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How has Mobile Phone Penetration Stimulated Financial Development in Africa?

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Abstract

In the first macroeconomic empirical assessment of the relationship between mobile phones and finance, the author examines the correlations between mobile phone penetration and financial development using two conflicting definitions of the financial system in the financial development literature. With the traditional International Financial Statistics (IFS) (2008) definition, mobile phone penetration has a negative correlation with traditional financial intermediary dynamics of depth, activity, and size. However, when a previously missing informal-financial sector component is integrated into the definition, mobile phone penetration has a positive correlation with informal financial development. Three implications result: There is a growing role of informal finance; mobile phone penetration may not be positively assessed at a macroeconomic level by traditional financial development indicators; and it is a wake-up call for

scholarly research on informal financial development indicators that will orient monetary policy.

Key words:

Africa banking financial development mobile phones shadow economy

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Notes

Note. *, **, ***: significance levels of 10%, 5%, and 1%, respectively. Heteroscedasticity and Autocorrelation Consistent (HAC) p values in brackets. Fin. = financial. Bolding represents significance at 1%, 5% or 10% for estimated coefficients and Fisher test. Bolding also reflects failure to reject the null hypothesis of Ramsey's RESET.

Note. *, **, ***: significance levels of 10%, 5%, and 1%, respectively. Heteroscedasticity and Autocorrelation Consistent (HAC) p values in brackets. Informal 1: Absolute informal financial development. Informal 2: Relative informal financial development. Informal and Semiformal: Relative informal and semiformal financial development. Bolding represents significance at 1%, 5% or 10% for estimated coefficients and Fisher test. Bolding also reflects failure to reject the null hypothesis of Ramsey's RESET.

Min. = minimum; Max. = maximum; Obser. = observations; FD = financial development.

M2 = Economic financial depth; Fd = Financial system depth; Bd = Banking system depth; BcBd = Banking system efficiency; FcFd = Financial system efficiency; Pcrb = Banking system activity; Pcrbof = Financial system activity; Dbacba = Financial system size; Informal 1 = Absolute informal financial development; Informal 2 = Relative informal financial development; FD = Financial Development; Fin. = Financial; Gov. Exp. = Government Expenditure; FDI = Foreign Direct Investment; RQ = Regulation Quality.

WDI = World Bank Development Indicators; FDSD = Financial Development and Structure Database; FD = Financial Development; AfDB = African Development Bank; Fd = Financial system deposits; Bd = Banking system deposits; M2 = Money supply.

“Relative to the spread of some other technologies that have been introduced in sub-Saharan Africa—improved seeds, solar cook stoves and agricultural technology-mobile phones adoption has occurred at a staggering rate on the continent. Yet few empirical economic studies have examined mobile phone adoption. This could be due to a variety of factors, including unreliable or nonexistent data on individual level adoption (leading to measurement error) … ” Aker & Mbiti (2010, 225).

In order to have a mobile money account and make a deposit, a customer must own a cell phone SIM card with the mobile operator and register for a mobile money account. The customer then makes cash deposits at the physical offices of one of the operator's mobile money agents. These cash deposits create electronic money credit in the account. Customers can make person-to-person transfers of mobile money credit to the accounts of other mobile money users in the same network. They can also use their mobile money credit to pay bills and to buy phone airtime. Withdrawals (conversion to cash) could be made at the offices of the network's mobile money agents. There is also a possibility for a mobile money customer to make a transfer to someone who is not registered with the same network. In this case, when notice of the transfer is received through an SMS text message, the recipient can receive the cash at a mobile money agent (Demombynes, & Thegeya, 2012).

Data on ‘mobile phone penetration’ is the same as in Ondiege (2010).

Bank deposits here refer to demand, time and saving deposits in deposit money banks. See Lines 24 and 25 of International Financial Statistics (IFS, October 2008) for the definition of formal financial intermediary development.

Financial deposits are demand, time and saving deposits in deposit money banks and other financial institutions. See Lines 24, 25 and 45 of IFS (October, 2008).

This is a measure of sector importance in financial development. That is, from formal and semiformal to ‘informal’ financial development: (Informalization). This proposition appreciates the deterioration of the formal and semiformal banking sectors to the benefit of the informal sector. See Asongu (2011a).

This is also a measure of sector importance in financial development. That is, from formal to ‘semiformal and informal’ financial development: (Semi-informalisation and informalization). This proposition appreciates the deterioration of the formal banking sector to the benefit of other sectors (informal and semiformal). See Asongu (2011a).

A referee has also suggested an OLS approach with a lot of controls for the omitted variable bias problems. This suggestion is premised on the lack of good instruments at a macro level necessary for an Instrumental Variable empirical strategy.

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