

The Role of Human Capital and Finance-Growth Nexus: Panel Data Analysis of African Countries

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Research Problem

- Despite shocks to the global economy, African countries continue to register impressive growth performances.
 - According to Africa Development Bank (2023), Africa's pre-Covid-19 top five performing economies are projected to grow by more than 5.5% on average in 2023-2024.
 - These are among the world's 10 fastest-growing economies - Rwanda (7.9%), Côte d'Ivoire (7.1%), Benin (6.4%), Ethiopia (6.0%), and Tanzania (5.6%).
- At the same time, while financial development is still lagging when compared to other regions, the overall financial sector development, especially financial institutions development, has been improving in the Africa (Mlachila et. al., 2016; Svirydzenka, 2016).
 - More local Pan African banks are replacing non-African international bank

Research Problem

- Human capital development has taken center stage in policy discussion since the development of the endogenous growth models of growth.
 - Through the MDGs, access to education has been pushed, and now quality of education, TVET and STEM education are on the policy agenda through SDGs and other interventions.
- However, while research has largely established that financial development (and human capital development) impacts economic growth in Africa, the channels through which this happens is not well documented.
 - In the context of these dynamics in economic growth, financial and human development in Africa, one is poised to ask the empirical question: does human capital development mediate finance-growth nexus in Africa.
 - Bridging this knowledge gap is not just important for academic literature but also imperative for policy.

Contribution/Value Added

- The results make significant contributions to existing finance–growth literature in so many ways:
 - First, unlike the extant literature that emphasis the independent impact of human capital on economic growth, this study add to the important role that human capital plays in economic growth of Africa through its role of making finance sector more growth enhancing.
 - Second, the study extends the literature by empirically examining how different measures of human capital shape the finance–economic growth nexus.
 - Third, this study emphasized the structural aspects of the financial sector through a composite indicator of financial institutions and financial markets development.

Objectives/Hypothesis

- The overall objective of this study is examine role of human capital in financial development-economic growth nexus for African countries.
 - Specifically, examine whether financial development and economic growth have any non-linear relationship.
 - Examine whether the non-linear relationship is determined by human capital
 - Examine whether human capital impact on finance-growth nexus is the same or financial institution and financial markets.
- The hypotheses therefore are:
 - financial development and economic growth have a non-linear relationship.
 - the non-linear relationship is determined by human capital
 - There are no structural heterogeneity in human capital impact on finance-growth nexus in Africa.

Research Design/Methodology

- The following estimation techniques are used:
 - Panel Smooth Transition Regression (PSTR) – used to test and model non-linearity in finance-growth nexus anchored on human capital
 - $growth_{it} = \mu_i + \beta_0 FD_{it} + \beta_1 FD_{it} g(HC_{it}; \gamma, c) + \beta_2 X_{it} + u_{it}$
 - where $g(HC_{it}; \gamma, c) = [1 + \exp(-\gamma \prod_{j=1}^m (HC_{it} - c_j))]^{-1}$ is a continuous logistic transition function
 - Systems GMM – used with an interaction term in financial development and human capital
 - $growth_{it} = \alpha_0 + \alpha_1 Fd_{it} + \alpha_2 sch_{it} + \alpha_3 (Fd * HC)_{it} + A_4 X_{it} + \varepsilon_{it}$
- Data
 - Financial development is measured using a composite index of the overall financial development, financial institutions development and financial markets development. This allows us to assess the impact at institutions and market levels.
 - Human capital is measured as school enrolment and life expectancy as found elsewhere
 - Other data series are sourced from international data sets like WDI etc

Result/Discussion

- System GMM Result
 - The findings from this analysis show that the overall financial development, financial institutions development and financial markets development significantly enhance economic growth, even after controlling for other significant growth covariates in the setup of a dynamic panel regression method.
 - After interacting finance and human capital (non-linear models)
 - It also showed that human capital significantly moderates the impact of financial development on economic with a significant interactive financial development-human capital term in all six specifications of the model.
 - Whether we measure human capital by educational participation or quality of life, our results do not differ.
 - Our results hold for financial institutions as well as for financial markets, and both combined

GMM (Schooling) Result

VARIABLES	Linear specifications			Non-linear specifications		
	Overall	Institutions	Markets	Overall	Institutions	Markets
L.lngdppc	0.884*** (0.0439)	0.711*** (0.131)	0.888*** (0.0703)	0.889*** (0.0439)	0.500** (0.215)	0.779*** (0.119)
Lnsch	0.0557 (0.0398)	0.224* (0.121)	0.092 (0.0616)	0.230** (0.106)	0.836** (0.41)	0.522** (0.238)
Lntrade	0.0418 (0.0383)	0.108 (0.0768)	0.0483 (0.0434)	0.0457* (0.0267)	0.2 (0.154)	0.132 (0.0853)
Lngfcf	0.0236 (0.0153)	0.0439 (0.0352)	0.046 (0.0272)	0.0425** (0.0179)	0.0928 (0.1)	0.109* (0.0612)
Lnfd	0.125** (0.0502)			0.239 (0.148)		
Lnfdsch				0.0866* (0.0434)		
Lnfi		0.105* (0.0532)			0.894 (0.56)	
Lnfish					0.281* (0.16)	
Lnfm			0.00471 (0.00302)			0.314** (0.149)
Lnfm sch						0.0871** (0.0412)
Constant	0.668** (-0.256)	0.885* (-0.475)	0.179 (-0.203)	-0.201 (-0.335)	-0.366 (-0.974)	-1.192* (-0.603)

GMM (Life Expectancy) Result

Variables	Linear specifications			Non-linear specifications		
	Overall	Institutions	Markets	Overall	Institutions	Markets
L.lngdppc	0.852***	0.857**	0.882** *	0.741***	0.716**	0.883** *
	0.045	0.048	0.043	0.116	0.121	0.04
Le	0.314**	0.363***	0.504** *	0.067*	2.903**	1.031** *
	0.142	0.13	0.075	1.55	1.334	0.256
Lntrade	0.101*	0.109**	0.076	0.118	0.159	0.068
	0.056	0.054	0.057	0.107	0.101	0.062
Lngfcf	0.040*	0.038	0.018	0.079*	0.075*	0.038
	0.021	0.026	0.022	0.046	0.042	0.025
Lnfd	0.097**			-4.344		
	0.044			2.537		
lnfd_le				1.106*		
				0.643		
Lnfi		0.076*			-5.461	
		0.042			2.767	
lnfi_le					1.386*	
					0.702	
lnfm			0.010**			0.561**
			0.004			0.272
lnfm_le						0.140**
						0.067

PSTR Result

- PSTR Result
 - We rely on endogenous threshold model of panel smooth transition regression (PSTR) introduced by (Fok et al., 2005; Gonzalez et al., 2005) to further investigate non-linearity in financial development and growth relationship
 - We have formally tested and modelled the non-linearity in finance-growth nexus to depend on human capital.
 - In both models (secondary enrollment and life expectancy), we found that a threshold value of 85 (35) for secondary education (life expectancy) is the value above which financial development (institutions, markets and both) impacts growth positively

PSTR (Schooling) Result

	Overall		Institutions		Markets	
Linearity Test	Stat.	P value	Stat.	P value	Stat.	P value
Likelihood Ratio	6.584	0.086	4.764	0.053	5.389	0.0743
Wald	6.514	0.086	4.548	0.050	5.563	0.0784
Fisher	1.880	0.013	1.340	0.012	1.456	0.0124
Test of no linearity	T stat.	P value	T stat.	P value	T stat.	P value
Likelihood Ratio	-2.212	0.530	-2.843	0.620	-2.365	0.556
Wald	2.204	0.531	2.643	0.634	2.794	0.74
Fisher	0.613	0.607	0.754	0.708	0.76	0.763
PSTR Coefficient Estimates						
Gamma	5.55		5.55		5.55	
C	84.57		84.57		84.57	
	Regime 1	Regime 2	Regime 1	Regime 2	Regime 1	Regime 2
Coefficient	-0.303	1.065	-0.132	1.13	-0.278	1.65
	(-0.76)	(1.90)	(-0.53)	(2.02)	(-0.641)	(2.34)

PSTR (LE) Result

	Overall		Institutions		Markets	
Linearity Test	Stat.	P value	Stat.	P value	Stat.	P value
Likelihood Ratio	6.584	0.086	4.764	0.053	5.389	0.0743
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Wald	2.204	0.531	2.643	0.634	2.794	0.74
Fisher	0.613	0.607	0.754	0.708	0.76	0.763
PSTR Coefficient Estimates						
Gamma	3.50		3.50		3.50	
C	44.65		44.65		44.65	
	Regime 1	Regime 2	Regime 1	Regime 2	Regime 1	Regime 2
Coefficient	-0.303	1.065	-0.132	1.13	-0.278	1.65
	(-0.76)	(1.90)	(-0.53)	(2.02)	(-0.641)	(2.34)

Result/Discussion

- What does our finding collaborate with previous literature
 - Both financial development and human capital individually promotes growth in Africa
 - Finance-growth nexus for African countries is non-linear
- What little insights have we uncovered?
 - We have modelled and showed that the non-linearity in finance-growth depends on the level of human capital.
 - In previous studies the non-linearity depends on financial development itself or institutional quality
 - Where it depends on human capital, it was assumed and never tested for as in an interactive term
 - Such non-linearity is robust to the different financial sector development (markets vs institutions) and human capital (education vs quality of life)

Policy Recommendation

- Human capital Impact on Financial Development-Growth Nexus
 - Financial development policies devoid of upgrading human capital stock of African countries may have a limited impact on economic growth.
 - Policymakers should augment financial development policies with a broad, long-term human capital development policies to consolidate financial development impact on long-term economic growth in Africa.
- Financial superstructure
 - Policy makers in African countries should further pursue financial development from a broad perspective keeping an eye on both financial markets and financial institutions development.
 - Human capital enhances the impact of both markets and institutions on growth.
 - Moreover, given that financial development index is multidimensional, our findings call to policy makers to not just focus on financial deepening but also access and efficiency aspects of the African financial superstructure.

Policy Recommendation

- Human capital in its various forms
 - Furthermore, the results indicate a positive impact of human capital measured with education and life expectancy promote economic growth with a significant interactive financial development-human capital term in all six specifications of the model.
 - Hence, policymakers should focus not only on education both also on the quality of life as they seek to promote economic growth through human capital development.

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Thank You