Finance and Health: Evidence from Macro Panel Data

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Abstract

This paper examines the relationship between health and financial development in Sub-Saharan Africa. The results using the fixed-effects and two-step generalized method of moments estimators indicate significant relationships between health and financial development. All health indicators, at the exception of out-of-pocket expenditure, are positively associated with financial development. The out-of-pocket health expenditure is negatively associated with financial development. Furthermore, we fit the model with an autoregressive distributed lag specification to allow rich dynamics in a way financial development adjusts to changes in health conditions. We then apply the pooled-mean group estimator. While the results indicate that a long-run relationship coexists between health and financial development, no strong evidence seems to appear in the short-run. Overall, the results suggest that good health increases total saving and fosters financial development, especially in the long-run.

Introduction

- *Background*: The relationship between the financial sector and health sector has not been investigated in the literature. One can easily conjecture that a healthy man, unlike the unhealthy one, can work, save, and contribute to widening the financial sector. In other words, the healthy worker supplies labor and gets paid. He uses his labor income to consume and save. His savings go through the market for loanable funds to finance capital goods for firms. Everything being the same, the larger the savings, the deeper the financial sector. Higher public and private spending on healthcare will provide the society with healthier and stronger workers who, through their savings, may contribute to deepening the financial system. This paper offers a novel insight into the relationship between health and financial development. Specifically, we examine whether improvements in health conditions in Sub-Saharan African countries can help explain the expansion of the financial system.
- *Literature*: One of the theories of efficiency wages suggests that healthy workers are more productive (Leibenstein, 1957). It is reasonable to assume that the healthy worker on a higher wage eats better, works longer, and saves more, compared to the unhealthy worker on a lower wage. From this premise, the healthy worker participates more in widening the financial system, unlike the unhealthy one. Using the life-cycle model, Smith (1999) discusses the effect of health on wealth and argues that savings may fall as current health gets worse. Put simply, poor health reduces current period income and increases either consumption or out-of-pocket medical expenses. This theory implies that the unhealthy household simply dissaves, which causes a leftward shift of the supply of loanable funds and a decrease in investment.
- *Hypothesis*: Based on the literature, we posit that countries with better health infrastructure are likely to exhibit stronger and healthier economies. Accordingly, those countries will save more, allowing their financial system to grow deeper and wider.

Methods and Materials

Empirical Model:

$$FinDev_{it} = \alpha_0 + \beta_i + \theta_t + \alpha_1 FinDev_{it-1} + \alpha_2 Health_{it} + \alpha_3 Income_{it} + \alpha_4 Inflation_{it} + \alpha_5 RuleOfLaw_{it} + \alpha_6 Corruption_{it} + \alpha_7 Trade_{it} + \alpha_8 Employment_{it} + \varepsilon_{it}$$

- Three different empirical strategies
  - The fixed-effects estimator: controls for unobserved heterogeneity
  - The GMM estimator: controls for the endogeneity of the health variables; use internal instruments
  - The pooled-mean group estimator: catches rich dynamics in a way financial development adjusts to health conditions; short-run vs. long-run analyses.
- Data
  - Financial development variables: domestic credit to private sector (%GDP) and liquid liabilities (%GDP);
  - Health variables: health index, total health expenditure (%GDP), private health expenditure (%GDP), public health expenditure (%GDP), per capita health expenditure ($PPP), out-of-pocket health expenditure (%Total H. E.).
  - Sample: 46 Sub-Saharan African countries;
  - Time period: 1995-2015

Results

- The fixed-effects and GMM results
  - Health expenditure and infrastructure foster financial development
  - Out-of-pocket expenditure has a negative impact on financial development.
  - More significant evidence that public health expenditure has a positive impact on financial development, unlike private health expenditure.

	1	2	3	4	5	6
L.credit	0.62***	0.59***	0.83***	0.82***	0.81***	0.79***
	(0.13)	(0.15)	(0.05)	(0.05)	(0.05)	(0.06)
index	30.91*	33.57*				
	(17.57)	(19.46)				
total			0.24**	0.10		
			(0.11)	(0.13)		
public					0.49***	0.40**
					(0.15)	(0.19)
control	no	yes	no	yes	no	yes
obs	255	233	737	647	737	647
R2	0.43	0.46	0.73	0.74	0.73	0.74
Hansen	0.53	0.53	0.05	0.11	0.93	0.93

	7	8	9	10	11	12
L.credit	0.85***	0.83***	0.79***	0.77***	0.79***	0.76***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)
private	-0.02	-0.15				
	(0.16)	(0.17)				
pocket			-0.08***	-0.09***		
			(0.02)	(0.02)		
pc exp					0.01***	0.01**
					(0.00)	(0.00)
control	no	yes	no	yes	no	yes
obs	737	647	737	647	737	647
R2	0.73	0.74	0.73	0.74	0.74	0.75
Hansen	0.01	0.05	0.69	0.79	0.56	0.41

Table 4. Two-step GMM; Dependent variable is domestic credit.

- The pooled-mean group results
  - Significant long-run relationships between financial development and health.
  - Both public and private health expenditures have long-run positive impacts on financial development.
  - No strong evidence that health has significant effects on financial development in the short-run.

Discussion

- The results are consistent with the theory. Better health implies more savings. That is, better health, through more spending on healthcare, produces healthier workers according to the efficiency wage theories. Ceteris paribus, healthier workers work longer, save more, and contribute to deepening the financial system, while the unhealthy workers spend more of their labor income on health, which means less savings for the financial system. This is consistent with Smith (1999), who argues that savings may fall as current health gets worse.
- It follows that improving health conditions increases total saving and promotes financial development. Alternatively, less deductible may promote financial development. It is thus important African governments design policies that help expand health infrastructure or minimize the cost of the high deductible. Buying equipment, building hospitals, staffing, and subsidizing nutrition, promoting free market, among others, are some ways to keep populations healthy or to lower the cost of deductible in order to promote financial development.

Conclusion

- This paper investigates the impact of health on financial development in Sub-Saharan African countries.
- The results based on the fixed-effects and GMM estimators indicate that, while health expenditure and infrastructure foster financial development, out-of-pocket expenditure drains saving out of the financial system and impedes financial development. In addition, the results also show that public health expenditure is more conducive to financial development than private health expenditure.
- The results based on the pooled-mean group estimator show that there is a long-run relationship between financial development and health. Second, although both public and private health expenditures promote financial development, it is not clear whether public expenditure promotes financial development in the long-run more than private expenditure. Third, we do not find strong evidence that health has significant effects on financial development in the short-run.
- Improving health infrastructure and creating competitive health market may increase savings and promote financial development.

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