

The Redistributive Effects of Fiscal Policy in Mali

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Abstract

This paper provides a fiscal incidence analysis for Mali using the CEQ methodology developed by the Commitment to Equity Institute. We study the progressivity of taxes and public spending in Mali and analyze the overall impact of taxes and spending on poverty and inequality. The results show that although taxes and spending are generally progressive, the fiscal system leads to an impoverishment of the population. The poverty rate rises from 40.59 percent to 42.99 percent, corresponding to an increase of 5.9 percent or 2.4 percentage points when the effects of fiscal policy are taken into account. In addition, 35 percent of the population who were poor became poorer and 2.8 percent of the population who were non-poor became poor due to the effect of the fiscal system. The fiscal system has also a little impact on the decline in inequality in Mali. Mali's fiscal policy lowers the Gini index from 0.491 to 0.469 corresponding to 0.022 Gini points or a 4.5 percent drop when all taxes, transfers and in-kind benefits are taken into account. We find indirect taxes to be responsible for the negative impact of the tax system on poverty. A reform of indirect taxes is therefore necessary in order to limit the negative impact of these taxes on the poor.

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1. Introduction

Reducing poverty and inequality has become the major objective of public policies in developing countries. State fiscal policy and public spending are now seen as instruments to be used to reduce poverty and redistribute revenues even if theory and evidence point to the existence of one thing without the other (for example, inequality reduction but worsening poverty through fiscal policy). But in a context of limited financial resources in these countries, decisions must be made about which sectors are to benefit from greater public expenditure. For example, if a lot of resources are devoted to energy subsidies, there will be fewer resources available for education, health, infrastructure, and other areas of government intervention. Energy subsidies are, of course, important for the modern industrial sector, but they benefit mainly non-poor households. It is therefore important to identify the sectors for which public spending by the State will lead to a significant reduction in poverty and inequality.

State public spending is financed partly from the resources that the Government collects from households and other economic agents in the form of taxes. For households, paying taxes to the State reduces income and purchasing power. It must therefore be ensured that tax collection by the State does not exacerbate inequalities or result into a great deterioration in the living conditions of vulnerable households.

The main focus of this paper is how taxes and budget expenditures in Mali redistribute resources among the various welfare quantiles. The paper's objective is to prompt reflection on potential indicators that might help to measure the contribution of fiscal policies to the reduction of poverty and inequality. It presents a fiscal incidence analysis using the CEQ methodology to assess how taxes and spending distribute resources among the various income deciles in Mali. One of the advantages of the CEQ methodology is that it allows an analysis of the contribution of both taxes and public spending to the reduction of poverty and inequality. It is possible that taxes will be a source of inequality, but that the redistributive effect of public spending will be sufficient to compensate more than proportionally for the inequalities caused by the taxation system, such that, overall, the fiscal system³ helps to reduce inequality.

Our fiscal incidence analysis uses a partial equilibrium approach. It does not model the behavior of agents in response to different government fiscal interventions and does not take into account general equilibrium effects. The data used come from the latest Integrated Survey on Agriculture (*Enquête Agricole de Conjoncture Intégrée*, EACI), from 2014/15, and the national budget for 2014. In this paper we use simple notions of progressivity and the pro-poor nature of spending and taxes. A public expenditure (or tax) is progressive, in relative terms, if the proportion of expenditure (or tax) in relation to income decreases (increases) with household income. A public expenditure (or tax) is pro-poor if it is progressive in absolute terms—in other words, if the absolute amount

³ The fiscal system comprises both taxes and public expenditure.

(per capita, for example) of public expenditure (or tax) decreases (increases) with household income.

The results show that fiscal policy has a marginally favorable impact in terms of reducing inequality in Mali. Taxes and public spending together reduce the Gini index by 4.5 percent (0.022 points) from market income to final income. In terms of poverty reduction, however, the country's fiscal policy leads to greater impoverishment of the population. Indeed, the poverty rate rises by 5.9 percent, or 2.4 percentage points, from market income to consumable income as a result of the impoverishing effect of indirect taxes.

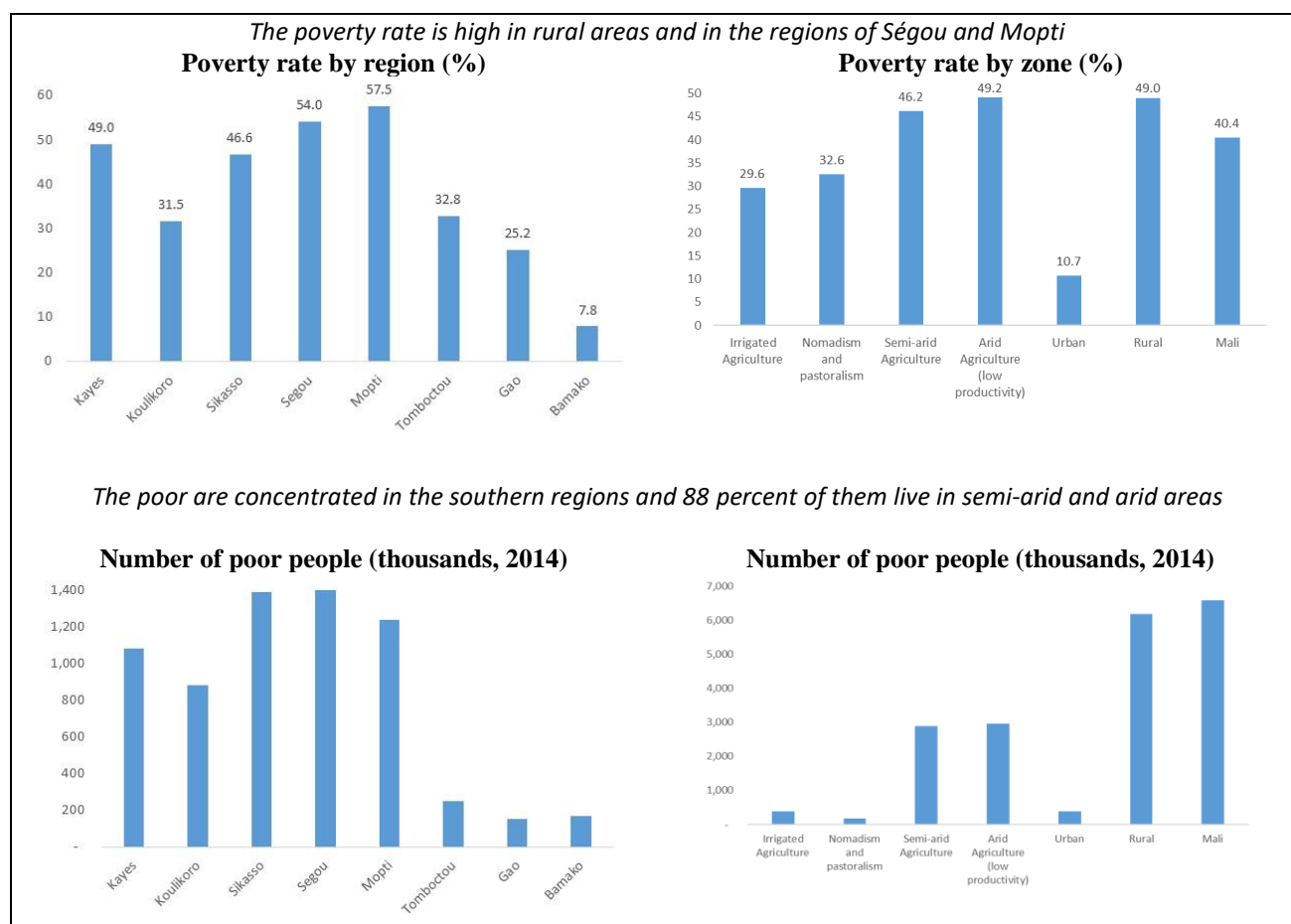
The remainder of this paper comprises the following sections: section 2 gives a brief overview of poverty in Mali, section 3 describes the methodology used, section 4 provides an overview of the Malian fiscal framework, section 5 presents the results with respect to the progressivity of taxes and expenditures, section 6 analyzes the overall impact of fiscal policy on poverty and inequality and the final section concludes.

2. Brief Overview of Poverty in Mali

It is clear from the World Bank Systematic Country Diagnosis (SCD) that poverty remains a daily challenge for the majority of Malians. In 2010, more than 90 percent of the poor lived in rural areas and subsisted on rain-fed agriculture and agro-pastoralism. The SCD concluded that one of the major factors that could contribute to poverty reduction would be to enable poor households to produce more, especially grain crops in arid areas where land is still relatively abundant but productivity is low. Hence, enabling poor households to increase their production (partly by farming larger areas) could be an effective strategy for poverty reduction. Arid zones account for 44 percent of the country's municipalities and 41 percent of its total population, according to the 2009 general population census.

Preliminary estimates by the World Bank indicate that the poverty rate stood at almost 40.4 percent in 2014. The rate was 49 percent in rural areas, which account for 94 percent of the country's 6.5 million poor. The poverty rate is higher in the regions of Segou (54 percent) and Mopti (57 percent), but relatively low in the northern regions and in the city of Bamako (7.8 percent). The majority of the poor are concentrated in the south, with more than 1 million poor in each of the regions of Kayes, Sikasso, Segou, and Mopti. In terms of agro-ecological zones, the poverty rate and the number of poor are higher in the two zones (semi-arid and arid) devoted to agriculture, where 88 percent of all poor people lived in 2014 (Figure 1).

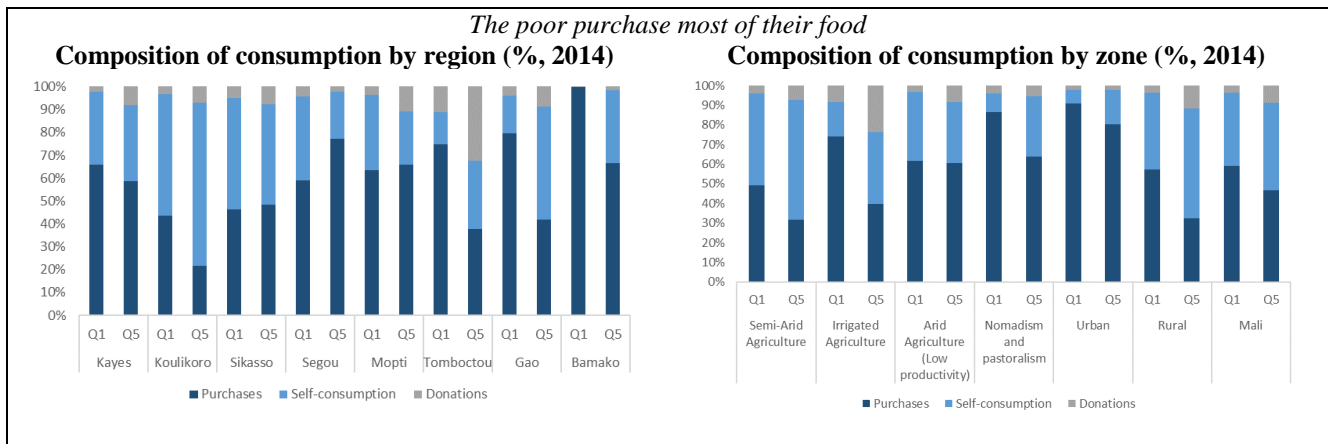
Figure 1: Poverty and Number of Poor by Region and Agro-Ecological Zone, 2014



Source: Authors' calculations on the basis of data from EACI, 2014.

There was considerable inequality between the richest and the poorest quintiles in 2014. The top quintile spent 6 times more on food and 10 times more on non-food products. Apart from that difference, consumption patterns were remarkably similar (Figure 2). Most foods are purchased in Mali, which is noteworthy, given the subsistence nature of the economy. Spending on clothing is significant, as is spending on public services. An analysis of the non-food expenditures of the poorest 20 percent in all rural and urban areas reveals that the poorest 20 percent in rural areas spend more on public services than the poorest 20 percent in urban areas, in both relative and absolute terms.

Figure 2. Composition of Consumption



Source: Authors' calculations on the basis of data from EAIC, 2014.

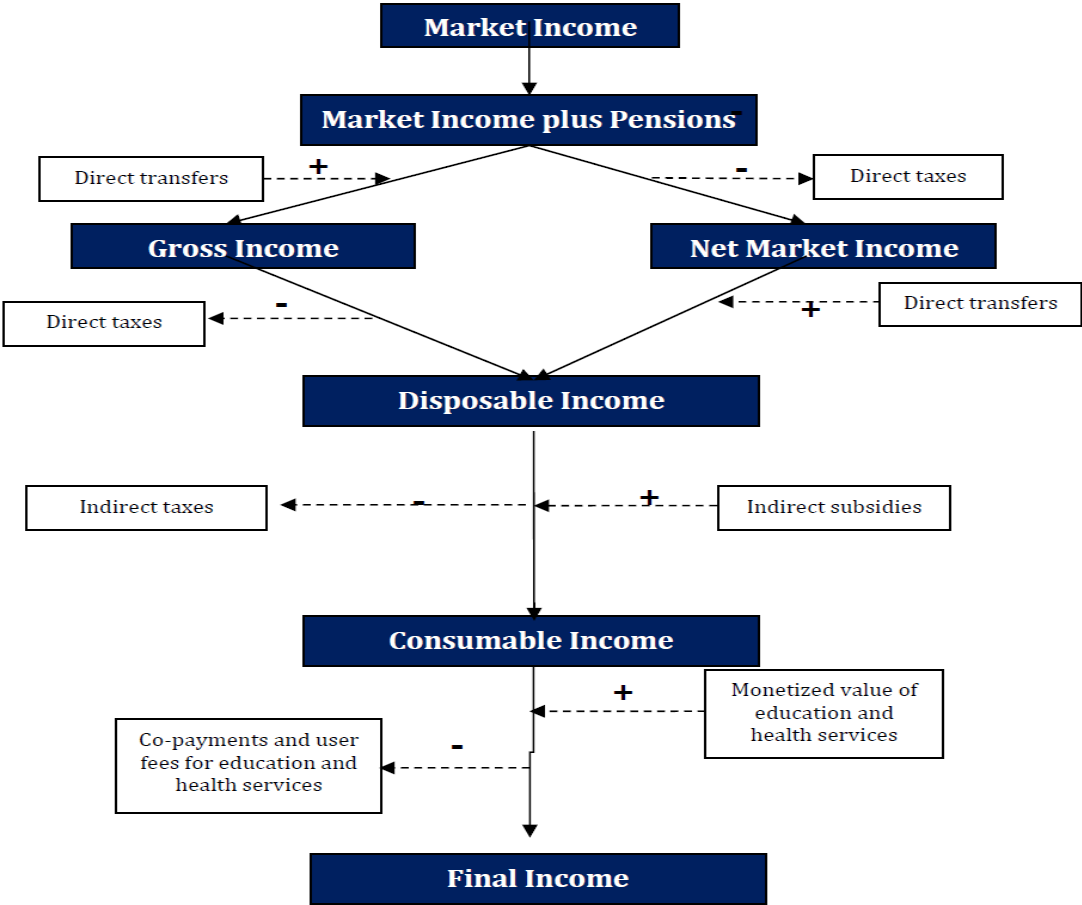
3. Methodology

In this paper, we use the CEQ methodology developed by the Commitment to Equity Institute. The general objective of the CEQ methodology is to assess the impact of a State's fiscal policy and its public spending on household welfare. The CEQ method seeks to identify the households that bear the burden of taxes and those that benefit from State social spending. The method uses two types of data: data from the State budget and national accounts and microdata of the type obtained from household surveys. Eligible households are allocated the amount of social spending they have received and the taxes they have paid, using institutional criteria as well as household survey data. When information is not available from a household survey, information from other sources may be used. The analysis uses various income concepts to measure the implications of each fiscal intervention for poverty and inequality.

Market income is pre-fiscal income—that is, household income before any fiscal intervention. It includes gross income from labor and capital, self-production and private transfers. Net market income is constructed by deducting direct taxes from market income. The direct taxes that we take into account here are taxes on salaries and wages. Disposable income is obtained by adding direct transfers to net market income. We assume that household consumption from the EACI data is equal to disposable income. Other income concepts are calculated using a backward and forward approach (see Figure 3 for definitions of the various income concepts in the CEQ approach). It is thus possible to calculate poverty and inequality indices for different income concepts in order to assess the impact of different fiscal interventions on household welfare. The direct transfers considered are cash transfers received by households under the *Jigisemejiri* social safety net program. The beneficiary households were randomly selected on the basis of the geographical areas covered by the program, the number of program beneficiaries and their poverty status. When indirect subsidies are added to disposable income and indirect taxes are deducted, the result is consumable income or post-fiscal income—i.e., household income after the various fiscal

interventions. Energy subsidies (gas and electricity) and agricultural subsidies are the two types of indirect subsidies considered. Indirect taxes include VAT, import taxes and other indirect taxes. Given the importance of the informal sector in Mali, the risk of tax evasion is high. The rates used for the various indirect taxes are therefore effective rates calculated on the basis of the Mali 2012 Social Accounting Matrix (SAM), rather than the statutory rates. Moreover, in addition to the direct effects of the VAT, indirect effects for the exempt sectors are taken into account using the input-output matrix from the 2012 SAM. The overall effect of indirect taxes on household welfare is therefore equal to the sum of the direct effect and the indirect effect and is assessed on the basis of the Paasche variation by assuming price-inelastic demand. Final income is obtained by taking into account the monetized value of public education and health services net of payments made by households to benefit from those services. The benefits of education (and health) spending are allocated to households for which at least one member uses the public education (or health) service. In order to assess the progressivity of different taxes and expenditures, we used the Kakwani index, which is equal to the difference between the concentration coefficient of a tax and the Gini index of pre-fiscal income. The tax is progressive if the Kakwani index is positive; if not, the tax is regressive.

Figure 3. Income Concepts in the CEQ Methodology



4. Mali's Fiscal Framework

The revenue collection method and the distribution of budgetary expenditure reflect government priorities. The budget, which is prepared by the Government and approved by the Parliament, is the expression of State choices that strongly influence the way in which different economic agents operate. The redistribution of budget resources to the poorest economic agents is essential to the goal of poverty reduction. This redistribution may involve changes in both revenue collection and the distribution of spending at the national and local levels.

Fiscal Incidence Analysis

The structure of resources in the Malian budget is very similar to that of other countries of the subregion, with a predominance of taxes on goods and services. The tax system generates considerable resources for potential redistribution, especially as the gold sector accounts for about 20 percent of taxes on income, profits, and property. Taxes on goods and services accounted for 34 percent of budget resources in 2014, while taxes on income, profits and property accounted for 21 percent (Table 1). In principle, it is possible to analyze fiscal incidence from a budget revenue standpoint, but this paper looks only at the following budget lines: the wage and salary tax (WST), the value added tax (VAT), import taxes and other indirect taxes. These budget lines account for about 47 percent of the State's resources and 74.3 percent of tax revenues.

In order to measure the impact of taxation on a household, it is necessary to determine the effect of each tax on household income or expenditure. This can be relatively simple for most, but not all taxes. For example, it is difficult to allocate the burden of a natural resource tax to individual members of the population, which is why the distribution of such a tax is simply considered to be uniform. Also, corporate tax is not easy to deal with, mainly because of the lack of reliable data on the characteristics of business owners.

Fiscal incidence analysis must thus begin with a clarification of the assumptions to be made about the effective fiscal incidence of each tax on individuals. The question of allocation arises because the legal incidence of a tax (who is legally responsible) is often different from the actual economic incidence (who really bears the burden of the tax). For example, it will be assumed that individuals who do not contribute to the social security system do not pay taxes or that consumption taxes are paid by consumers but are not collected in the informal market.

Table 1. Structure of Budget Revenue, 2014

	Amount (CFAF Billions)	Share in the Budget (%)	Percentage of GDP	Included in the Analysis		Allocation Method	Value in the Survey (CFA F Billions)	Survey Value as a Share of National Account Value
A. Regular Revenues	1,045.7	68.9	14.7%	-		-		
Tax Revenues:	958.6	63.1	13.5%	-		-		
* Personal and Corporate Income Taxes	310.7	20.5	4.4%	-		-		
Wages and Salary Taxes	75.3	5.0	1.1%	Yes		Imputation	72.11	95.8%
Corporate Taxes	171.0	11.3	2.4%	No		-		
Gold Sector	56.0	3.7	0.8%	No		-		
* Indirect Taxes	509.5	33.6	7.2%	Yes		Imputation	411.8	80.8%
VAT	311.6	20.5	4.4%	Yes		Imputation	269.6	86.5%
Taxes on Mining companies	59.5	3.9	0.8%	Yes		Imputation		
Petroleum excises	30.2	2.0	0.4%	Yes		Imputation		
* Taxes on trade and International transactions	127.2	8.4	1.8%	Yes		Imputation		
* Other Taxes revenues	11.2	0.7	0.2%	No		-		
Non Taxes Revenues :	87.0	5.7	1.2%	No		-		
* Privatization and portfolio revenues	73.8	4.9	1.0%	No		-		
* Income from Buildings	2.0	0.1	0.0%	No		-		
* Other Non Taxes revenues	11.2	0.7	0.2%	No		-		
B. EXCEPTIONAL RESOURCES	22.0	1.4	0.3%	No		-	-	-
C. BUDGET SUPPORT	199.0	13.1	2.8%	No		-	-	-
D. BORROWINGS	135.7	8.9	1.9%	No		-	-	-
E. DONATIONS	51.0	3.4	0.7%	No		-	-	-
F. ANNEX BUDGET RESOURCES	4.7	0.3	0.1%	No		-	-	-
G. RESOURCES OF ACCOUNTS AND SPECIAL FUNDS	60.0	4.0	0.8%	No		-	-	-
TOTAL REVENUES	1,518.1	100.0	21.3%	-		-	-	-

Analysis of the Incidence of Expenditures, Transfers, and Subsidies

It is obvious that not all households benefit from public spending in the same way. The incidence analysis will help to identify potential areas for reform to improve the Government's ability to reduce poverty and inequality through better targeted public spending. Unfortunately, however, some public spending cannot convincingly be allocated to households. For example, who benefits most from military spending, or from law enforcement or diplomatic services or the courts, or from government debt service payments? It can be assumed that the entire population benefits equally from these public services.

In this paper, the analysis of spending will begin with a measurement of the incidence of public spending on education, health, and targeted social programs. The analysis may also examine the effects of specific subsidies for electricity and liquefied petroleum gas (LPG) and agricultural subsidies. These budget lines accounted for about 30 percent of total spending in 2014 (Table 2). The method for analyzing public expenditure generally comprises three stages. First, the value of the unit costs of the public expenditure or subsidy is estimated. The second step is to identify the coverage of the spending or subsidies and allocate them to users/beneficiaries. The third and final step is to aggregate and present the results showing the magnitude of public spending relative to household spending and income, broken down into quantiles.

Table 2. Structure of Budget Expenditure, 2014

Public Expenditures	Amount (CFAF, Billions)	Share in the Budget(%)	Share in the GDP	Included in the Analysis	Allocation Method
Public Powers and General Administration	150.90	10.1%	2.1%	No	-
Jigisemejiri	15.10	1.0%	0.2%	Yes	Simulation
Diplomacy & Foreign Affairs	26.11	1.7%	0.4%	No	-
National Defense & Security	201.67	13.4%	2.8%	No	-
Basic education	179.13	11.9%	2.5%	Yes	Imputation
Higher Education and Scientific Research	88.67	5.9%	1.2%	Yes	Imputation
Youth, Sport and Culture	21.70	1.4%	0.3%	No	-
Health	85.19	5.7%	1.2%	Yes	Imputation
Social Sector	41.21	2.7%	0.6%	No	-
Employment	6.15	0.4%	0.1%	No	-
Agriculture	157.29	10.5%	2.2%	No	-
Agricultural Subsidies	34.50	2.3%	0.5%	Yes	Imputation
Hydraulic Mine And Industry	113.55	7.6%	1.6%	No	-
-Gas Subsidies	6.50	0.4%	0.1%	Yes	Imputation
-Electricity Subsidies	42.00	2.8%	0.6%	Yes	Imputation
Urban Planning and public Infrastructures	96.81	6.5%	1.4%	No	-
Transportation	27.81	1.9%	0.4%	No	-
Communication	30.61	2.0%	0.4%	No	-
Internal Debt	28.51	1.9%	0.4%	No	-
External Debt	62.38	4.2%	0.9%	No	-
Interest on external Debt	20.59	1.4%	0.3%	No	-
Non-Distributed Deposits	162.05	10.8%	2.3%	No	-
Total	1500.33	100.0%	21.1%	-	-

5. Progressivity of Taxes and Public Spending

Direct Taxes: Wage and Salary Tax (WST)

The sum of wages and the various benefits received is considered income from employment. To estimate the contribution of households to the WST, the following rates are applied for each income bracket.

Table 3. WST Taxation Rates

<i>Income brackets (CFAF)</i>			<i>Rate</i>
0	to	175,000	0 %
175,001	to	600,000	5 %
600,001	to	1,200,000	13 %
1,200,001	to	1,800,000	20 %
1,800,001	to	2,400,000	28 %
2,400,001	to	3,500,000	34 %
Over 3,500,000			40 %

The rates apply to the income of wage-earners who are employed by private or public organizations in the formal sector and to pensions. In the EACI, an individual is considered to be working in the formal sector if at least one of the following three conditions is met: (i) the individual is entitled to annual paid leave, (ii) the individual is entitled to sick leave, or (iii) the individual is entitled to a retirement pension as an employment benefit. We also apply the corresponding deduction according to the size of the household.

The results show that the WST is progressive (Figures 4a and 4b). The poorest 60 percent pay 2% of total WST collected, while 77 percent of the WST is paid by the top decile, as is shown in Figure 4a. In addition, WST represents less than 3 percent of the market income of the top decile. This is due to the high level of informality and the survey being truncated at the top.

The distribution of the WST by area of residence shows that the share of the rural population in the WST amounts collected by the State is negligible (Figures 4c and 4d). The minimal contribution of rural areas to the WST is explained by the predominance of the informal sector in these areas. In both urban and rural areas, WST is globally progressive. The amounts of WST paid by urban households, both as a share of market income and in absolute terms per capita, are significantly higher than in rural areas regardless of the deciles considered.

The WST is progressive everywhere and pro-poor

Figure 4a. WST (incidence by market income deciles and concentration by decile)

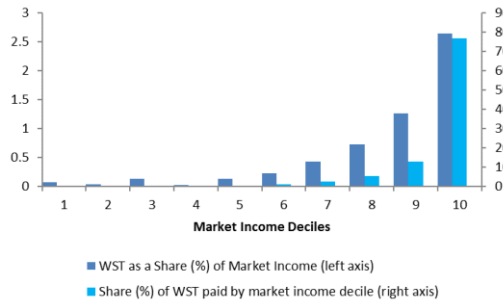
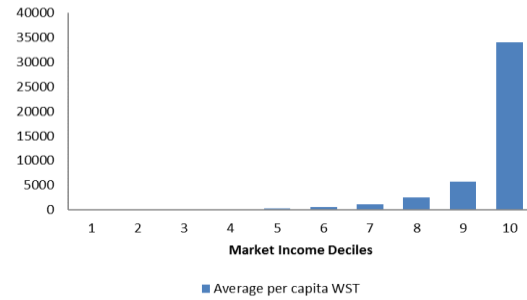


Figure 4b. WST (CFAF, amount per capita)



WST is negligible in rural areas

Figure 4c. WST (incidence by market income deciles) by place of residence

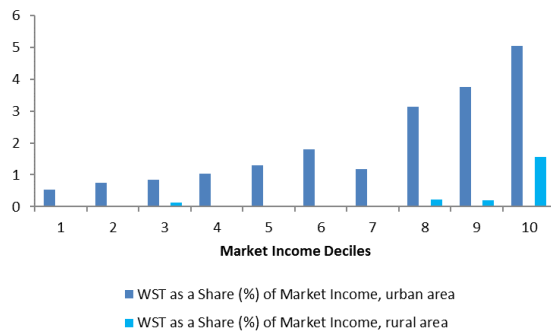
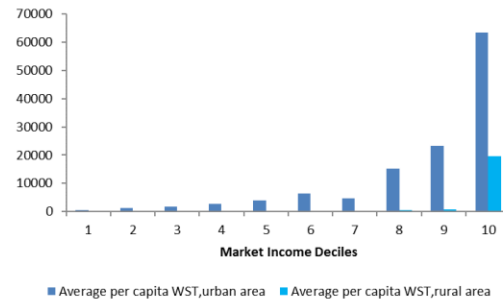
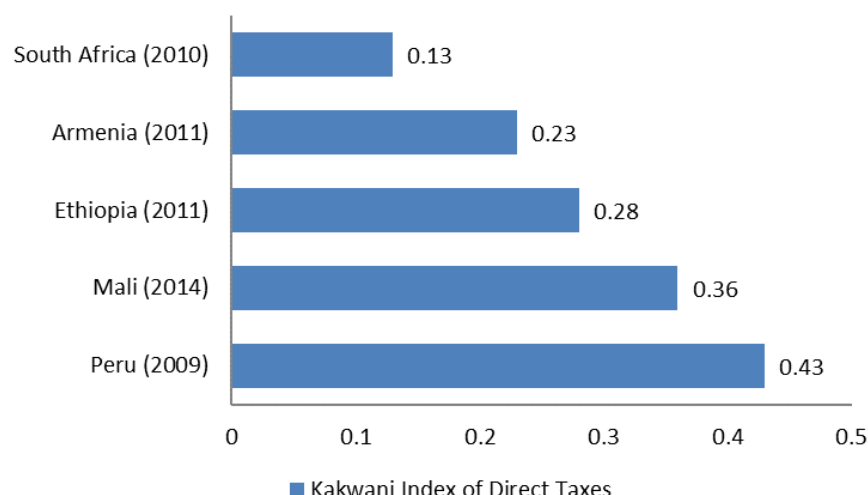


Figure 4d. WST (CFAF, average amount per capita) by place of residence



It is possible to compare the progressivity of direct taxes in Mali with the situation in other countries using the Kakwani index. As stated above positive value of the Kakwani index means progressive, while negative means regressive. Furthermore, higher positive values mean more progressivity. Figure 5 compares the Kakwani indices of direct taxes for selected countries.

Figure 5. Kakwani Index of Direct Taxes for Selected Countries



Source: Armenia (Younger and Khachatryan, forthcoming), Ethiopia (Woldehanna et al, forthcoming), Peru (Jaramillo, 2014), South Africa (Inchauste et al., 2015), Mali (Own Computations)

In comparison with other countries, Mali's direct taxes are among the most progressive. This is because the informal sector in Mali is very large. As a result, a large proportion of the population does not pay taxes on income from work. Only the richest households pay this type of tax.

Indirect Taxes: VAT, Import Taxes, and Other Consumption Taxes

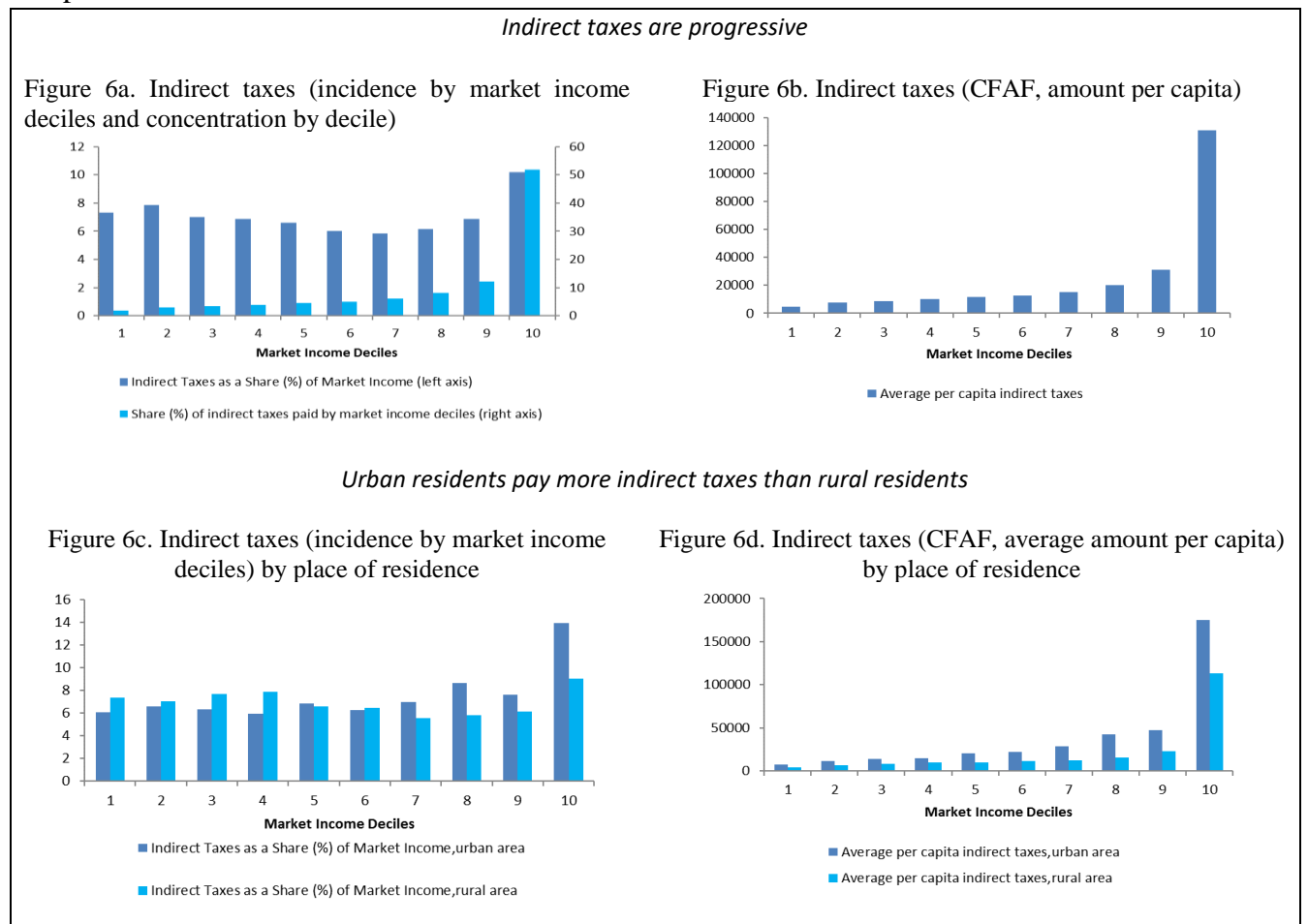
Indirect taxes on consumption of goods and services are estimated by analyzing price multipliers using the 2005 Social Accounting Matrix (SAM), calibrated and updated on the basis of 2012 macroeconomic indicators. The indirect tax for each good and service or product in the SAM represents the actual indirect tax collected. This means that the ratio of the indirect tax to the total value of the supply of each product represents the effective tax rate for the product. The tax rates obtained by this method are markedly lower than the statutory tax rates because the rates may not be universally applied to all transactions.

The informal sector in Mali is large and tax evasion can be significant, even in the formal sector. As a result, the incidence analysis uses the effective taxation rate obtained directly from the SAM. For the VAT, the effective rate applied to each product represents the direct effect of VAT on consumers. In an economy with exempt sectors, VAT has an indirect effect on prices through the VAT paid on inputs. In general, producers can claim VAT refunds for the inputs used. The VAT is therefore levied only on the final product. In exempt sectors, there is no VAT paid directly on final goods but VAT has an indirect effect. Indeed, VAT implies higher producer prices as producers

can not claim VAT refunds for the inputs they used to produce the final good. We use the SAM to compute the indirect effect of VAT in exempt sectors.

The total effect of VAT is thus equal to the sum of the direct effect and the indirect effect.

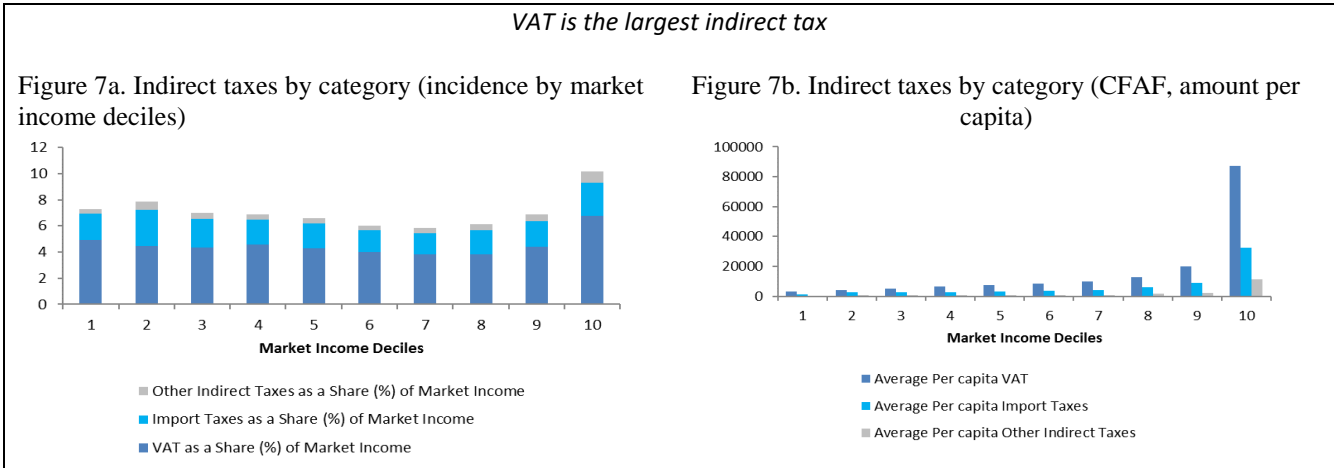
The results show that indirect taxes are slightly progressive, as the value of the Kakwani index (0.08) is positive. Indirect taxes are progressive, but all things considered, they increase poverty. This is because of the magnitude of these taxes, which is large in proportion to market income compared to direct taxes.



The richest decile is the largest contributor to indirect taxes; persons in this decile pay more than 50 percent of all indirect taxes, which corresponds to 10 percent of their market income. In absolute terms, the average per capita amount paid in indirect taxes per decile increases with income. The richest decile pays on average 28 times more indirect taxes than the poorest decile (Figures 6a and 6b). Urban residents pay more in indirect taxes than rural residents in both absolute and relative terms (Figures 6c and 6d).

Analysis of the different categories of indirect taxes reveals that they are slightly progressive. VAT is the largest indirect tax in both relative and absolute terms, followed by import taxes and other

indirect taxes (Figures 7a and 7b). The fact that VAT is progressive can be explained by exemptions and reduced rates on certain products.



The various indirect taxes are progressive in both rural and urban areas. It should be noted, however, that households in rural areas pay less indirect tax than those in urban areas for the various categories of taxes.

The progressivity of the various taxes can be compared using the Kakwani index (Figure 8a). The results show that Import taxes are less progressive than other indirect taxes. Moreover, indirect taxes are less progressive than direct taxes.

As expected, the tax system is globally progressive, as shown by the concentration curve (Figure 8b) and the overall Kakwani index, with a value of 0.12. The total tax paid (direct taxes + indirect taxes) as a proportion of market income increases with income.

The tax system is progressive

Figure 8a. Kakwani index of taxes by category

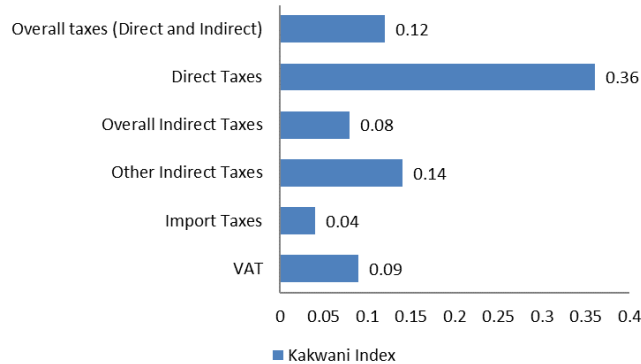
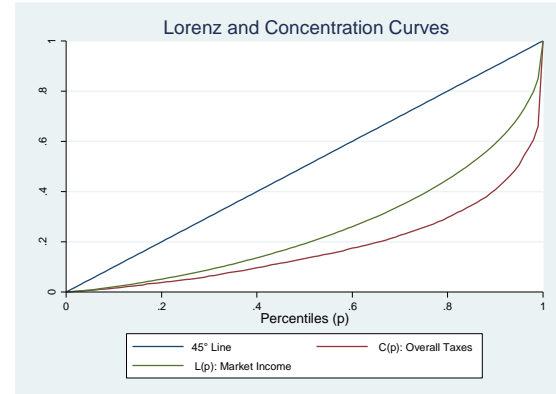


Figure 8b. Concentration curve of total taxes



Health and Education Expenditures

The total number of individuals enrolled in primary, secondary and higher education is estimated directly from the survey. The unit costs of each level of education are obtained by dividing public spending on education by total national enrollment. The transfer of education spending to the household level is determined by multiplying the number of individuals enrolled in primary, secondary and tertiary education in 2013/14 by unit costs. Public spending on education includes salaries, operating expenses, and investments in physical infrastructure. For health, the number of individuals who visited a health care provider or were hospitalized during 2013/14 is estimated based on the survey. The unit cost is determined by dividing total health spending by the total number of individuals. This assumption assumes more equitable distribution among health service users than happens in reality. Indeed, health service users do not obtain the same levels of benefits depending on the nature of the service received. But unfortunately, it is not possible to distinguish health spending for the different type of services in the budget data. The calculation of the unit costs of education and health can be refined by estimating specific unit costs by region. For the incidence analysis, two levels of education are considered: basic education and higher education. Basic education includes pre-school, primary education and secondary education.

The results show that public spending on education for basic education is globally progressive but not progressive everywhere (Kakwani index = 0.36). For higher education, public spending is globally regressive (Kakwani index = -0.08). Overall education spending is globally progressive (Kakwani index = 0.21). The regressivity of spending on higher education is explained by the fact that the richest households are often also the ones with the most education. It is thus these households that benefit the most from spending on higher education. The benefits received from

spending on basic education are greater than the benefits received from spending on higher education in relative or absolute terms for the first eight deciles (Figures 9a and 9b).

In urban areas, the benefits received from basic education spending are higher than the benefits received from higher education spending for the first six deciles. The opposite is true for the seventh to tenth deciles. In rural areas, on the other hand, it is only for the top decile that the benefits received from spending on higher education are greater than the benefits received from spending on basic education (Figures 9c and 9d). The average benefit received from education spending by urban households is greater than the average benefit received by rural households for all deciles. The average benefit received from spending on basic education and higher education by urban households is higher than the average benefit received by rural households for all deciles with the exception of the ninth decile for spending on basic education.

Spending on basic education is progressive and spending on higher education is regressive

Figure 9a. Spending on education by category (incidence by market income deciles)

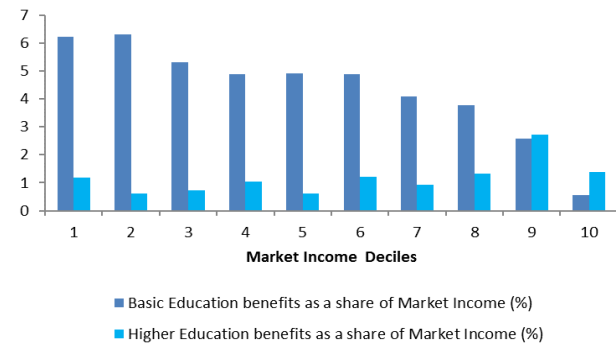
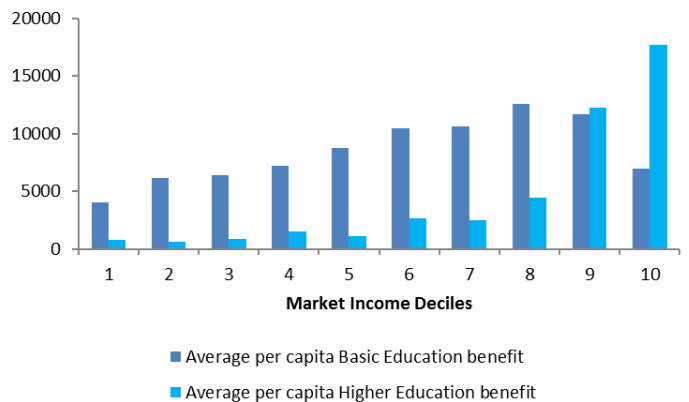


Figure 9b. Spending on education by category (CFAF, average amount per capita)



Urban residents benefit more from education spending than rural residents

Figure 9c. Spending on education by category in urban areas (CFAF, average amount per capita)

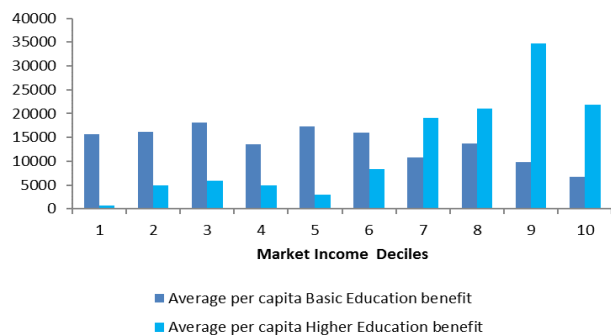
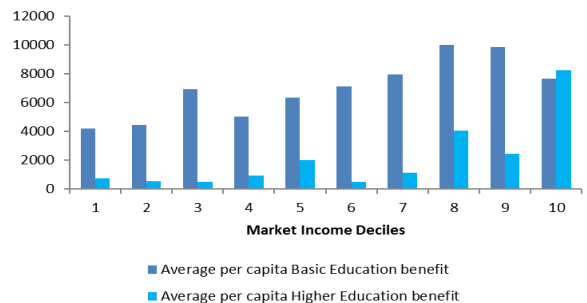


Figure 9d. Spending on education by category in rural areas (CFAF, average amount per capita)



The analysis also shows that health spending is globally progressive but not progressive everywhere (Kakwani index = 0.25). The health benefit received by households as a share of the market income decreases with income.

Health spending is progressive

Figure 10a. Spending on health (incidence by market income deciles and concentration by decile)

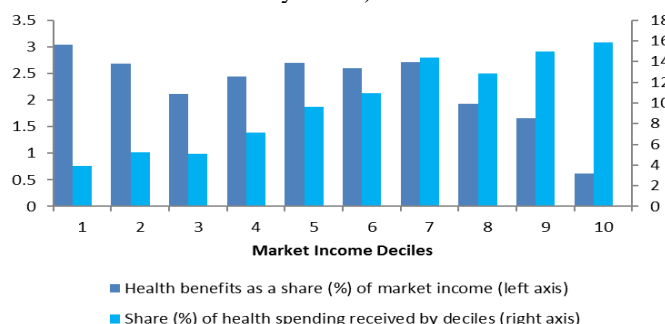
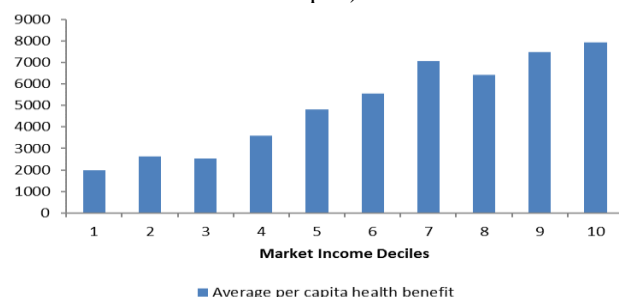


Figure 10b. Spending on health (CFAF, average amount per capita)



Urban residents benefit more from health spending than rural residents

Figure 10c. Spending on health (incidence by market income deciles) by place of residence

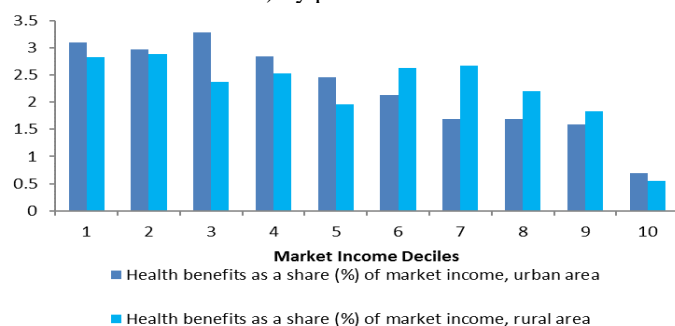
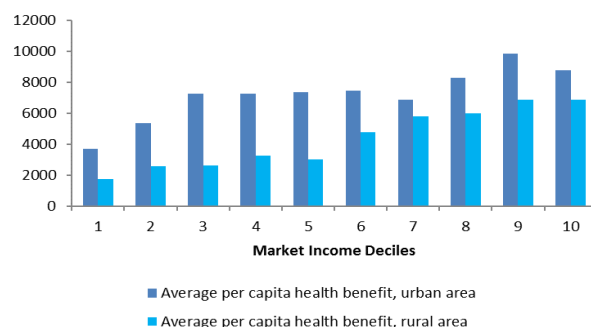


Figure 10d. Spending on health (CFAF, average amount per capita) by place of residence



The average benefit received from health spending by urban households is higher than the average benefit received by rural households for all deciles.

Notwithstanding public spending on education and health, households are sometimes obliged to make out-of-pocket payments in order to benefit from education or health services. This is the case, for example, if the public service is not fully subsidized. Figure 11 shows that household spending on health is higher than spending on education for the various deciles. Moreover, the relative distribution of spending is fairly homogeneous across deciles.

Heath spending by households is higher than education spending

Figure 11a. Out-of-pocket spending by households on education and health (incidence by market income deciles)

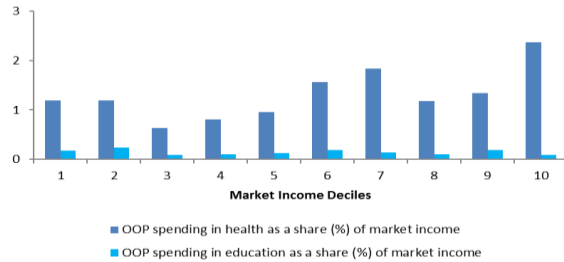
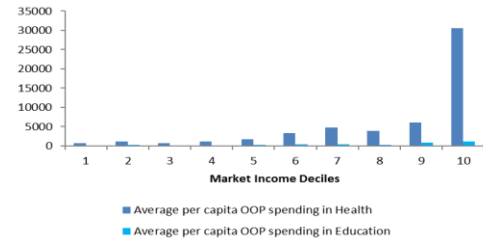


Figure 11b. Out-of-pocket spending by households on education and health (CFAF, average amount per capita)



Analysis of the Incidence of Indirect Subsidies: Energy Subsidies and Agricultural Subsidies

The survey data were used to estimate annual household consumption of gas and electricity. The subsidy per kilogram of gas and per kilowatt-hour of electricity was estimated by dividing the total public subsidy in 2014 (approximately CFAF 40 billion for electricity and CFAF 6 billion for domestic gas) by total annual consumption of gas (20,000 metric tons) and total consumption of electricity (1,180 gigawatt hour). The average price of gas (CFAF 583 per kilogram) and the electricity rate brackets were also used to determine consumption levels. The total value of the subsidy received by the household is simply the product of the subsidy per kilogram or kilowatt-hour and the annual household consumption.

Gas and electricity subsidies are regressive

Figure 12a. Energy subsidies by category (incidence by market income deciles)

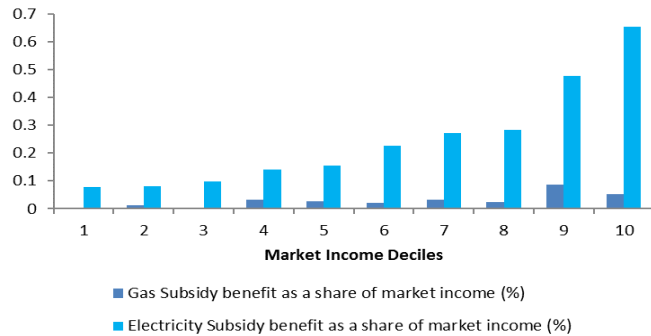
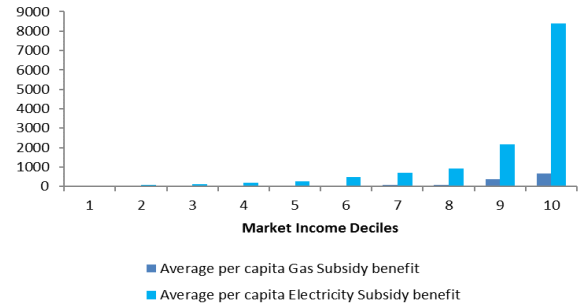


Figure 12b. Energy subsidies by category (CFAF, average amount per capita)



Urban residents benefit more from energy subsidies than rural residents

Figure 12c. Gas subsidies (CFAF, average amount per capita) by place of residence

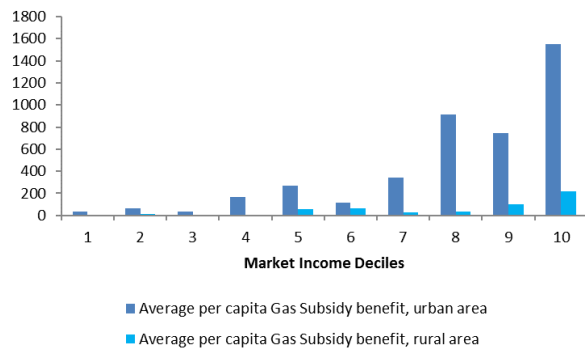
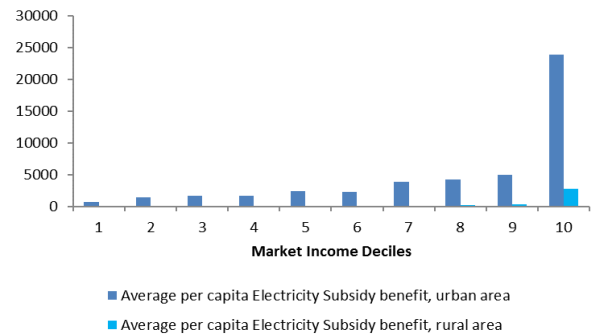


Figure 12d. Electricity subsidies (CFAF, average amount per capita) by place of residence



The results show that gas subsidies are globally regressive (Kakwani index = -0.19). Electricity subsidies are also globally regressive (Kakwani index = -0.25). This can be explained by the fact that domestic gas service is not yet affordable for the poorest. As a result, only better-off households benefit from these subsidies. Domestic gas is more widely used in urban areas than in rural areas because urban households have wider access to such services. Accordingly, the average subsidies received by urban households are higher than the average subsidies received by rural households in all deciles. The same trend is observed for electricity subsidies.

At the national level, electricity subsidies exceed gas subsidies in absolute or relative terms. The two energy subsidies combined are globally regressive (Kakwani index = -0.25).

The regressivity of energy subsidies is explained by the fact that they are generally not well-targeted. Concerning electricity subsidies for example only 27% of the population had access to electricity in 2014.

Agricultural subsidies (Kakwani index= 0.56) in the form of inputs are pro-poor. This means that the absolute amount per capita received decreases as income level rises. For all deciles, households in rural areas benefit from larger subsidies than those in urban areas.

Agricultural subsidies are pro-poor

Figure 13a. Agricultural subsidies (incidence by market income deciles and concentration by decile)

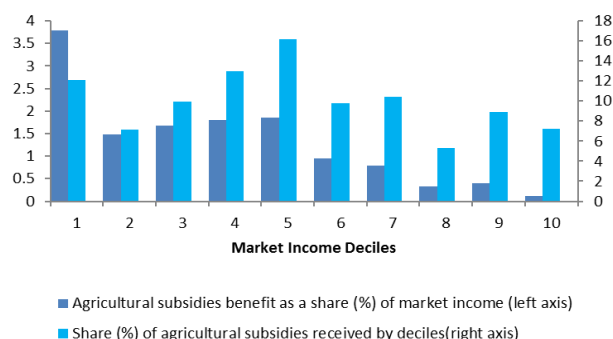
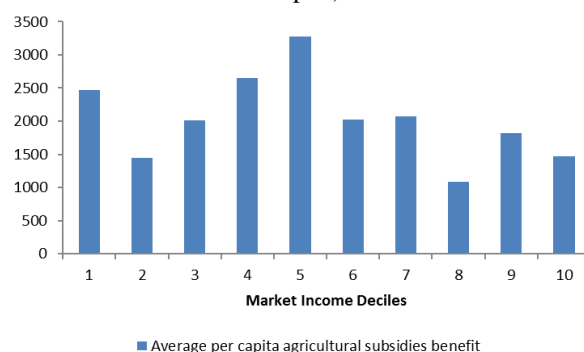


Figure 13b. Agricultural subsidies (CFAF, average amount per capita)



Rural residents benefit more from agricultural subsidies than urban residents

Figure 13c. Agricultural subsidies (incidence by market income deciles) by place of residence

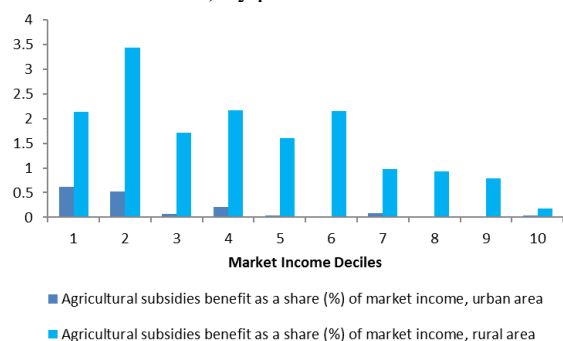
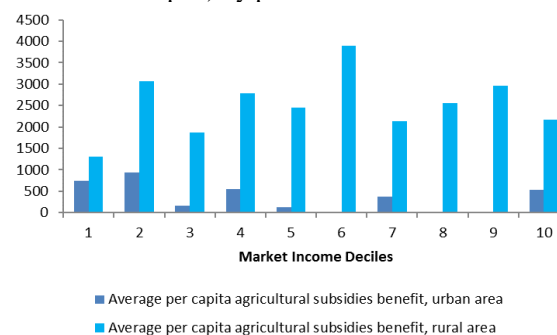


Figure 13d. Agricultural subsidies (CFAF, average amount per capita) by place of residence



Analysis of the impact of cash transfers

In this section, we analyze the incidence of the *Jigisemejiri* cash transfer program, which is funded largely by the World Bank. The number of households receiving cash transfers increased from 4,961 in the first three quarters of 2014 to 13,444 families in the last quarter of 2014. Cash transfers amounted to CFAF 30,000 per quarter and per household. The corresponding total quarterly cash transfers also increased, rising from CFAF 150 million in the third quarter of 2014 to CFAF 400

million in the fourth quarter of 2014. The geographical areas covered by the program in 2014 were Bamako and Sikasso, with the following distribution: 918 households in Bamako for the four quarters of 2014 and 4,043 in Sikasso for the four quarters of 2014, with 8,483 additional households in Sikasso for the last quarter of 2014. By the end of 2014, 13,444 households (95,900 individuals) had benefited from cash transfers; 49.5 percent of the beneficiaries were women. The aim is to cover 75 percent of households below the poverty line by the end of the project, which targets poor and food-insecure households.

Cash transfers are pro-poor

Figure 14a. Cash transfers (incidence by market income deciles and concentration by decile)

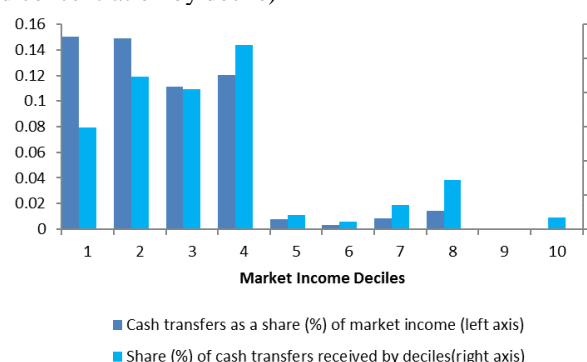
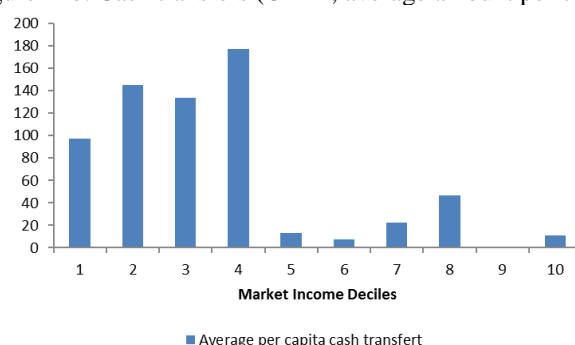


Figure 14b. Cash transfers (CFAF, average amount per capita)



Rural residents benefit more from cash transfers than urban residents

Figure 14c. Cash transfers (incidence by market income deciles) by place of residence

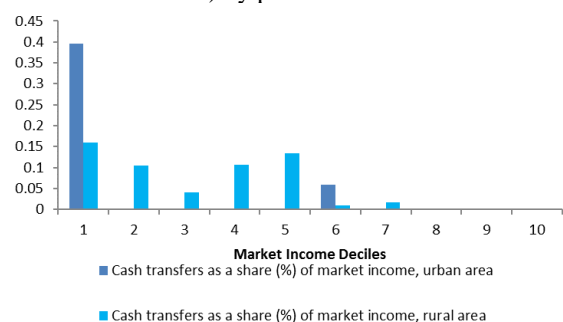
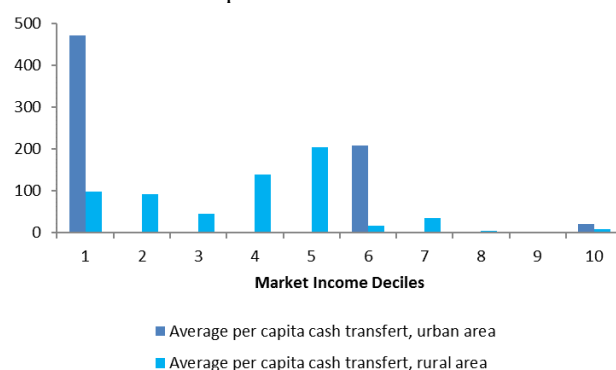


Figure 14d. Cash transfers (CFAF, average amount per capita) by place of residence

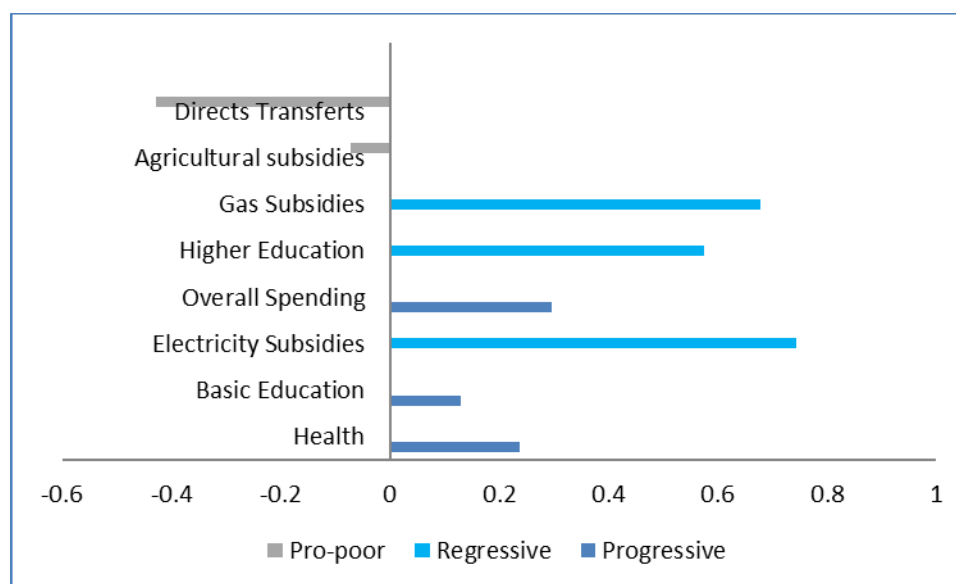


The results show that cash transfers are pro-poor (Kakwani index= 0.92). Moreover, the poorest 40 percent received nearly 85 percent of the total amount transferred to households. Cash transfers are pro-poor in both urban and rural areas, although rural residents benefited more from cash transfers than urban residents.

Total public spending is globally progressive (Kakwani index= 0.2), as shown in Figure 15. Gas subsidies, Electricity subsidies and higher education expenditures are the only expenditure

categories that are regressive. Health and Basic education spending are progressive, while direct transfers and agricultural subsidies are pro-poor.

Figure 15. Concentration Coefficient of Public Spending



6. Effect of Taxes and Public Spending on Poverty and Inequality

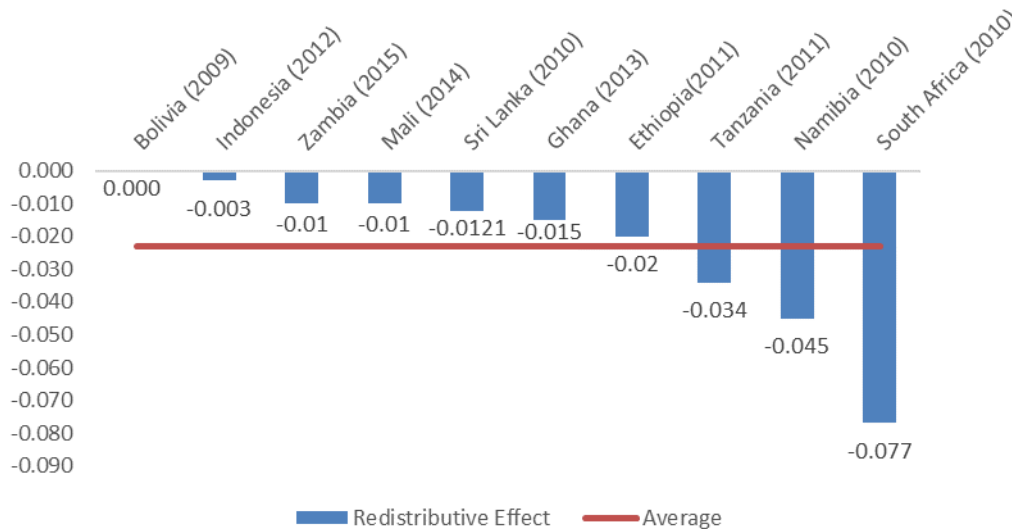
In this section we analyze the various fiscal interventions and their impact on poverty and inequality. The following table shows that fiscal policy has a favorable but marginal impact on the reduction of inequality in Mali. Taxes and public spending reduce the Gini index by 4.5 percent, or 0.022 Gini points, from market income to final income. Without the in-kind benefits (Health and Education) Mali's fiscal policy achieves a redistributive effect of 0.01 Gini points corresponding to a 2 percent drop.

Table 4: Poverty and Inequality Indices for Different Income Concepts

Type of income	Gini index	Headcount index (%) National Poverty Line	Headcount index (%) US \$ 1.25 PPP	Headcount index (%) US \$ 2.5 PPP
Market income (pre-fiscal income)	0.491	40.59	42.01	75.48
Market income plus pensions	0.491	40.43	41.81	75.4
Net market income	0.486	40.44	41.82	75.61
Gross Income	0.491	40.41	41.81	75.4
Disposable income	0.486	40.42	41.82	75.61
Consumable income (post-fiscal income)	0.482	42.99	44.04	77.84
Final income	0.469			

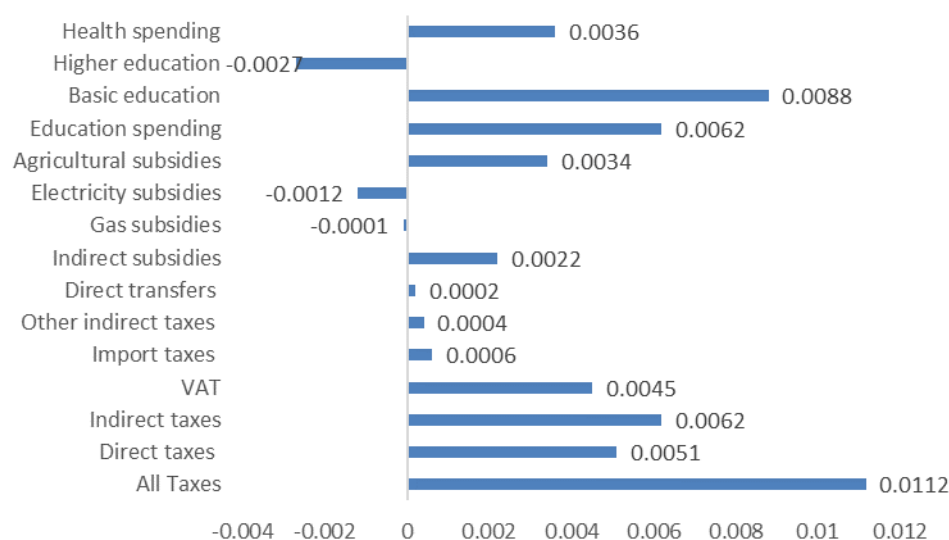
When compared to other CEQ countries, the redistributive effect of fiscal policy in Mali is low and below the average. In the set of selected countries only 3 countries (Bolivia, Indonesia and Zambia) perform worse than Mali. The others countries achieve higher level of fiscal redistribution with South Africa recording the best fiscal redistribution.

Figure 16: Redistributive effect of fiscal policy across countries (From Market Income to Consumable Income)



We now turn to the marginal contributions to inequality of the various fiscal interventions to better understand what explains a so low level of fiscal redistribution. When the ranking of individuals in the income distribution is not the same following a fiscal intervention or when there are numerous taxes and transfers, as is usually the case, a progressive tax or transfer does not always have a positive effect in reducing inequalities. A tax or transfer can therefore be progressive and increase inequality or be regressive and reduce inequality. This counter-intuitive result is known in the literature as the Lambert conundrum. The Marginal contribution to inequality is used to assess the impact of a fiscal intervention to inequality. The marginal contribution for each fiscal intervention is computed as the difference in the Gini of the respective end income concept without the intervention minus the Gini of the respective end income concept. If the marginal contribution of a fiscal intervention to inequality is positive, the intervention is inequality reducing.

Figure 17: Marginal Contributions to Inequality reduction



The marginal contributions of the various fiscal interventions show that direct taxes and direct transfers are redistributive in Mali. Direct transfers achieve a low level of redistribution given that they represent a small share of total spending. Indirect taxes are more redistributive than direct taxes with VAT having the greatest redistributive impact. This is not surprising since indirect taxes account for a greater share of tax revenues than direct taxes despite being less progressive. In contrast, energy subsidies (gas and electricity) increase inequality. The country's fiscal policy would have had a greater redistributive effect without energy subsidies. Apart from energy subsidies, which increase inequality, agricultural subsidies reduce inequality. Education and health spending also reduce inequality, with the exception of spending on higher education.

The redistributive effect of the fiscal policy is equal to the difference between the Gini index of pre-fiscal income and the Gini index of post-fiscal income. The total redistributive effect (RE) can be broken down into vertical inequality (VE) and horizontal equity (HE) such that $RE = VE - HE$. Horizontal equity measures the extent to which the ranking of individuals in the distribution of income changes following the application of the fiscal policy. The HE index is equal to the difference between the Gini index of post-fiscal income and the concentration coefficient of post-fiscal income. The VE index is the difference between the Gini index of pre-fiscal income and the concentration coefficient of post-fiscal income.

Table 5. Breakdown of the Redistributive Effect

	Mali (2014)	South Africa (2010)	Tunisia (2010)	Bolivia (2009)
Redistributive effect (RE)	0.01	0.077	0.044	0.000
Vertical inequality (VE)	0.013	0.083	0.05	0.003
Horizontal equity (HE)	0.003	0.006	0.006	0.003
HE/VE	0.21	0.075	0.12	1

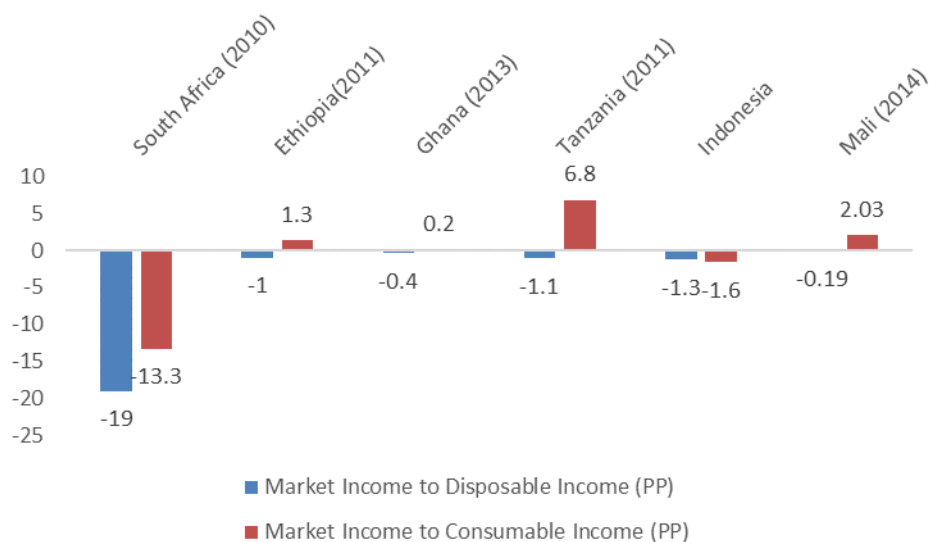
Source: South Africa (Inchauste et al, 2015); Tunisia (Shimeles et al, 2016); Bolivia (Paz et al., 2014) and authors' calculations for Mali

Fiscal policy in Mali has generated a high level of horizontal inequity in relative terms. The total redistributive effect in Mali is relatively low in comparison with other countries, such as South Africa and Tunisia. Without the strong horizontal inequity observed which represents 21 percent of the vertical inequality, Mali's fiscal policy would have achieved a greater redistribution.

With regard to poverty reduction, the fiscal policy of Mali leads to an impoverishment of the population. Indeed, the poverty rate (measured with the national poverty line) rises (in a statistically significant manner) by 5.9 percent, or 2.4 percentage points, from market income to consumable income because of the impoverishing effect of indirect taxes.

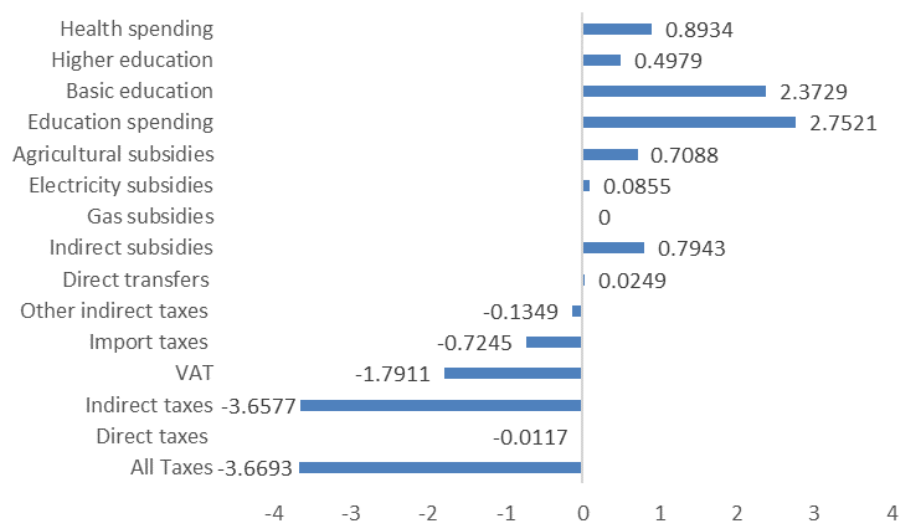
Figure 18 shows that other countries like Tanzania, Ghana and Ethiopia have the same trend of poverty variation. From market income to disposable income, poverty rates decrease as a result of the combined effect of direct transfers and taxes. However, when indirect taxes and subsidies are considered, poverty rates for the corresponding income concept (consumable income) increase leading to a global poverty increase for the fiscal system.

Figure 18: Poverty impact of Fiscal Policy using US \$1.25 2005 PPP/day poverty line in Selected Countries



In order to understand the effect of various fiscal interventions on poverty, we calculate their marginal contribution to changes therein. Marginal Contributions to poverty reduction are calculated as the difference in the poverty headcount of the respective end income concept without the intervention minus the poverty headcount of the respective end income concept. Taxes have a negative marginal contribution to poverty reduction meaning that they increase poverty while transfers have a positive marginal contribution to poverty reduction because they decrease poverty.

Figure 19: Marginal Contributions to Poverty reduction



According to marginal contributions to poverty reduction, both direct taxes (-0.01) and transfers (0.02) have a little impact on poverty because direct taxes are mostly paid by the richest household and direct transfers are relatively small. In contrast, indirect taxes have a strong impoverishment effect (-3.66) that is, in absolute value, greater than the poverty reduction effect (0.79) of indirect subsidies. Among indirect taxes categories, VAT has the strong impoverishment effect (-1.79). As a result, poverty headcount measured with the consumable income is far above poverty headcount measured with the market income. Fiscal policy in Mali is therefore impoverishing.

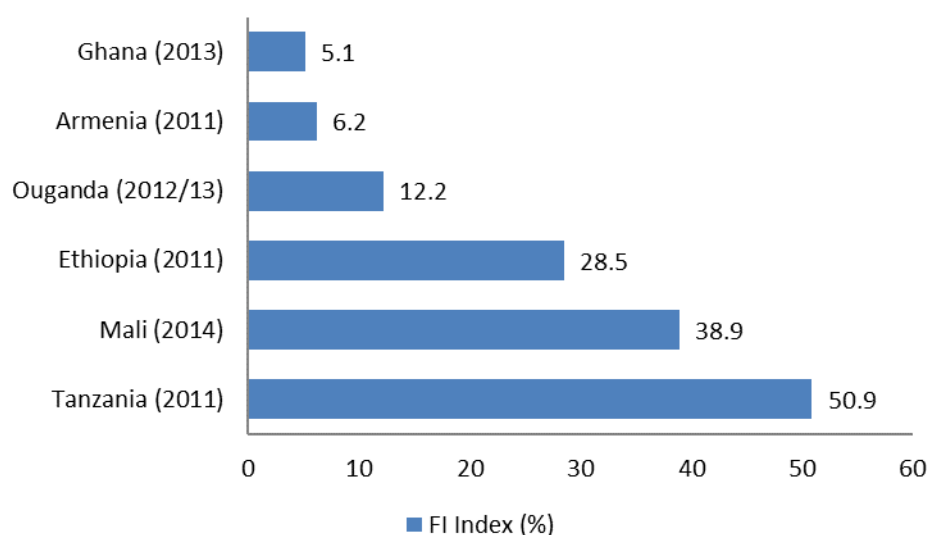
The calculation of the poverty indices before and after the application of the fiscal policy shows the change in poverty due to taxation. However, it does not show the proportion of households that have become poorer or richer as a result of the various fiscal interventions. While the payment of taxes impoverishes households, the benefits from public spending enrich them, and the net effect may therefore be positive (enrichment) or negative (impoverishment). We use the indicators proposed by Lustig and Higgins (2016) to assess fiscal impoverishment (FI) or fiscal gains to the poor (FGP). Individuals are considered to be impoverished by fiscal policy if they were not poor before the policy was applied and became poor after its application or if they were already poor and dropped further below the poverty line after the policy's application.

Table 6. Impoverishment Due to Fiscal Policy

	From market income to disposable income	From market income to consumable income	From market income to final income
Fiscal impoverishment (FI) index (as % of population) <i>National Poverty line</i>	0.25%	37.89%	21.46%
Fiscal impoverishment (FI) index (as % of population) <i>US\$1.25 per day, PPP 2005</i>	0.25%	38.9%	21.99%
Non-poor individuals who became poor (as % of population) <i>National Poverty Line</i>	0.01%	2.81%	1.8%
Non-poor individuals who became poor (as % of Market income Non-poor) <i>National Poverty Line</i>	0.02%	4.73%	3.04%

When we move from market income to disposable income, and thus we take into account direct transfers net of direct taxes, almost no one becomes poor or is fiscally impoverished. This is because direct transfers are specifically targeted at the poor and because only the richest members of the population pay direct taxes. On the other hand, when indirect taxes net of indirect subsidies are taken into account, 2.8 percent of the population becomes poor and 37.9 percent of the population is fiscally impoverished. Hence, indirect taxes have a strong impoverishing effect on the population. People pay more in indirect taxes than they receive in indirect subsidies. The fiscal impoverishment rate from market income to consumable income in Mali is one of the highest in comparison with other countries.

Figure 20: Fiscal Impoverishment Rate using US \$1.25 2005 PPP/day poverty line for Various Countries



Source: Higgins and Lustig (2016), Jellema et al. (2016), and authors' calculations for Mali.

The FGP rate measures the proportion of the poor (based on pre-fiscal income) who experienced a positive net fiscal gain. From market income to consumable income, scarcely 5.51 percent of the poor received more direct transfers and indirect subsidies than they paid in direct and indirect taxes. The tax system needs to be reformed if it is to become more pro-poor.

Table 7. Gains to the Poor as a Result of the Fiscal Policy

	From market income to disposable income	From market income to consumable income	From market income to final income
Proportion of the poor who received a positive net fiscal gain (FGP) National Poverty Line	1.7%	5.51%	20.93%
Proportion of the poor who received a positive net fiscal gain (FGP) US \$ 1.25 PPP	1.76%	5.62%	21.69%

7. Conclusion

This paper aimed to assess the impact of spending and taxes on poverty and Income distribution in Mali. We analyzed the incidence of 74.3 percent of total tax revenue, including the wages and salary taxes, VAT, import taxes and other indirect taxes. We also analyze the impact of spending in Education and health, cash transfers and indirect subsidies representing 30 percent of general government expenditures.

The results show that the fiscal system is progressive in Mali. However, Fiscal policy has a limited effect on the distribution of revenue in Mali and a negative impact on poverty. The fiscal system reduces the Gini index by only 4.5 percent (0.022 points) and results in a 5.9 percent rise in the poverty rate. The low redistributive impact of fiscal policy in Mali is mainly due to the bad targeting of energy subsidies as well as the small size of per capita benefit for direct transfers. The redistributive effect is limited in Mali in comparison with South Africa (0.077) and Tunisia (0.044). Results for 11 countries in Latin America show a redistributive effect ranging from 0.024 to 0.14 (Lustig, 2015).

The various indirect taxes have a strong impoverishing effect despite being inequality reducing. It will be important to undertake a reform of indirect taxes in Mali by lowering tax rates on the products most consumed by the poor. Indirect subsidies should also be better targeted to mitigate the impoverishing effect of indirect taxes. The fiscal system could deliver more benefits to those impoverished by the tax system by transferring more resources (higher levels and broader coverage) through the Jigisemejiri cash transfer program.

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