

Analyzing the Effects of Neo Liberal Policy on Primary Female Education Enrollment in Africa

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ABSTRACT

This article investigates the impact of the economic changes associated with the neo-liberal policies on female primary education rates in Africa. Employing a polynomial panel-data regression from 1997-2010, and using Freedom Index Scores provided by the Heritage Foundation as a proxy for the measure of neo-liberal economic policies, as well as other indicators for openness, we find that neo-liberal policy negatively impacts female primary education enrollment in Africa.

INTRODUCTION

In the past few decades, mainstream economists have adamantly prescribed the operation of a free “open market economy” as the cure to economic and societal ailments that plague third world countries. According to the Heritage Foundation, “the fundamental right of every human... In an economically free society, individuals are free to work, produce, consume, and invest in any way they please, with that freedom both protected by the state and unconstrained by the state.” And, it is only through the unfettered operation of the free enterprise system that the well-being of ordinary people will improve. “The record of history is absolutely crystal clear: that there is no alternative way so far discovered of improving the lot of the ordinary people that can hold a candle to the productive activities that are unleashed by a free enterprise system.” (Milton Friedman in Pantin, 2007) The assumption is that with the advent of economic freedom and spread of globalization, welfare of people all over the world will improve. The “globalization will lead to a widespread improvement in average incomes. Firms will reap increased economies of scale in a larger market, and incomes will converge as poor countries grow more rapidly than rich ones” (Scott, 2001).

Nevertheless, many researchers argue that in the past few decades the introduction of neo-liberal policy, manifested by the implementation of Structural Adjustment Programs (SAP) has stifled the economic growth and progress in Africa. “There is now a considerable body of research showing the negative impact of SAP’s on the lives of the majority of the population in countries where they have been implemented” (Kanji and Jazdowska, 1993). This paper will investigate the effects of implementing neo-liberal policies on female primary education enrollment in Africa.

The Significance of Female Primary Education

James Wolfensohn, then president of the World Bank in 1995, stated “If we educate a boy, we educate one person. If we educate a girl, we educate a family and a whole nation.” (Quoted in Knowles, et al, 2002) While females have always contributed to the well-being of their society, in many parts of the

world it is not only recently that they are becoming more active outside the confinement of their households. As female participation in the labor force increases so does the need for female education. While the improvement in both male and female primary education rates can bring a more stable productive economy, there are added social advantages in increasing female education. These social gains include reducing “fertility and infant mortality, improving family and child health, increasing life expectancy, and increasing the quantity and quality of children’s educational attainment.” (Knowles and et al, 2002). Clay (1992) found that “higher education is typically associated with a preference for smaller families and with the use of contraceptives and other forms of birth control.” (Clay, 1992) Research conducted by Osili, et al, (2008), discovered that increasing female education by one year diminishes early fertility by 0.26 births; it also showed an inverse relationship between female education and infant mortality, while also concluding that, “higher female educational attainment likely would also affect wages, child nutrition, child mortality, and other outcomes.” (Osili, et al, 2008) Moreover, the decline in birth rates associated with the increase in female’s education has implications for the overall health of the nation. (Herz and Khandker, 1991) Such improvement is related to two factors. First, the reduction in family size causes an increase in per-child investment which in return improves the health of existing children while also increasing educational levels. Second, educated mothers are more knowledgeable about nutrition, safety, and health risks and prevention, (Hadden, et al, 1996). Female education may also affect the overall level of GDP, estimated by Knowles, et al, (2002) where a one percent increase in the education of females increased GDP on average by .37 percent. Browne and Barrett’s study on female education in Sub-Saharan Africa claims, “The synergistic effects of female education encompass a wide range of benefits, potentially both human and economic development.” (Browne & Barrett, 1991).

Neo Liberal Economic Policy

The implementation of neo liberal policy suggests a reduction in the size of government, curbed trade unions, free international trade and investment, unconstrained corporate activities, and in particular those of multinational corporations. These policies have become the major components of the World Bank and the International Monetary Fund (IMF) structural adjustment. Structural Adjustment Programs (SAPs) were constructed by the IMF and the World Bank to be used as instruments to cure the issues surrounding third world debt in the 1980s resulting from the oil crisis of earlier years. While many, including Hodd (1987) and Stein (1992), agree that Structural Adjustment Programs were imposed on African countries to cure their debt problems, there are those such as Whitaker & Berg (1986) who argue that “Africa’s problems did not start with the oil price hikes of 1973 and 1979”. They believe that other factors contributed to the deterioration of Africa’s economic environment. These factors included repayment of loans at the behest of the World Bank and IMF standardization, the worsening of terms of trade, increased competition, and the alteration of developmental assistance. The IMF and World Bank sponsored these structural adjustment programs which are described by (Kanji & Jazdowska, 1993) to emphasize:

- Formal or de facto currency devaluation to discourage imports and encourage exports;
- Trade liberalization through the abolition of price and imports controls and more access for foreign and multinational companies;
- Reduction of government expenditures in the social welfare sectors through privatization, introduction or raising of user charges and withdrawal of subsidies, including those for food;
- Retrenchment of workers and wage restraints;
- Privatization of government enterprises and parastatals.

The main purpose of the structural adjustment programs was to have an export focused economy, transforming the defunct non-westernized economy into the free “open market”. The expected results would have been a generation of enough foreign currency to enable repayment of African countries’ international debt. Regardless of whether the SAPs enabled these countries to rid themselves of their international debt, an argument has sprouted over the social and economic effects of the neo-liberal policies of SAPs. Several authors, including Asoka Bandarage, (1977), have argued that the structural adjustment policies have worsened social conditions in most of the third world where they have been imposed. Moreover, some authors have argued that the effects of adjustment policies have fallen disproportionately on women as a group, impacting women’s health status, educational opportunities and employment. (Saadatmand, et al, 2004) “The effects of SAP’s are gender specific with women being worse affected than men.”(Kanji & Jazdowska, 1993)

THE MODEL

To measure the effect of neo-liberal policy on Female Primary School Enrollment rates in Africa, we utilize a panel-data regression with fixed-effects for all countries in Africa ranging from 1997-2010. Because of a lack of available data, we removed the Democratic Republic of the Congo from our data set, as there was no data for the given time period available. The model is formulated using data from The World Bank and from The Heritage Foundation. The functional form of the fixed effects panel regression model is listed below:

$$FPER = \beta_0 + \beta_1 \text{TRADE} + \beta_2 \text{GDP} + \beta_3 \text{HEALTH} + \beta_4 \text{HIV} + \beta_5 \text{INTERNET} + \beta_6 \text{FREEDOM} + \beta_7 (\text{FREEDOM})^2 + \beta_8 \text{FPER}(-1) + \varepsilon$$

Female primary enrollment rates (FPER) is expressed as the ratio of female to male students currently enrolled in primary level education in both public and private schools. This variable displayed properties of a unit-root, and we thus transformed the variable into a growth rate by first differencing the natural logarithm. We include 6 explanatory variables in the model, which are TRADE, GDP, HEALTH, HIV, INTERNET, and FPER(-1). We also include a freedom indicator, which is taken from an Index of Economic Freedom. The Index of Economic Freedom is a set of scores assigned to each country on an annual basis and is produced by the Heritage Foundation and the Wall Street Journal. This variable is being used as a proxy for neo-liberal economic policies.

We include TRADE in the model, expressed as the sum of all imports and exports as a percentage of GDP, as a measure of economic openness. As this variable is an indicator of economic activity, we expect this variable to negatively affect female education, as females will be more likely to seek work for pay, thereby leaving their daughters at home rather than school.

The variable GDP measures the growth rate in GDP for country and year. Using the Augmented Dickey-Fuller statistic, we could not reject the null that a unit-root existed in the data set, and therefore first differenced the data. In order to place it in terms of a growth rate, we employ the natural logarithm of this variable. Similarly, we transformed per capita health expenditures to a growth rate. This variable is expressed as the sum of all public and private healthcare expenditures as a ratio of the total population. All of these data are expressed in terms of inflation adjusted US dollars, fixed to the year 2000. As this variable serves as an indicator for health status, we expect this to have a positive effect on female enrollment.

HIV is expressed as the number of reported cases of HIV per 100,000 inhabitants. We expect this variable to negatively affect the female enrollment rates. As more girls are withdrawn from school to

take care of their sick relatives, enrollment should be expected to decrease. We lagged this variable by two years to assist in capturing the effects of HIV, as it has a delayed effect on the body (Kahende & Hoch, 2008).

We utilize internet usage per 100 inhabitants in the population as a measure of infrastructure. We therefore expect internet usage to have a positive relationship with the dependent variable.

We include 9 indicators of economic freedom. The first variable we include is the overall Freedom Index (FRD), an aggregated score compiled from 10 other economic indicators. This score is done on a scale of 0-100, where 0 indicates no economic freedom within the private sector, and 100 indicates the total absence of government intervention in the markets. We include Trade Freedom (TRD) in our second model, an indicator of the openness of the economy. A high TRD score indicates the absence of government tariffs or trade barriers. Business Freedom (BUS) is expressed as an “indicator of the efficiency of government regulation of business” (heritage.org). Greater difficulty in opening or operating a business as a result of government regulation results in a lower score. Financial Freedom is a measurement of “banking efficiency as well as a measure of independence from government control and interference in the financial sector.” (heritage.org). We include Freedom from Corruption (COR) as a measure of the amount of corruption in governments. A higher score indicates less corruption. Next, we include Government Spending (GOV). “This component considers the level of government expenditures as a percentage of GDP. Government expenditures, including consumption and transfers, account for the entire score” (heritage.org). Investment Freedom (INV) is a measurement of the freedom of capital flows both foreign and domestic. Monetary Freedom (MON) measures price controls and inflation rates. Property Rights (PRP) enforcement measures the legal protection of property. As previously performed by Jagodzinski & Weede (1981), including a squared term in a polynomial regression allows us to examine the effects of diminishing returns. We include all Freedom Index scores at the level and the square, in order to capture the expected diminishing returns in each of the models. We expect the level term to be positive, and the squared term to be negative, indicating a relative maximum in the variable. If neo-liberal policy has had a negative effect on female primary school enrollment, we should witness a downward-opening polynomial curve for the Freedom Index variables.

We included the dependent variable (FPER) in the model lagged by one year to assist with the problem of autocorrelation. After referring to the Durbin-Watson statistic, the model appears to be free of the existence of any first-order autocorrelation.

Results and Discussion

The results of the model are listed below in Tables 2 and 3. We estimate 9 separate models, each containing the same explanatory variables, but including only one Freedom Index variable.

All of the explanatory variables display signs that meet our expectations. TRADE is negative and statistically significant in all models, indicating that, holding all else constant, economic openness discourages female primary school enrollment. Per capita GDP growth rates are positive and significant in all models, except in the FRD model, indicating that increases in per capita income promote primary school enrollment. Per capita health expenditures are positive and significant in all equations, indicating that as health expenditures increase, so does female primary enrollment. HIV rates are negative, as expected, and significant in all models. Internet usage per 100 inhabitants displayed a positive effect on female primary school enrollment, however did not fall within the bounds of statistical significance in any of the models.

With regard to neo-liberal policy, our results show that 6 out of 9 freedom indices are significant within conventional bounds, with 4 of those 6 being negative at the square, indicating a maximum point where additional economic freedom has diminishing marginal returns to female primary school enrollment. TRD is significant at the 5% level in both the level and the square, and FIN is significant at the 10% level when run at the level, and the 5% level at the square. FRD also exhibits the same sign as of TRD and FIN, but it is not statistically significant within conventional bounds. As table 4 indicates, there are only 3 Freedom indicators (BUS, GOV, and PRP) have upward opening parabolic curves. However, only 2 of those (GOV and PRP) are statistically significant. Therefore, only 2 of 9 Freedom Indicators exhibit upward opening curves with statistical significance within conventional bounds, indicating that neo-liberal policy is adversely affecting female primary school enrollment.

CONCLUSION

Using a polynomial regression, we are able to estimate the diminishing marginal returns of the freedom index variables as a proxy for neo-liberal policy in Africa. We find a statistically significant relationship between the Freedom Index variables and female primary school enrollment rates in most of our models, but only 3 displayed an upward opening curve, indicating positive effects on female primary school enrollment. Out of those 3, however, 2 are statistically significant. Additionally, our results suggest that in 6 of the 9 models, increases in economic freedom, have diminishing marginal effects with respect to female primary school enrollment.

Table 1: (Descriptive Statistics)

	FPER	TRADE	GDP	HLTH	HIV	INT	FRD	BUS	COR	FIN	INV	MON	PRP	TRD
Mean	0.031	78.9	0.028	0.061	6.3	2.27	53.5	55.8	28.5	42.8	46.2	70.2	37.8	57.1
Max	0.29	203	3	0.6	26.5	27.31	77	85	70	70	90	90.4	75	90
Min	-0.08	24	-0.16	-0.59	0.1	0	21.4	17.1	7	10	0	0	5	0
Std. Dev.	0.054	38.3	0.03	0.12	7.5	3.94	8.3	12.9	12.9	15.6	16.2	15.2	15.8	14.8

Table 2:

Variable	FRD	BUS	COR	FIN
	(t-stat)	(t-stat)	(t-stat)	(t-stat)
C	-0.006	0.25	.13	.13
	(-.0191)	(2.92)***	(3.13)***	(1.84)*
TRADE/GDP	-0.0005	-.00057	-.0005	-.0005
	(-3.91)***	(-3.6)***	(-2.01)**	(-2.71)***
GDP	0.135	.16	.14	.15
	(1.37)	(1.74)*	(2.44)***	(2.33)**
HEALTHEXP	0.04	.04	.04	.04
	(2.01)**	(1.66)*	(2.21)**	(2.15)**
HIV	-0.001	-.001	-.0017	-.001
	(-1.26)	(-1.02)	(-2.34)**	(-1.81)*
INTERNET	0.0004	.0005	.0002	.0005
	(.33)	(.46)	(.19)	(.56)
FPER(-1)	0.005	-.0015	-.001	.0015
	(.49)	(-4.14)***	(-3.8)***	(-3.6)***
FRD	.005	N/A	N/A	N/A
	(.49)			
FRD ²	-3.5E-05	N/A	N/A	N/A

	(.66)			
BUS	N/A	-.0023	N/A	N/A
		(-.99)		
BUS^2	N/A	1.39E-05	N/A	N/A
		(.41)		
COR	N/A	N/A	.002	N/A
			(1.96)**	
COR^2	N/A		-3.79E-05	N/A
			(-1.92)**	
FIN	N/A	N/A	N/A	.0015
				(1.04)
FIN^2	N/A	N/A	N/A	-1.48E-05
				(-1.07)
R ²	.54	.54	.54	.54
Adjusted R ²	.44	.44	.45	.45
F-Stat	5.63	5.73	5.75	5.67
DW	2.18	2.16	2.14	2.18

Table 3:

Variable	GOV	INV	MON	PRP	TRD
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
C	.21	.066	-.33	.288	.117
	(3.69)***	(1.26)	(-1.23)	(6.4)***	(3.49)***
TRADE/GDP	-.0005	-.004	-.0005	-.0005	-.0005
	(-1.93)*	(-2.84)***	(-2.04)**	(-2.11)**	(-3.78)***
GDP	.16	.14	.13	.16	.15
	(2.54)***	(1.8)*	(2.05)**	(2.87)***	(1.65)*
HEALTHEXP	.04	.05	.049	.044	.05
	(2.21)**	(2.07)**	(2.41)**	(2.06)**	(2.17)**
HIV	-.001	-.0016	-.0017	-.001	-.001
	(-1.91)*	(-1.11)	(-2.28)**	(-1.66)*	(-1.18)
INTERNET	.0004	6.36E-05	.001	.0003	.0005
	(.44)	(.05)	(.17)	(.33)	(.37)
FPER(-1)	-.001	-.0015	-.001	-.002	-.0016
	(-3.31)***	(-4.34)***	(-4.11)***	(-4.71)***	(-4.19)***
GOV	-.001				
	(2.36)**				
GOV^2	1.28E-05				
	(1.74)*				
INV		.003			
		(1.64)*			
INV^2		-2.97E-05			
		(-1.44)			
MON			.013		
			(1.83)*		
MON^2			-8.91E-05		
			(-1.78)*		
PRP				-.004	
				(-2.34)**	
PRP^2				4.01E-05	
				(2.28)**	

TRD					.001
					(2.06)**
TRD^2					-1.58E-05
					(-1.93)*
R ²	.54	.55	.54	.55	.54
Adjusted R ²	.45	.46	.46	.45	.45
F-Stat	5.66	5.91	5.86	5.83	5.76
DW	2.14	2.21	2.2	2.14	2.18

Table 4: Optimized Freedom Index Scores

Variables	Values	Mean	Std. Dev.
Freedom Score	x = 71.4	56.76	6.25
	(max)		
Business Freedom	x = 83.4	60.21	11.27
	(min)		
Freedom from Corruption	x = 26.3	28.48	12.95
	(max)		
Financial Freedom	x = 48.07	42.8	14.05
	(max)		
Government Spending	x = 39.1	73.86	18.22
	(min)		
Investment Freedom	x = 50.5	46.15	16.13
	(max)		
Monetary Freedom	x = 73.03	70.25	15.24
	(max)		
Property Rights	x = 49.8	37.77	15.78
	(min)		
Trade Freedom	x = 31.64	57.05	13.91
	(max)		

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