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Public spending on education in Togo: Does the poor benefit?

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Abstract

This paper aims to analyze benefit incidence of public spending on education in Togo, using Benefit Incidence Analysis (BIA) approach. Unlike previous studies, a multidimensional approach of well-being is used. The results indicate that when we take into account the multidimensional nature of welfare, primary education spending becomes more pro poor, and tertiary education spending becomes more pro rich. Moreover, public spending on primary education is found to be highly progressive, while the tertiary education spending is rather regressive. We also find that gender inequalities increase as the level of education rises. These results implied that an effective strategy to reduce poverty can be reached through improving the access of the poorest to tertiary education. Strategies that can be adopted include grant scheme which will be based on merit and neediness. In implementing such grant scheme, gender and area of residence may be used as an utmost criterion.

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1. Introduction

To allow a significant reduction of inequalities and combat poverty, the delivery of basic services and their access to the entire population including the poorest is indispensable. Indeed, developing countries face many challenges in the design and implementation of fiscal policy. According to Chu et al. (2000), unlike advanced economies, developing countries do not have a de facto progressive tax policy and an effective tax administration to alter the post-tax distribution of income. Similarly, for a given pool of resources, these countries have a limited administrative capacity and a small menu of instruments for implementing cash transfer programs that could alter the post-transfer distribution of income, consumption, or other indicators of welfare. Under such conditions, the delivery of social services such as education, health care, and social safety net programs is important.

However, social services subsidies can tackle poverty and reduce inequalities if only they disproportionately benefit to the poor. The fact that the poor are disadvantaged in gaining access to important services which would help them escape from poverty, suggests that the government should seek to target the provision of these services to such groups. This paper particularly emphasizes on public subsidies to the education sector for five main reasons. First, although other categories of government spending are also important for individual welfare, educational services are normally regarded as being the most important for enhancing the long-run earning potential of the population, particularly the poor. Second, in the fight against poverty, education is identified as an essential service. Third, education generates positive externalities. Fourth, governments generally devote a significant proportion of their budgets to education. Finally, data on the use of education services are commonly found in household surveys, so that education spending lends itself to benefit incidence analysis.

In Togo, the major priorities of the strategy and sectorial plan for education for the period (2010-2020) are the universalization of primary school, the improvement of access and equity in each level of teaching, and the improvement of management and governance. The guiding principles of the strategy include: equity (affirmative action in the resources allocation); liberalization of educational opportunities; and promoting effective schools that bring success to all the learners and maximize learning.

The main challenges include strong repetition rates in primary school, and in secondary education whereas efficiency stays weak; inadequacy quantitative and qualitative research between education and employment; poor learning and working conditions: weak expenses for purchasing equipment; lack of ways to access different levels and types of learning; poor distribution of teachers who are exploited and under qualified; lack of books and didactic equipment for teachers and students; little use of information statistic systems; poor administrative management; poor control of socio-professional circles demand; and strong social disparities between academic programs, at the expense of girls and the poor, and strong regional disparities in term of schooling opportunities. Table 1 highlights strong inequalities between rural and urban areas and between male and female in terms of poverty incidence, literacy rate and school enrolment rates.

If it is believed that investment in education helps to reduce inequalities and combat poverty, then there is a need to look at who is benefiting from such spending for equity reasons. This is necessary because such information helps in digesting every government financial operations looking at the how this can help in achieving the overall goals and of equity and efficiency across sectors, locations as wells as gender. The research question is: who benefits from public spending on education in Togo? The paper aims to analyze the benefit incidence of educational spending in Togo. Specifically, it (i) analyzes the distribution

of the benefits of public spending on education for primary, secondary and tertiary education; and (ii) analyzes the progressivity of public spending on education in Togo by sub-groups (urban-rural; male-female).

To achieve these objectives, the Benefit Incidence Analysis (BIA) was used. There is a growing interest for the analysis of the impact of public spending using BIA. For example Selden and Wasylenko (1992), Demery (2000), Sahn et Younger (2000), Davoodi, Tiongson, and Asawanuchit (2003); Kamgnia et al. (2008), Gaddis and Demery (2012), Amakom (2012), Okafor and Ichoku (2015), and Karim (2015) analyzed the distributive impact of public spending including educational sector. But few are the studies that focus on Togo. Furthermore, the above studies used income or consumption as welfare indicator. Since it is now recognize that poverty is multidimensional, it is important to take into account the multidimensional nature of welfare in the implementation of the BIA. Ended, income alone can miss a lost. Participatory exercises reveal that poor people describe ill-being to include poor health, nutrition, lack of adequate sanitation and clean water, social exclusion, low education, bad housing conditions, violence, shame, disempowerment and much more.

This study differs from those mentioned above on two points. First, it takes into account the multidimensional nature of welfare. Second, it focuses on the specific context of Togo. Using data on government spending on education obtained from the ministry in charge of primary school, secondary school and literacy (MEPSA) and data on the use of educational services and socio-economic characteristics of the population from QUIBB (2011), the results indicate that when a multidimensional welfare indicator is used instead of revenue or consumption, public spending on primary education become more favorable to the poorest and public expenditure on higher education become more favorable to the richest. Moreover, our results indicate that public spending on primary education is progressive, while public spending on tertiary education is regressive. Our findings also highlight strong gender inequalities. These gender inequalities increase as the level of education rises. Finally our findings highlight inequalities between rural and urban areas.

The remainder of the paper is organized as follows. Section two and section three present respectively the BIA approach and the results of the study. Finally, section four provides conclusions and policy recommendations.

2. **The BIA approach**

This section first describes the BIA approach. Second, a description of main data sources is presented.

2.1. Description of BIA approach

According to Davoodi et al. (2003), BIA involves a five step process. The first step, consist of obtaining the average unit cost of providing a public service by dividing government spending on the service (net of any cost-recovery fees and out-of-pocket expenses by the users) by the total number of users of the service. Users of a service are regarded as ultimate beneficiaries of the service (e.g., students enrolled in primary schools). For example, teachers are not regarded as ultimate beneficiaries of government spending on education even though their wages and benefits comprise a sizable portion of government spending on education. The second step consist of defining the average benefit from government spending on a service as the average unit cost of providing the service, which is derived from the previous step. This assumption imputes benefits from government in-kind transfers to individuals' welfare as measured by their income or consumption.

The third step consist of ranking the population of users from poorest to richest using a welfare measure and of aggregating them into groups with equal numbers of users. This step requires two kind of choice. First, the unit of analysis in a household survey can be either the household, comprising all family members living together or an individual within the household. The choice of individual versus household can make a significant difference in grouping users into quintiles or deciles, and in estimates of benefit incidence. Demery (2000), for example, finds that in Ivory Coast, when the quintile is defined by households, the poorest earns 29 percent of benefits from primary education as compared with 19 percent when the quintile is defined by individuals. Demery (2000) recommends defining quintiles by individuals (population quintiles) when a service is provided to individuals (e.g., students enrolled at a school) but by households (household quintiles) when a service is provided to households (e.g., water and sanitation services). In the case of this study, quintiles are defined by individuals.

Second, the choice of welfare measure for ranking users (from poorest to richest) can also make a significant difference to estimates of benefit incidence. The most widely used indicator is per capita household expenditure, in which each member of the household receives an equal weight. An alternative indicator is per adult equivalent household expenditure, which takes into account the higher consumption needs (welfare) of the adults; as a result, adults are given a higher weight than children. Demery (2000) shows that when per adult equivalent household expenditure is used instead of per capita household expenditure, primary education spending in Ghana in the early 1990s becomes less pro poor, while secondary and tertiary education become more pro rich; however, no difference in benefit incidence is found between the two measures when spending on all three levels of education is combined. In the case of our study, we use MCA to compute a multidimensional wealth index based on durable goods owned by the households such us bike, motor, car, computer, fan, refrigerator, air conditioner, telephone, radio …; and some housing characteristics (the roof, floor, and wall materials). We also use household consumption for comparison.

The fourth step consists of deriving the distribution of benefits by multiplying the average benefit derived from the previous step by the number of users of the service in each income or consumption group. Finally, the fifth step consists of comparing the resulting distribution of benefits with a number of benchmark distributions. This is generally the use of Lorenz curves and concentration as shown by the figure 1 below. Benefits from government spending on a service are said to be pro poor if the concentration curve for these benefits is above the 45-degree line. In this case, benefits of government spending disproportionately go to the bottom quintile in absolute terms and relative to their share in the population. Analogously, benefits are said to be pro rich when the concentration curve for the benefits lies below the 45-degree line. Figure 1 indicates concentration curves for Government spending and various benchmarks.

Benefits from government spending on a service are said to be progressive if the concentration curve for these benefits is above the Lorenz curve for income or consumption, but below the 45-degree line. It means that lower-income groups get a larger share of the benefits from government spending than they do of either income or consumption. Analogously, government spending on a service are said to be regressive if spending when the concentration curve for the benefits lies below the Lorenz curve for income or consumption. Intuitively, government spending on a service is regressive when benefits from the service are distributed less equally than either income or consumption.

Following Gaddis and Demery (2012), the benefit incidence of government spending in a sector can be formally written as:

$$X_j = \sum_{k=1}^{K} B_{kj} \frac{S_k}{B_k} = \sum_{k=1}^{K} \frac{B_{kj}}{B_k} S_k \qquad (1)$$

where X_j is the amount of government spending in a sector that benefits group j (the groups are quintiles of the income distribution). S refers to government spending on that sector, the subscript k denoting the specific service (or sub-sector) that is subsidized (for example primary, secondary and tertiary education). B denotes the number of individuals receiving the subsidized service. $\frac{S_k}{B_k}$ is the mean unit subsidy in the delivery of that service.

The share x_j of total sector spending (S) imputed to group j is:

$$x_j = \sum_{k=1}^{K} \frac{B_{kj}}{B_k} \left(\frac{S_k}{S} \right) = \sum_{k=1}^{K} b_{kj} s_k \qquad (2)$$

This depends on two major determinants: the b_{kj}'s which are the shares of the group in total service use; and the s_{kj}'s which denotes the allocation of public sector spending across the different types of service. The s_{kj}'s are determined by government policy and by the forces which influence how budgets are allocated within a sector while the b_{kj}'s depend on two basic factors: first, the number of potential or eligible beneficiaries within the group; and second, the likelihood that a potential or eligible beneficiary will in fact claim the subsidy by using the service in question. The s_{kj}'s are determined by government policy and by the forces which influence how budgets are allocated within a sector while the b_{kj}'s depend on two basic factors: first, the number of potential or eligible beneficiaries within the group; and second, the likelihood that a potential or eligible beneficiary will in fact claim the subsidy by using the service in question.

2.2. Data description

Three kinds of information are needed for the calculation of the incidence of government spending on the service it provides, such as primary education. These are government spending on a service (net of any cost recovery fees, out of pocket expenses by users of the service, or user fees); public utilization of the service; and the socioeconomic characteristics of the population using the service. In the case of our study, data on government spending on education are obtained from the MEPSA. Table 2 indicates the public spending on primary, secondary and tertiary education in 2010-2011, and the unit subsidy in percentage of GDP per capita. One can point out two main remarks: first, one can notice that priority is given to primary education in Togo since its share represents over 57% of the total educational spending; second the unit subsidy grows when we move from primary to tertiary education.

The information on the use of educational services and socio-economic characteristics of the population are from the household survey conducted by the General Directorate of Statistics and National Accounts (DGSCN) in 2011. This survey aims to provide the necessary elements for the assessment of poverty. This is socio demographic information (household composition, education, etc.), housing characteristics, ownership of durable goods,

access to basic infrastructure. It covered 5532 households (29,781 individuals including 15,260 women) and is nationally representative of the Togolese population. The BIA is performed using the "Distributive Analysis Stata Package"-DASP (Araar and Duclos 2013).

3. Results and discussion

3.1. Benefit incidence estimates

Table 3 shows benefit share according to the approach described in equations (2) and based on population quintiles ranked by household consumption (approach A) and a multidimensional poverty index (Approach B). Using approach A, the share of the poorest quintile in the primary education is 20.3 percent while the richest quintile's share is just 15.6%. The richest quintile earns 36.1% of public spending on tertiary education while the poorest earns some 0.8%. The poor benefit the most from public expenditure on secondary education. Its share was 24% against 21% for the middle class, 20% for the richest and only 15.7% for the poorest quintile.

Using approach B, public spending on primary education are slightly more favorable to the poorest and public spending on tertiary education are most favorable to the richest. The poorest quintile earns nearly 21% of primary education spending (against 20.3% in the approach A) while the share of the richest quintile decreases from 15.6% (approach A) to 11.2% (Approach B). Similarly the richest quintile secures 52% of the tertiary education spending against 36% in approach A, while the share of the poorest from 4.3% (approach A) to only 0.8% (Approach B). Gaddis and Demery (2012) find similar results. The results also indicate an increase of the share of the middle class in the secondary education spending from 21% in the approach (A) to 25% in the approach (B). These results indicate that the choice of welfare indicator has an influence on the incidence of benefits and are consistent with Demery (2000) in the case of Ghana.

Table 4 shows the benefit share by gender. It indicates that gender inequalities increase as the level of education rises. Indeed, inequalities between girls and boys are lower in primary and secondary education. Similarly, they are higher in the tertiary education than in the secondary education. Boys earn 51% of primary education spending, 53.4% of secondary education spending and 59.1% of tertiary education spending. This can be explained by the fact that the boys-girl parity is almost reached in primary education in Togo, so that primary education spending benefit equally to boys and girls. But as the level of education rises, inequalities in terms of retention in the school system for girls and boys grow. The low retention of girls can be explained by early pregnancy that increase the dropout rate of girls compared to boys. In addition, some customary practices predispose girls to housework and explain the fact that girls drop out of school more often to be economically active.

Table 5 shows the benefit incidence of educational spending by residence (rural versus urban). The results show strong inequalities between urban and rural areas. The rural areas earn a larger share of primary education spending (69%) than urban areas while the latter captures a larger share of tertiary education spending (83.6%). It should be noted that urban areas in the Gulf prefecture alone captures 26.6% of total tertiary education spending but it earns only 2.5% of primary education spending and 4.1% of secondary education spending. These results can be explained by the fact that there are more public schools than private ones in rural areas. In addition, the free registration fees in public primary school attract rural households (which are poorer than urban households) to public primary schools. By cons, tertiary educational infrastructures are located in urban areas.

3.2. Progressivity analysis

To analyze the progressivity of educational spending benefits, Lorenz and concentration curves are used. The Lorenz curve of consumption and the Lorenz curve of wealth were used for each sub-sector. Overall spending on education is on average pro rich in Togo (see figure 2). Davoodi. Tiongson, and. Asawanuchit (2003) find the same result.

Figure 3 shows the case of primary educational spending. In both cases (approach A and Approach B) the public expenditure on primary education is absolutely progressive. Indeed, the concentration curve of the benefits lies above the 45-degree line. The absolute progressivity of primary education according to Demery, (2000), can be explained by the fact that greater proportion of children of primary school age come from poor households. In addition, Togo introduces free primary education since 2008. It is also worth noting that the absolute progressivity of primary education spending as indicated by the result says nothing about the quality or standard of education provided, just as it fails to capture the behavior of households (household choices) in sending their wards to school. It is possible that richer households may not have benefitted much from public primary education spending because they consider the quality/standard of service very low, hence resorting to private schools (Amakom, 2012).

Figure 4 indicate the case secondary education. Using approach A, we cannot conclude on the progressiveness of secondary education spending since the concentration curve of benefit intersects the 45 degrees line. But using approach B, figure 4 clearly indicates that public spending on secondary education is pro-rich.

In the case of tertiary education, Figure 5 indicates that we cannot conclude on the progressivity of the benefits since the concentration curve of benefit intersects the Lorenz curve. However, using the Lorenz curve of wealth index, the benefits of tertiary education are clearly regressive. This result reflects the difficulties that face the poor to access the tertiary education. Given the fact that registration fees are higher in the tertiary education, students from poor households have more difficulty accessing it. In addition, the poor reside mostly in rural areas which do not have tertiary education infrastructure.

4. Conclusion

The objective of this study is to analyze the distributional effects of public spending on education in Togo using the ABI method. Unlike previous studies, we took into account the multidimensional nature of well-being using a multidimensional index of wealth instead of income or consumption. Our results indicate that public spending on primary education are progressive while public spending on tertiary education are regressive. We also find that public spending on secondary education are pro-rich. Considering the educational spending as an in-kind transfer, these results mean that primary education spending reduce inequality while tertiary education spending increase them. These results implied that an effective strategy to combat poverty recommends improving the access of the poorest to tertiary education for at least two reasons. First, since the benefits are higher in the tertiary education, the poorest access to higher education can enable them to earn higher benefits. Second, according to the human capital theory which establishes a positive correlation between the levels of human capital, productivity and income, the access of the poorest to tertiary education can ensure them higher incomes. This could help them get out permanently of poverty. To facilitate the access of the poorest to the tertiary education, a grant system based both on merit and neediness can be implemented. In implementing such grant system, gender and area of residence may be used as a criterion since our findings hihlight strong gender inequalities and inequalities between urban and rural areas.

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Table1: Poverty and educational indicators by gender and area

Indicators	Togo	Urban	Rural	Male	Female
Literacy rate	63.3%	79.8%	49.2%	76.7%	51%
Poverty incidence	55.1%	36.35%	68.7%	54.6%	57.5%
Primary Net enrolment	84.8%	91.4%	81.5%	86.3	83.6%
Secondry net enrolment	49.1%	63%	39.3%	55.2%	42%
Access to primary school	90.6%	95.6%	80.6%	89.5%	93.8%
Access to secondary school	63.8%	85.3%	44.1%	62.1%	68.7%

Source: QUIBB (2015).

Tableau 2: Public spending on education and unit subsidy by sub-sector, 2010-2011

	public spending	percent share	unit subsidy in percentage of GDP per capita
Primary	36590673749	57.1324634	8.6%
secondary	14141110370	22.0798468	17.54%
tertiary	13313544173	20.78768979	142.35%
Total	64045328292	100	na

Source: MEPSA (2010-2011)

Table 3: Share of benefit by sub-sector and quintile

Quintiles	Primary education		Secondary education		Tertiary education	
	(A)	(B)	(A)	(B)	(A)	(B)
Richest quintile	15.6	11.2	19.9	17.6	36.1	52.1
Rich	17.7	19.6	19.7	23.8	25.1	24.9
Middle class	21.7	23.5	21.1	24.8	21.3	16.4
Poor	24.7	24.7	23.6	18.7	13.1	5.7
Poorest quintile	20.3	20.9	15.7	15.1	4.5	0.8
Togo	100	100	100	100	100	100

Source: author's estimates

Table 4: Share of benefit by sub-sector and by gender

Gender	Primary	Secondary	Tertiary
Male	50.6	53.4	59.1
Female	49.4	46.6	40.9
Togo	**100**	**100**	**100**

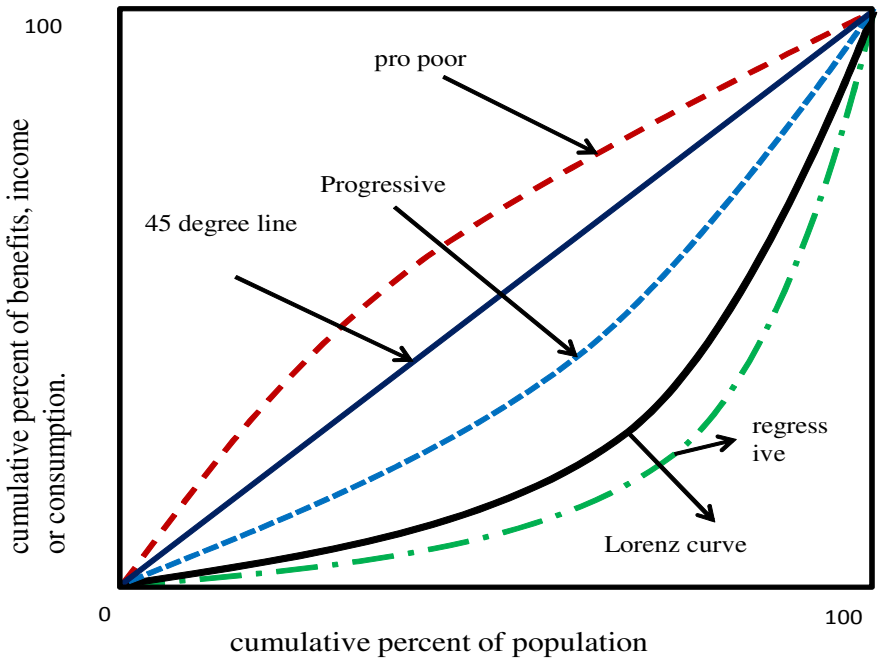
Source : author's estimates

Table 5: Share of benefit by sub-sector and by area

Area	Primary	Secondary	Tertiary
Urban	31	41.7	84.6
Rural	69	58.3	16.4
Togo	100	100	100

Source *:* author's estimate

Figure 1: Concentration curves for Government spending on education and various benchmarks



Source : Davoodi et al. (2003), p14.

Figure 2: Concentration curves for education, all sectors

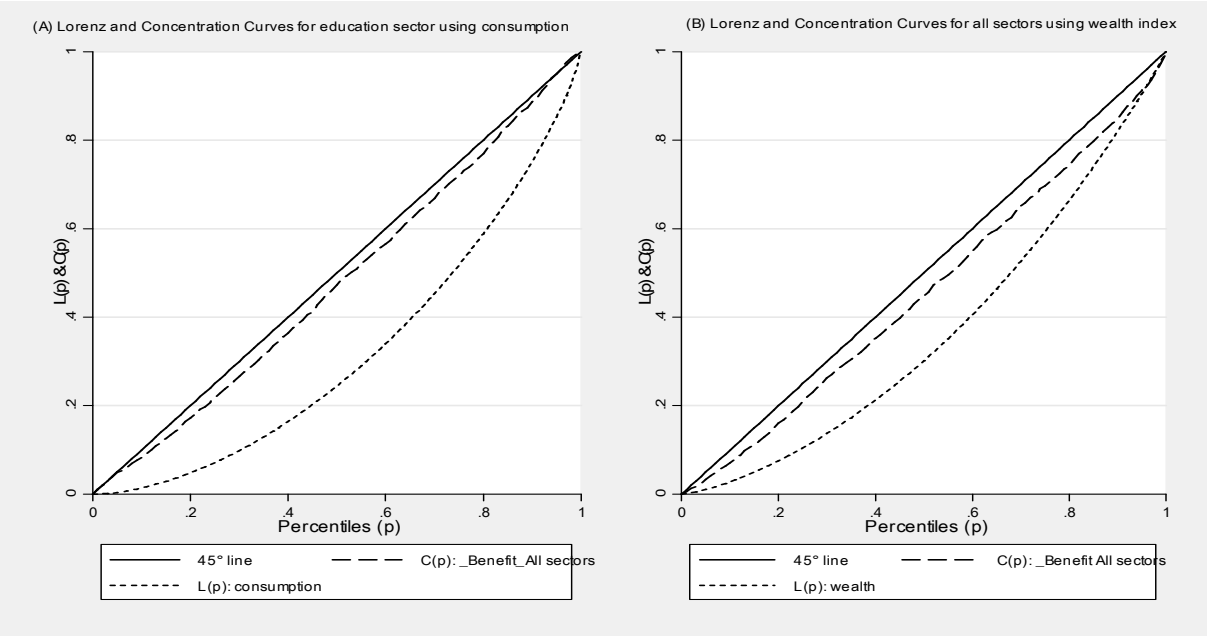


Figure 3: Concentration curves for primary education

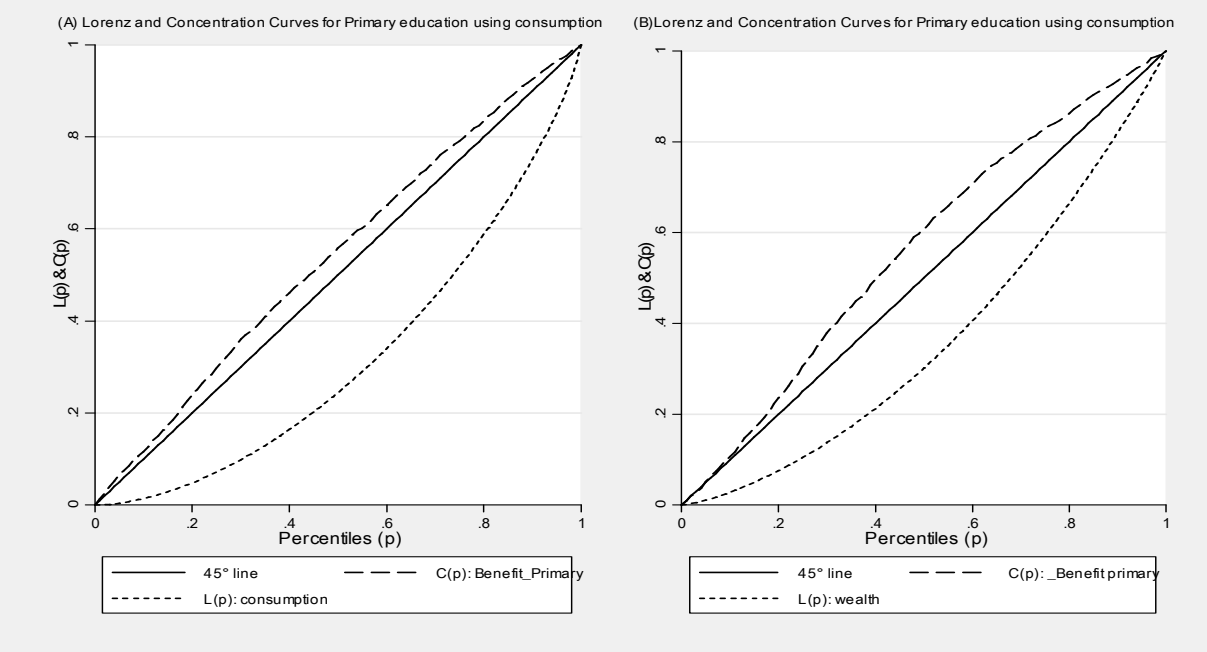


Figure 4: Concentration curves for secondary education

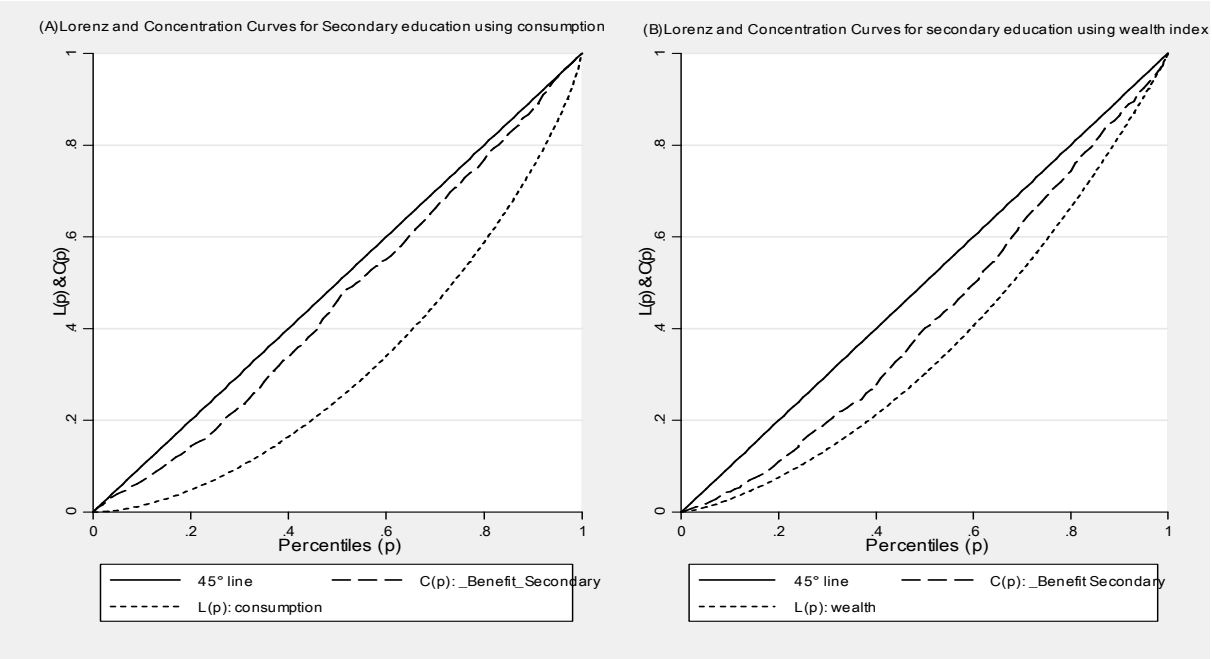


Figure 5: Concentration curves for tertiary education