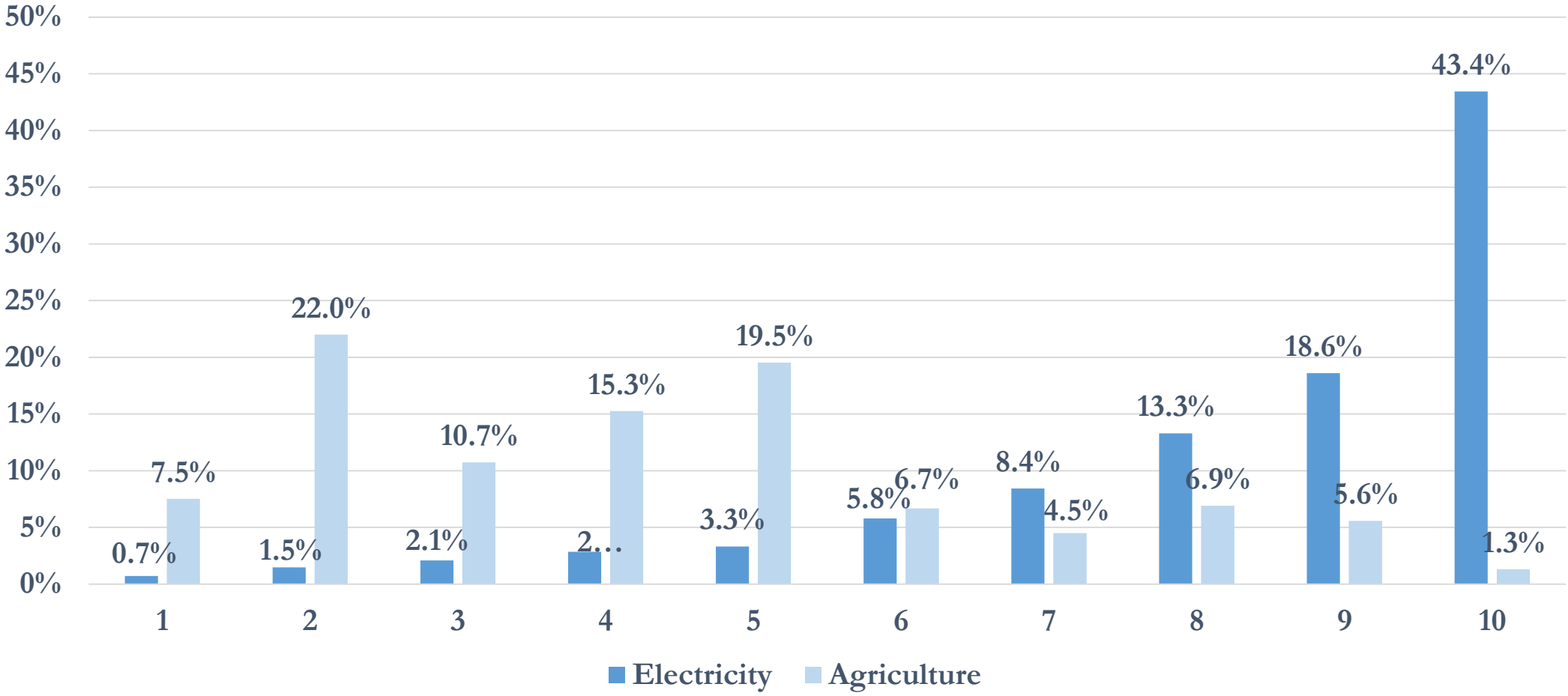


Direct transfers are concentrated among the poorest half of the distribution, but the non-poor also benefit…

Direct transfers are received by each decile as a proportion of the total tax collection



Subsidy to electricity is concentrated among the top 20% of the distribution while the subsidy to agriculture, among the first 50%



Basic levels of education are distributed uniformly, while higher education benefits the richest.