ACHIEVING SCHOOLING FOR ALL: AN EMPIRICAL ANALYSIS OF HOUSEHOLD ANNUAL FORMAL PRIMARY EDUCATION EXPENDITURE IN GHANA

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ABSTRACT
The study analysed household-level annual spending on formal primary education with focus on determinants of various socio-economic factors, using the latest Ghana Living Standards Survey Seven data of 2016-2017. The study findings are that an increase in annual household income of 122 cedis per year increases actual household expenditure on formal primary education by about 1.2 cedis. The study further established that increase in household size positively correlates with annual household formal primary education expenditure. Rural annual household formal primary education expenditure lags behind urban household annual education expenditure in Ghana. Based on the findings, it is recommended that policy-makers must take pragmatic steps to drastically reduce the gap to help maximised the education for all as envisaged by the SDG 4.

Keywords: Household, annual, formal primary education, expenditures, Tobit model, Ghana

INTRODUCTION
Primary education has long been recognized as a cornerstone of poverty reduction and socioeconomic development (Becker, 1964;

Psacharopoulos, 1985, 1994, 2004; Rodrigues & Souza, 2020; Yuvaraj & Arabi, 2021; Asravor, 2021; Hanushek & Woessmann 2021; Addai, 2022; 2023). In most national development strategies in Africa, relatively large parts of development resources have been allocated to primary education. Public spending on primary education in sub-Saharan Africa increased by 29% in real terms between 2000 and 2005 (UNESCO, 2010). There are many reasons for investing heavily in primary education: young people with at least a primary education are at lower risk of contracting HIV than those without an education; Greater investment in women's primary education leads to more productive family life and a significant reduction in malnutrition, (Boateng, 2014).

Universal access to primary education has been defined and labelled in many different ways. Universal primary education (UPE) is the provision by a country of sufficient primary school places to enrol all eligible primary school-age populations. Countries receive this if they achieve a gross enrolment rate (GERs) in primary school of 100 percent or more (UNESCO 2002).

In 1996, the international community committed itself to significantly reducing poverty in developing countries through the international development goals (Copenhagen Declaration 1996). Education, especially primary education, was seen as a crucial prerequisite for achieving these development goals. The World Education Forum reaffirmed these international commitments at its Dakar meeting in 2000, but went a step further to include quality aspects in the goals. More specifically, the Dakar Framework for Action on primary education for all (EFA) commits signatories to:

(i) ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete, free and compulsory primary education of good quality;

(ii) eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in primary education of good quality;

(iii) improving all aspects of the quality of education and ensuring excellence of all so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills. (Samer Al-Samarrai, 2003; World Education Forum, 2000). However, many countries in Sub-Saharan Africa, including Ghana, failed to meet the EFA 2015 targets, necessitating their inclusion in the SDG 4 strategy document (SDG, 2015).

Country wise, expenditure on primary education in the form of investment in Ghana has a long history. The central government of Ghana (GOG) considers growth in its primary education expenditure as a major task to developing its economy. This GOG action affirms (Becker, 1964; Rodrigues & Souza, 2020; Hanushek & Woessmann 2021; Addai, 2022, 2023) arguments that investing in primary education promotes human capital accumulation for a country's economic growth and development. The literature on investment in primary education in Ghana shows that Governor Gordon Guggisberg (1919-1927) was the first to invest heavily in the better teaching and improved management of schools' agenda. This public (funded by the tax payers') education investment introduced the 'Sixteen Principles of education' into the annals of Ghana's public education investment history (Lindsay, 1976). The promulgation in 1951, the Accelerated Development Plan and ten years after, the 1961 Education Act, which saw a massive injection of public investment in Ghana, is unparalleled as an era of public education investment (Addai, 2023, 2022; Nudzor, 2012; Akyeampong, 2009; Graham, 2013; Lindsay, 1976; Evans, 1966).

Financing public primary education expenditure in Ghana started from a sole central government sponsorship in the post-independent era. The current development in the public primary education investment in Ghana *inter alia* involves the participation and signing of international agreements and protocols relating to the development and provision of education, (SDG 4, 2015; Nudzor & Ansah, 2017). These public education investments which are supply-sided investments mostly have been recorded in the books of the GOG by its agency, the Ministry of Education.

However, investment in primary education by faith-based institutions is the first to be recorded in Ghana. These educational investments undertaken were in the form of provision of castle primary schools, established by the Western Christian missionaries aimed at producing interpreters for their Christian evangelism as well as producing agents, who facilitated their trading activities as far back as 1776 (Addai, 2023; Lindsay, 1976; Graham, 2013; Evans, 1966). Empirical research on household direct demand-side factors for formal primary education expenditure in Ghana is limited albeit the fact that the GOG expenditure per student on primary education as a percentage of GDP per capita is only 6.4 percent as at 2014 for which data is available, (UNESCO Institute for Statistics. 2020).

Not much effort has been made to collect data on household spending on formal primary education although one in five people in Ghana (20.8 percent) aged 3 and over have never attended primary school (Ghana Statistical Service, 2022). Because household formal primary education investment complements government spending on primary education, the unreliability and lack of empirical analysis of household spending on formal primary education makes it difficult to make reliable primary education and supply projections in the economy of Ghana for an economic development. With the low level of institutional primary education investment arising out of dwindling government expenditure on primary education, analysing household formal primary education expenditure in the face of this economic difficulties in areas of how household have stepped in to augment, such as fees paying in schools in the face of low income levels, and an analysis of household ability and willingness to spend on formal primary education as captured in the household formal primary education expenditure budget is a concern.

The purpose of this study is to contribute an aspect to the limited empirical discourse on household formal primary education expenditure by examining the determinants of various socio-economic factors affecting formal primary household formal primary education expenditure in Ghana. Household formal primary education expenditure in Ghana consist of expenditure on school fees, parent-teacher association dues, school

uniforms and sportswear, books and stationery, transportation to school, dormitory and housing, extra tutoring, material and non-material expenditures.

The outline and structure of the study are as follows. The next section, Section 2, describes the methodology. The Section 3 introduces the model specification. Section 4 covers the analysis of the results. Finally, Section 5 concludes the study with policy recommendations.

2. Methodology

Data availability influenced the nature of the methodology used. The general methodology categorising individual household characteristics with some very specific features can be expressed in linear regression as follows:

$$H_i = \beta_0 + \beta_1 PrynC_i + \beta_2 Priedlv_i + \beta 3PRurbi + \beta_4 PhSIZE_i + \beta_5 Prignd_i.$$

The variables used in the methodology are described in Table 1.

Table 1: Description of the variables used in the Methodology

Variables used in the Methodology	Description
H_i	Captures total household$_i$ formal primary expenditure on education in a year in cedis.
PrynC	The total annual household$_i$ net income in cedis.
PriUNDFN	Total household$_i$ expenditure on education in cedis which is not defined in a year. Serves as the base category.
Priedlv	Household$_i$ head having no primary education = 1, 0 otherwise.
PRurb	Household$_i$ situated in a urban area =1, 0 if in a rural area.
PhSIZE	Household$_i$ membership size
Prignd	Gender of household$_i$ head = 1 if female, 0 if male.

In the household formal primary education expenditure theoretic literature, it is established that household formal primary education expenditure varies and depend on the socio-economic background characteristics like household head gender, household income, household

size, parent's education, and other household indicators like the location of the household, especially in developing economies, as well as other institutional factors constituting a complex set of factors *inter alia*, which are cited, (Filmer & Pritchett, 1999; Akyeampong, 2009; Glewwe, 2016; Choudhury & Kumar, 2021; Wongmontaa & Yuvaraj & Arabi, 2021; Panigrahi, 2022; Addai, 2022, 2023).

That said, this study makes an attempt to investigate the empirical model variables determining annual household formal primary education expenditure in Ghana. Theoretical issues about household income being a major determining factor in household formal primary education expenditure are well documented. Several studies have found positive relationships between household income and education expenditure including the studies of (Addai, 2023; Filmer & Pritchett, 1999; Akyeampong, 2009; Iddrisu *et al.* 2018; Choudhury & Kumar, 2021), c*eteris paribus*.

Household heads having primary level education and understanding the importance of education in the human capital formation, are expected to positively influence spending on household annual education, (Addai, 2022; Iddrisu *et al.* 2018; Psacharopoulos et al., 1997), *ceteris paribus*.

In the literature, theoretical issues on the location of household affecting household formal primary education expenditure are documented by (Psacharopoulos *et al.,* 1997; Nudzor & Ansah 2017; Addai, 2022, 2023). (World Bank, 2010) assert that the expenditure on a rural child education is three times less than the education expenditure on an urban child in a developing economy. In Ghana, as a developing economy, where the majority of households are in the rural areas, the expectations are that rural household have negative correlation on formal primary education spending, but have a positive spending correlations for urban households, *ceteris paribus*.

Theoretical issues in the literature argue that large household size is a deficient on household education spending and as household size increases, there is a household-level trade-off between household size and

human capital formation as household tends to have lesser resources to devote to each child's education (Becker & Lewis, 1973). Hence, the expectation of the study is that, this proposition cannot hold in developing economies, hence there is positive relationship between household size and formal primary education spending in Ghana, *ceteris paribus*.
Theoretical issues in the literature (Tansel & Bircan 2006; Qian & Smith 2011; Ogundari & Abdul 2014) studies have shown that female -headed household have a higher positive correlation with household spending on formal primary education than males-headed households, *ceteris paribus.* And this study opines as such.

3. Model Specification

Looking at the data, not all Ghanaian households spend on formal education in a given year. The Tobin (1958) model is specified to handle this type of censorship. In estimating a relationship in the presence of such censoring, the underlying theoretical model could be specified as:

$$H_i^* = x_i'\varpi + \omega_i \quad [1]$$

$$\omega_i \mid x_i \sim N\left(0, \sigma^2\right) \quad [2]$$

Where H_i^* is the censored latent dependent variable, x_i is a row vector of covariates, ϖ represents linear estimated coefficients, and ω_i is an error term. Actual annual household formal primary education expenditure H_i is observed, if $H_i^* = x_i'\varpi + \omega_i > 0$, and H_i is not observed if $H_i^* = x_i'\varpi + \omega_i \leq 0$, (Addai, 2023, 2022). i = 1, ..., 14,009.

3.1 *Data*

The Ghana Statistical Service 2017 Ghana Living Standards Survey Seven (GLSS7) data is used with permission. The GLSS 7 data were gathered all over the country, covering a data collection period of 12 months. GLSS 7 activity received financial sponsorship from the central government of Ghana and international partners, making the approach used in generating the survey to conform to international standards. It has a sample size of 14,009 household.

Empirical Results Analysis

The empirical model variables summary statistics are reported in Table 2.

Table 2: The empirical model variables summary statistics

Variable	Mean	Std. Dev	Min	Max
H_i	682.0024	1873.916	0	105000
PrynC	10422.17	10284	81.1	232614.7
Priedlv	232614.7	1.501406	1	6
PRurb	1.570419	0.495034	1	2
PhSIZE	7.969948	4.31338	1	15
Prignd	1.311657	1.311657	1	2

Source: From GLSS 7 data, based on Author's analysis.

Generating cross-sectional living standards survey data in developing countries is mostly problematic. This fact arises out of the difficulties in recollecting retrospectively, and sometimes, the fading of some respondents' memories, misunderstanding of a survey item among others (Addai, 2222). In adjusting for the potential heteroscedasticity inherent in the data set, (White 1980) heteroscedasticity consistent standard errors robust option, using STATA statistical software is applied to generate the Tobit model conditional marginal effects. The estimates generated are reported in Table 3.

Table 3: Annual household formal primary education expenditure conditional marginal effects estimates

Variable	Marginal Effects Estimate
PrynC	0.122*** (7.96)
Priedlv	-185.5*** (-4.19)
PRurb	231.4** (2.68)
PhSIZE	2.974 (0.63)
Prignd	192.9*** (4.21)

Asymptotic t statistics in parentheses. *Significant at the 0.05 level, **Significant at the 0.01 level, ***Significant at the 0.001 level.

The total numbers of household with censored observations were 5,338, or 42 percent of the sample data. 8,181 uncensored observations were generated, suggesting that 58 percent of the household sampled actually expended on formal primary education.

4.1 Household Characteristics

4.1.1 *Household Income*

The estimate suggests that an increase in household income of 122 cedis per year increases household actual spending on formal primary education by 1.2 cedis per year. The marginal effect is statistically significant. Income level has a positive effect on household formal primary education expenditure in Ghana, confirming the positive relationship between household income and formal primary education expenditure which is well documented in the literature, (Psacharopoulos et al., 1997; Filmer & Pritchett, 1999; Psacharopoulos & Mattson, 2000; Ogundari & Abdulai, 2014; Acar et al., 2016). Tansel and Bircan (2006) established in Turkey that higher-income families spend more on their primary children's school fees, and (Ogundari & Abdulai, 2014), study on determinants of formal primary household' education and healthcare spending in the context of Nigeria established similar results. (Kanellopoulos & Psacharopoulos, 1997) study in Greece reported similar findings and confirmed the effect of household income on household spending on primary education.

4.1.2 Household *head with no primary education*

Household heads having less than primary schooling education spend 185 cedis less on actual annual household formal primary education expenditure. The marginal effect is statistically significant at the 1 percent significance level. It confirms similar studies showing a negative relationship between non- formal educated household heads and household spending on primary education (Psacharopoulos, 1997; Lewin & Akyeampong, 2009; Ampiah & Adu-Yeboah, 2009; Akyeampong, 2009; Kanellopoulos & Nudzor, 2012).

4.1.3 *Urban household*

Urban household annual education expenditure is 231 cedis more on actual annual household formal primary education expenditure in Ghana, and the marginal effect is statistically significant. Differences in urban and rural investment in education in developing countries, where rural households spend less on formal primary education than their urban counterparts, are well documented by (Akyeampong, 2009; Choudhury & Kumar, 2021: 5; Addai, 2022). The negative relations between rural

household and their annual formal primary education expenditure could be due to the low income and low expenditure pattern that exists in rural areas against the prevailing general higher cost of living and expenditure in urban areas in developing countries (Choudhury & Kumar, 2021; Addai, 2022, 2023 . The World Bank (2010) has documented that the household expenditure on a rural child education are three times less than the education expenditure on an urban child in a developing economy. (Akyeampong, 2009; Rolleston, 2009; 2013) findings confirm that rural household in Ghana consistently spend less on formal primary education than urban household. What's more, families with children attending private schools pay significantly higher tuition and fees than children attending public schools, and these fee-paying families are highly concentrated in urban areas of Ghana. Thus, it is likely that high-income households are concentrated in the urban areas in Ghana and they spend more on formal primary education tuition and school fees for better-quality private schools, while households in rural areas are more likely to send their children to local government managed schools where tuition fees at formal primary education are in many cases, zero. This idea helps us to explain the huge annual decrease in education expenditure patterns between rural and urban areas on formal primary in Ghana.

4.1.2 *Household size*

Taking into account the annual expenditure of household members, 2.97 cedis more is spent on each family member actual annual household formal primary education expenditure in Ghana, albeit the marginal effect is not statistically significant. (Becker & Lewis, 1973) argue that as household size increases, there is a household-level trade-off between household size and human capital formation as household tends to have lesser resources to devote to each child’s primary education and household with limited family assets may experience qualitative trade-offs in their children's formal primary education spending. However, the results of this study are inconsistent with the assertions of (Becker & Lewis, 1973), and the dilution hypothesis that children from larger households share of educational resources are comparatively smaller to smaller families, but it confirms (Wongmonta & Glewwe, 2016; Addai, 2022) study showing that household spending on formal primary education by household size is

positively correlated and larger families have the tendency of accessing greater formal primary education expenditure in the household budget outlay. The positive relationship between family size and formal primary education may be driven by the EFA (UNESCO 2008) policy implemented in Ghana and the SDG 4 policy on inclusive education.

4.3 Individual *Characteristics*

4.3.1 *Gender of household head*

Female household head annual formal primary education expenditure is 193 cedis more on actual annual household formal primary education expenditure in Ghana, and the marginal effect is statistically significant at the 1 percent level. These finding supports (Idrisu et al. 2016, 2017; Addai, 2022) studies, which shows that female heads of households tend to spend more on formal primary education than male heads of households.

5. Conclusion and Policy Recommendations

Primary education is recognized as the first point of human capital development in Ghana and families are determined to ensure that all children in the family receive primary education. Many sub-Saharan African countries are investing more resources in primary education, and Ghana is no exception (Psacharopoulos, 1985; Psacharopoulos, 1994; Psacharopoulos et al., 1997; Colclough & Al-Samarrai, 2000; Psacharopoulos & Patrinos, 2004; Addai, 2022, 2023).

Using the annual household budget share of total formal primary education expenditure as the dependent variable, vis-a-vis annual household expenditure from household level data drawn from the latest GLSS 7 this study focused on investigating factors determining household annual formal primary education expenditure in Ghana.

The study established that increase in household size positively correlates with annual household formal primary education expenditure. Rural annual household formal primary education expenditure still lags behind urban household annual education expenditure in Ghana. Lagging behind urban household in primary education have the potential of creating an unequal society as more formal primary education by urban household

creates more inequality in the nurturing of specialized human capital in Ghana.
However, as a developing country, Ghana's annual household spending on formal primary education should have several other important socioeconomic determinants that the current study could not investigate. For example, the annual household formal primary education expenditure function can be better estimated by analysing child's birth order (Ejrnæs & Pörtner 2004; De Haan, et al., 2014; Lehmann, et al., 2016;) the quality of school, type of educational institution, ownership of educational institutions, the quality of the primary educational infrastructure, gender of the household child, is the school international or national in enrolment, amongst others.

Supply-side factors, as well as other psychological factors such as bullying and cyberbullying, together influence family formal primary education spending decisions in Ghana (Addai, 2022). However, the GLSS 7 data could not be used to investigate the impact of these on annual formal household primary education spending in Ghana.

Specifically, the policy recommendations from the study are first, to increase the government spending on primary education, considering its impact on economic growth and national development. Provide tax-relief to household with larger family size, reduce inequality in access to formal primary education by rural dwellers as part of a public policy measure in Ghana.

Finally, this study contributes to further knowledge and understanding by providing information on the issue of annual formal primary education spending by Ghanaian household. This idea will contribute to the primary education policy-making and planning interventions in Ghana. It also will serve as a guide for the implementation of the Ghana's Education Strategic Plan (2018-2030). Stakeholders involved in promoting and sustaining primary education in Ghana's economy, SDG4 (2015) that emphasise inclusive education for all and the AU Agenda 2063 (2013) policy of attaining primary education by all on the continent may also find the findings of this study beneficial as it helps to inform and guide Ghana's

education sponsorship and primary education financing and coping strategies.

REFERENCES

Acar, E. Ö., Günalp, B., & Cilasun, S. M. (2016). An empirical analysis of household formal Acar, E. Ö., Günalp, B., & Cilasun, S. M. (2016). An empirical analysis of household formal primary education expenditure in Turkey. *International Journal of Educational Development*, *51*, 23–35. https://doi.org/10.1016/j.ijedudev.2016.03.007

Addai, I. (2023). Analysing Household Expenditure on Education in Ghana: An Update.

Microeconometric Models of Household Behavior eJournal, Elsevier, Social Science Research Network, http://dx.doi.org/10.2139/ssrn.4339145 / https://ssrn.com/abstract=4339145

Addai, I. (2022). A contribution to the determinants of annual household education expenditure in Ghana. *Social Sciences & Humanities Open*, *6*(1), 100349. https://doi.org/10.1016/j.ssaho.2022.100349

African Union, 2013.Agenda 2063: The Africa We Want. 50th anniversary solemn declaration. *50th Anniversary Solemn Declaration.* Available from: https://au.int/en/documents/20130613/50th-anniversary-solemn-declaration-2013 [Accessed 1 June 2021].

Akyeampong, K. (2009). Revisiting free compulsory universal primary education (FCUBE) in Ghana. *Comparative Education*, *45*(2), 175–195. https://doi.org/10.1080/03050060902920534

Ampiah, J. G., & Adu-Yeboah, C. (2009). Mapping the incidence of school dropouts: A case study of communities in Northern Ghana. Comparative Education, 45(2), 219–232. https://doi.org/10.1080/03050060902920625

Asravor, R. K. (2021). Estimating the economic return to education in Ghana: A gender-based perspective. *International Journal of Social Economics, 48*(6), 843–861. https://doi.org/10.1108/ijse-09-2020-0602
Becker, G. S. (1964). Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education. New York: Columbia University Press.

Becker, G. S., & Lewis, H. G. (1973). On the interaction between the quantity and quality of children. *Journal of Political Economy*, *81*(2, Part 2). https://doi.org/10.1086/260166

Boateng, N.A. (2014). Does public expenditure management matter for education outcomes?, *Development Southern Africa*, 31:4, 535-552, DOI: 10.1080/0376835X.2014.906299

Choudhury, P. K., & Kumar, A. (2021). An empirical analysis of household expenditure on engineering education in Odisha. *Millennial Asia*, 097639962096989. https://doi.org/10.1177/0976399620969892

Colclough, C., & Al-Samarrai, S. (2000). Achieving schooling for all: Budgetary expenditures on education in Sub-Saharan Africa and South Asia. *World Development*, *28*(11), 1927–1944.

De Haan, M., Plug, E., & Rosero, J. (2014). Birth order and human capital development. *Journal of Human Resources*, *49*(2), 359–392. https://doi.org/10.3368/jhr.49.2.359

Ejrnæs, M., & Pörtner, C. C. (2004). Birth order and the intrahousehold allocation of time and Education. *Review of Economics and Statistics*, *86*(4), 1008–1019. https://doi.org/10.1162/0034653043125176

Evans, P. C. (1966). Education and social change in Ghana. London, *Africa*, *36*(3), 334–335. https://doi.org/10.2307/1157697

Filmer, D., & Pritchett, L. (1999). The effect of household wealth on educational attainment: Evidence from 35 countries. *Population and Development Review*, *25*(1), 85–120. https://doi.org/10.1111/j.1728-4457.1999.00085.x

Ghana Statistical Service (2021). Population and Housing Census General Report Highlights. Volume 3. Accra, Ghana.

Ghana Statistical Service (2017). Ghana Living Standards Survey Round Seven, Main Report. Accra, Ghana.

Ghana's Education Strategic Plan (2018). Main Report. Accra, Ghana
Graham, C. K. (2013). The history of education in Ghana: *From the Earliest Times to declaration of Independence*, Routledge. https://doi.org/10.4324/9780203042939

Hanushek, E. A., & Woessmann, L. (2021). Education and economic growth. *Oxford Research Encyclopedia of Economics and Finance*. https://doi.org/10.1093/acrefore/9780190625979.013.651

Iddrisu, A. M., Danquah, M., Quartey, P., & Ohemeng, W. (2018). Gender bias in household' educational expenditure: Does the stage of schooling matter? *World Development Perspectives*, *10-12*, 15–23. https://doi.org/10.1016/j.wdp.2018.09.001

Lehmann, J.-Y. K., Nuevo-Chiquero, A., & Vidal-Fernandez, M. (2016). The early origins of birth order differences in children's outcomes and parental behavior. *Journal of Human Resources*, *53*(1), 123–156. https://doi.org/10.3368/jhr.53.1.0816-8177

Lewin, K. M., & Akyeampong, K. (2009). Education in Sub-Saharan Africa: Researching access, transitions and equity. *Comparative Education*, *45*(2), 143–150. https://doi.org/10.1080/03050060902920492

Lindsay, B. (1976). The development of education in Ghana: *The Journal*

of Modern African Studies, *14*(4), 721–722. https://doi.org/10.1017/s0022278x00053830

Nudzor, H. P. (2012). Unmasking complexities involved in operationalizing UPE policy initiatives: Using the 'fcube' policy implementation in Ghana as an exemplar. *Journal of Educational Change*, *13*(3), 347–371. https://doi.org/10.1007/s10833-012-9181-6

Ogundari, K., & Abdulai, A. (2014). Determinants of household's education and healthcare spending in Nigeria: Evidence from survey data. *African Development Review*, *26*(1), 1–14. https://doi.org/10.1111/1467-8268.12060

Panigrahi, J. (2022). Financing of higher education. *Higher Education Financing in India*, 12–31. https://doi.org/10.4324/9780367809799-2

Psacharopoulos, G., Arieira, C. R., & Mattson, R. (1997). Private education in a poor country: The case of urban Bolivia. *Economics of Education Review*, *16*(4), 395–406. https://doi.org/10.1016/s0272-7757(97)00007-1

Psacharopoulos, G., & Mattson, R. (2000). Family size, education and expenditure attainment in a poor country. *Journal of Educational Planning and Administration* 14(2), 169-186.

Psacharopoulos, G., & Patrinos , H. A. (2004). Returns to investment in education: A further update. *Education Economics*, *12*(2), 111–134. https://doi.org/10.1080/0964529042000239140

Psacharopoulos, G. (1994). Returns to investment in Education: A global update. *World Development*, *22*(9), 1325–1343. https://doi.org/10.1016/0305-750x(94)90007-8

Psacharopoulos, G. (1985). Returns to education: A further international update and implications. *The Journal of Human Resources*, *20*(4), 583. https://doi.org/10.2307/145686

Qian, J. X., & Smyth, R. (2011). Educational expenditure in urban china: Income effects, family characteristics and the demand for domestic and overseas education. *Applied Economics*, *43*(24), 3379–3394. https://doi.org/10.1080/00036841003636292

Rodrigues, M., & Souza, D. (2020). Education quality and the Empirics of economic growth: Reconciling Mankiw-Romer-Weil estimates with microeconometric evidence. *Applied Economics Letters*, *28*(6), 470–476. https://doi.org/10.1080/13504851.2020.1761524

Rolleston, C. (2009). The determination of exclusion: Evidence from the Ghana Living Standards Surveys 1991–2006. *Comparative Education*, *45*(2), 197–218. https://doi.org/10.1080/03050060902920617

Rolleston, C. (2013). Education, poverty and culture in Ghana 1991–2010. *Compare: A Journal of Comparative and International Education*, *44*(2), 303–304. https://doi.org/10.1080/03057925.2012.751802

Samer Al-Samarrai (2003). Financing primary education for all: public expenditure and education outcomes in Africa. Institute of Development Studies, University of Sussex.

Tansel, A., & Bircan, F. (2006). Demand for education in Turkey: A Tobit analysis of private tutoring expenditure. *Economics of Education Review*, *25*(3), 303–313. https://doi.org/10.1016/j.econedurev.2005.02.003

UNESCO (2022). UNESCO Institute for Statistics Data as of February 2020 on Ghana. [Accessed 1 May 2022].

United Nations, 2015. Transforming our world: The 2030 agenda for sustainable development. Available from: https://digitallibrary.un.org/record/3923923 [Accessed 1 Apr 2018].

Tobin, J. (1958). Estimation of relationships for limited dependent variables. *Econometrica*, *26*(1), 24. https://doi.org/10.2307/1907382

UNESCO (2008). Education for All by 2015: Will We Make It? (Global Monitoring Report). Paris: UNESCO.

UNESCO (2002). The Education for All Global Monitoring Report: Is the World on Track? Paris: UNESCO.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, *48*(4), 817. https://doi.org/10.2307/1912934

Wongmonta, S., & Glewwe, P. (2016). An analysis of gender differences in household formal primary education expenditure: The case of Thailand. *Education Economics*, *25*(2), 183–204. https://doi.org/10.1080/09645292.2016.1168363

World Bank (2010). Project Performance Assessment Report' (Republic of Ghana, Second Phase of the Functional Literacy Project, IDA-3246O, IDA-3246A). Accra: World Bank.

World Education Forum (2000). The Dakar Framework for Action. Education for All: Meeting our Collective Commitments, World Education Forum 2000, Dakar, Senegal, Paris:UNESCO

Yuvaraj, N., & Arabi, U. (2021). Determinants of household expenditure on primary education. *Shanlax International Journal of Economics*, *9*(3), 10–14. https://doi.org/10.34293/economics.v9i3.4021

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