



IMF Working Paper

Monetization in Low- and Middle-Income Countries

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African Department

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Abstract

The degree of an economy's monetization, which has an important implication on economic growth, can be affected by the conduct of monetary policy, financial sector reform, and episodes of financial crises. The paper finds that monetization—measured by the ratio of broad money to nominal GDP—in low- to middle-income countries is significantly correlated with per-capita GDP, real interest rates, and financial sector reform. It suggests that maintaining an upward momentum in monetization can be an important policy objective, particularly for low-income countries, and that monetary and financial sector policies need to be conducive to enhancing monetization.

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I. INTRODUCTION

Monetization was once regarded “among the most significant aspects of the growth and development of the economies of less developed countries.”¹ In other words, the degree to which money is accepted and used as a medium of exchange, a unit of account, and a store of value was considered an important indicator of economic development. More recently, a consensus is emerging that financial sector development, for which monetization can be a key contributor, is an important driver of economic growth.²

Despite this recognition of the role of money in economic development, there is surprisingly little in the existing literature that analyzes underlying factors that influence monetization. It is true that there is a vast literature on the demand for money, but the focus there is the stability of money demand and its implications for the conduct of monetary policy. The interest of this paper is in analyzing the monetization phenomenon from a long-run perspective: why do many emerging countries show steady or rapid rise in the degree of monetization while a significant number of low-income countries experience an extended period of downward trends (demonetization) or sudden reversals? We employ an empirical methodology suited to an application to a diverse panel of nonstationary time series data and shed an initial light on this question.

The paper is organized as follows. Section II reviews the literature that is relevant for the analysis of monetization. Section III conducts empirical analysis to identify possible factors that affect monetization. Section IV concludes with discussions of policy implications of the empirical findings.

II. REVIEW OF THE LITERATURE

A. Macroeconomic Factors Affecting Monetization

In the literature, monetization and financial deepening are often used to capture the same phenomenon: an increase in the ratio of broad money to GDP. Using this ratio as an indicator of financial deepening, a study shows that real deposit rates, income level and the real exchange rate are positively and significantly correlated with the ratio in a selection of Asian countries (Agrawal, 2001). There is also an earlier study that shows that positive real deposit and lending rates appear to constitute a fundamental precondition for substantial financial development (Lynch, 1996). This can be explained by a number of possible mechanisms: negative real deposit rates tend to deter households from making new bank deposits (Townsend and Ueda, 2010); and higher real deposit rates induce a substitution effect away from other financial asset holdings, such as informal credit markets (Taylor, 1983, Edwards, 1988, van Wijnbergen, 1982). Taken together, real interest rates would emerge as one of the key macroeconomic factors affecting monetization.

Demographic factors are also highlighted in the literature. An earlier paper found that the degree of financial deepening was affected by the propensity to invest in financial assets, and the urban population had higher propensity than the rural population (Patrick, 1966). More

¹ Quote from Chandavarkar (1977).

² See the literature review in Section II.C.

recently, a paper found that rural population density affects financial deepening, showing that geographical barriers to banking services affect the ease of access to finance (Detragiache et. al., 2005).

A large body of literature concerning the analysis of the demand for money also provides guidance as to the potential macroeconomic factors affecting monetization (Bordo and Jonung, 1989; Arize, 1994; Henstridge, 1999; Sriram, 2001). In a portfolio investment framework, higher returns on real assets would negatively affect the demand for money (Sriram, 1999). In developing countries where financial assets are mostly limited to money, the expected rate of inflation is shown to be a good proxy for the rate of return on real assets (Arestis and Demetriades, 1991). Another factor analyzed in this literature is central bank financing of fiscal deficits which is significant in a number of developing countries where the government financing through capital markets are limited (Fry et. al., 1996). A study shows that central bank financing of the fiscal deficit tends to depress the demand for money because of higher expected inflation in the absence of credible constraints on monetary financing by the government (Ritter, 1995).

B. The Impact of Financial Sector Reforms on Financial Deepening

An earlier literature put a strong emphasis on financial liberalization as the key condition for financial deepening. It is argued that a move from a regime of financial repression (characterized by negative real returns on financial assets) to one of liberalization would be the necessary condition to mobilize savings (McKinnon, 1973, Shaw, 1973).

More recently, the emphasis has shifted to institutional and legal aspects as fundamental factors for financial sector development (Tressel and Detragiache, 2008). According to the study, the relationship between the degree of financial sector reform and financial depth has been found to be significant, with the impact of banking sector reforms particularly important. This factor is strongly and positively associated with increases in financial depth (although their marginal effect becomes insignificant after five years), and the magnitude of the impact is almost twice as large in developing countries as in advanced countries. Additionally, it is found that reforms in developing countries tend to succeed when political institutions and property rights are better developed.

Another related factor analyzed in the literature is capital account openness. On one hand, capital account controls are a typical aspect of financial repression policies pursued by the authorities of developing countries (Kletzer and Kohli, 2001). On the other hand, capital inflows tend to weaken the relationship between monetization and the level of real economic activity and may lessen the usefulness of monetization as an indicator of financial development (Pill and Pradhan, 1995).

C. Economic Growth Effects of Financial Sector Development

Although this paper concerns factors influencing monetization, not the consequence of monetization, the growth impact of financial sector development is relevant for the study of monetization. This is because monetization can be a key contributor to financial sector development, and given the emerging consensus that financial sector development is an important driver of economic growth (Demirguc-Kunt and Levine, 2008), one could argue that monetization is the backbone of sustained economic development.

From a theoretical point of view, a well functioning financial system influences resource allocation and economic growth in several respects by: producing information and allocating capital; monitoring firms and exerting corporate governance; helping to ameliorate and diversify risks; pooling and mobilizing savings; and facilitating exchange and lowering transaction costs (Levine, 2005).

Numerous empirical studies have examined each of these specific aspects (Levine, 2005, for an overview). A wide range of empirical techniques and indicators of financial development have been used to examine the role of financial sector development in economic growth. The early literature found potentially large long term growth effects of changes in financial development (e.g., the cross country study of King and Levine, 1993). The introduction of more robust econometric techniques such as dynamic panel methodology strengthened this evidence, finding a robust link between financial development indicators and both economic and productivity growth (Beck, Levine and Loazya, 2000). In the specific context of poorer countries, it has been found that finance tends to support growth mainly through the speeding up of capital accumulation. However, this effect appears to be nonlinear as countries with very low levels of financial development experience very little growth acceleration from a marginal increase in financial development (Rioja and Valev, 2004a, 2004b).

Specific aspects of financial sector development are also found to be associated with economic growth. Stock market development facilitates long run growth (Levine and Zervos, 1998, Rousseau and Wachtel, 2000), while higher degrees of public ownership of banks are associated with lower levels of bank development and slower economic growth (La Porta, Lopez-de-Silanes and Shleifer, 2002). Additionally, a study finds that there is little evidence that foreign banks contribute much to the growth process of developing countries (Zhuang et. al., 2009).

III. EMPIRICAL ANALYSIS

A. The Model and Data

We consider a model where the monetization ratio, measured as the ratio of broad money to nominal GDP, is associated with macroeconomic and demographic factors as well as financial sector reforms. The choice of explanatory variables is motivated by the existing studies in the literature:

- log of per capita real GDP which captures the level of economic development;
- real bank deposit rate which is the incentive to hold bank deposits;
- inflation expectations captured alternatively by current inflation, one period ahead inflation, and the level of central bank credit to government;
- the percentage of the rural population in total population which reflects (negatively) the propensity to invest in financial assets³;
- capital account openness, which could affect monetization in both directions;

³ A direct measure of access to financial services, such as the number of bank branches, could be an interesting alternative, which is not explored in this paper.

➤ a financial reform index.

We use the data for a selection of 34 low- and middle- income countries—comprising countries from emerging Asia (EA), Middle East and North Africa (MENA), transition economies (TC), Latin America (LA) and sub-Saharan Africa (SSA)—considered by Christiansen et. al. (2009) and Detragiache et. al. (2005), from which data on monetization and the explanatory variables are available (Table A1). The sample countries are chosen solely based on sufficient availability of time series of the explanatory variables, particularly the financial reform index which is a key explanatory variable in the model. In doing so, we adopted a general to specific principle: we first took the largest pool of countries and then eliminated those for which sufficient observations were not available.⁴ The income level of the sample countries is diverse (Table 1 for descriptive statistics). The sample period (1973–2005) is given by the availability of a key explanatory variable (the financial reform index). The dataset is an unbalanced panel due to missing observations.

As can be seen on Figure 1 and 2, the sample countries cover a broad spectrum of monetization experiences. There is a high degree of inter-group variation in countries' average degree of monetization (Figure 1): average monetization tends to be higher in MENA and EA than in other regions, and SSA is clearly lagging behind the other regions. There is also a high degree of variation within individual countries in the time series evolution of the monetization ratios (Figure 2): some countries, such as Bangladesh, China, and Morocco, experience steady increases in monetization over the sample period, while others, such as Algeria, Kenya, and Uganda, exhibit a more volatile pattern.

There is also a large degree of heterogeneity between regions in terms of the explanatory variables (Table 2). For example, real bank deposit rates in SSA are more volatile and significantly more negative than the rest of the countries in the sample.

B. Estimation Methodology

In order to decide the estimation methodology, we first examine the stationarity of the panel data using the panel unit root tests of Im, Pesaran and Shin (2003) and the Fisher type tests of Maddala and Wu (1999) are used.⁵ Overall, the evidence is mixed with respect to the presence of unit roots in the data series under consideration.⁶ For some variables (the ratio of net credit from the monetary authority to GDP, inflation, real deposit rates, nominal deposit rates), the evidence is clearly against the null hypothesis of a unit root in all panels. For some others (the financial reform index), the evidence is mixed. In the case of other variables (log per capita income, the monetization ratio), it is clear that they are nonstationary.

⁴ Pesaran, Shin and Smith (2004) highlights that using cross sections for which smaller length of time series is available introduces bias into the coefficient estimates.

⁵ These tests also allow for the option of demeaning the data (deviation from each individual cross section mean) to alleviate cross – sectional dependence, which is employed here to ameliorate the potential for common shocks to affect several panels at the same time. These two different tests are employed since the power of individual panel unit root tests (even in a panel of the size under consideration here) is limited, and many of the existing panel data tests are specifically designed to be used with strongly balanced panels. However, one should also be aware that different tests can lead to different conclusions.

⁶ Full results of the unit root tests are available upon request.

Co-integration in all of the estimated specifications is tested through implementation of the tests of Pedroni (2004) (Table 3). In each case, the test statistics with the strongest asymptotic properties (group ADF and panel ADF) decisively reject the null hypothesis of no cointegration. The results highlight the need for an estimation methodology which accounts for these common trend properties.

Given the stationarity properties in the data, two alternative estimation approaches are available. One is a 'brute force' approach, differencing the nonstationary variables and estimating the model in differences (the interpretation of the results in this case would be in terms of growth rates). Alternatively, one could employ one of the standard techniques for estimating long run relationships in cointegrated panel data, such as the Fully Modified OLS technique of Pedroni (2000), the Dynamic OLS methodology of Kao and Chiang (2000), and the Pooled Mean Group (PMG) estimator of Pesaran, Shin and Smith (2004). Among these, the first two do not seem appealing because of the lack of power and reliability in the context of panel unit root tests (Karlsson and Lothgren, 2000). Therefore, in the context of this study, we prefer the PMG estimator⁷. Under this approach, the long run coefficient estimates are asymptotically normal irrespective of whether the variables are I(1) or I(0) (Pesaran and Shin, 1999, Pesaran, Shin and Smith, 1999, Pesaran, Shin and Smith, 2004). Loazya and Ranciere (2005) is an example which applies this technique to study financial development and growth.

The additional advantage of the PMG approach which is based on an auto-regressive distributed lag (ARDL) model is that it allows for short-run heterogeneity in the cross country adjustment dynamics towards the long-run equilibrium. These different cross country short-run dynamics may for instance be caused by differences in market structures, vulnerabilities to domestic and external shocks, monetary and fiscal adjustment mechanisms, financial market imperfections, and relative price and wage flexibility (Loazya and Ranciere, 2005). As we focus on the long-run factors affecting monetization, these short-run dynamics are not explicitly modeled in our analysis.

As such, the equation which is estimated in each of the specifications is of the following (error correction) form:

$$\Delta y_{it} = \phi^i \left[y_{i,t-1} - \beta_1^i (X_{i,t-1}) \right] + \sum_{j=1}^{p-1} \xi_j^i \Delta(y_{i,t-j}) + \sum_{j=0}^{q-1} \lambda_j^i \Delta(X_{i,t-j}) + \alpha_i + \varepsilon_{it} \quad (1)$$

where y is the dependent variable (the monetization ratio), X is the set of variables employed to explain the monetization ratio (see above), ξ and λ are the short run coefficients related to

⁷ The Pooled Mean Group estimation technique of Pesaran, Shin and Smith (1999, 2004), which is based on an auto-regressive distributed Lag (ARDL) model, can intuitively be understood as a panel error correction framework appropriate for the estimation of long run relationships in the context of cointegrated panel data. In relation to other panel data estimators, the PMG methodology occupies an intermediate position between the Mean Group (MG) method (used to obtain estimates of the long run coefficients of individual members of a panel) - in which both the slopes and the intercepts of individual panel members are allowed to differ across countries - and standard fixed effects methods in which the slopes are fixed and the intercepts are allowed to vary. In PMG estimation, only the long-run coefficients are constrained to be the same across countries, while the short-run coefficients are allowed to vary. As such, an intuitive way to conceptualize the PMG estimator is as the weighted average of the MG estimates of each individual cross section member, where the weights are given by the variance - covariance matrix of each MG estimate.

monetization and the explanatory variables, β are the long run coefficients, ϕ is the error correction (speed of adjustment) coefficient, α_i is the country specific effect, ε is the time varying error term and the subscripts i and t refer to country and time period respectively. The lag order for the ARDL model underlying equation (1) is chosen by the Schwartz Bayes Criterion.⁸

C. Estimation Results

Regression results

The main results of the multivariate regression analysis are contained in Table 5. In each column, the long-run coefficients of the ARDL model resulting from introduction of the different explanatory variables in each model specification are presented.⁹

As expected, the basic controls, namely the proxy for economic development and the dummy for capital account openness, are highly significant and positive (column 1). It is therefore indicated that monetization tends to be increasing in economic development – as countries develop, the use of money and all its basic services tends to increase throughout the economy. Furthermore, the monetization ratio is on average higher for countries with open capital accounts, reflecting the role of capital inflows which add to the quantity of money.

In contrast, the percentage of rural population appears not to be significantly correlated with monetization (column 2). This indicates an insignificant role for the tendency of rural communities to invest in real assets. Further, in this specification the explanatory power of the capital account dummy appears to be weakened, such that on average, monetization no longer appears to be higher in countries with open, as opposed to closed, capital accounts¹⁰. However, the proxy for the return on real assets is significant, displaying the expected negative association with monetization (column 3). This indicates that on average, higher inflation tends to encourage investment in real assets (which act as a hedge against inflation) and tends to be associated with lower monetization.

The negative association of the return on real assets with monetization is not robust however to the control for the fiscal situation (column 4). While the controls for the level of development and the capital account remain significant in this specification, it is shown that the return on real assets becomes insignificant once government borrowing from the central bank is accounted for. Furthermore, the inflationary environment itself does not appear to have any significant additional explanatory power for monetization once central bank financing of the fiscal deficit is controlled for (column 5).

⁸ This approach is taken since the central interest of the analysis is the significance and magnitude of the long run coefficients, β (see Loazya and Ranciere, 2005 for details).

⁹ In each case, the assumption of homogeneity of the long run coefficients is valid given the insignificance of the Hausman test statistic. Furthermore, the error correction coefficients are significant, indicating the validity of the long term relationship.

¹⁰ The change in the magnitude of the coefficient of the capital account dummy between specifications (1) and (2) indicates that this results from omitting potentially relevant explanatory variables from the first specification. The same applies when comparing specifications (1) and (3).

Taken together, these results reflect the relationship between central bank financing of the fiscal deficit and inflation outcomes. It has been well documented that central bank financing of fiscal deficits tends to have inflationary impacts in developing countries (Hossain and Chowdhury, 2000). Since inflationary environments are also associated with increasing investment in (real) assets that act as inflation hedges, it is the borrowing by the government from the central bank, the associated inflation, and the increased attractiveness of real assets that underpins the negative association with monetization.

In addition to the inflationary effect, borrowing from the central bank by the government also tends to inhibit the spread of money as a means of transaction in developing economies. This is likely because in the absence of credible restraints on central bank financing of the government deficit, agents tend not to believe government promises not to engage in additional seignorage (which undermines the value of money holdings) and therefore tend to limit their utilization of money services (Ritter, 1995). This effect is captured by the negative and significant long run correlation of the net credit from the central bank to the government over GDP variable with the monetization ratio.

Finally, both real deposit rates and financial sector reforms are significantly and positively correlated with monetization in the long run (column 6). As expected, we find a positive association with real bank deposit rates which confirms that higher returns on monetary assets will provide stronger incentives to invest in them. Moreover, once the proxy for financial sector reforms is added, the negative association of government financing of the fiscal deficit with monetization disappears.

Magnitude of effects

How do the above coefficient estimates translate into economic significance? Given that the logarithmic transformation of the dependent variable has been employed, the resulting semi – log specification of the model is interpreted as follows. The estimated coefficients of the log per capita GDP and net credit from the monetary authority/GDP variables are understood as the average effect of a one percent change in these variables (from their respective mean levels) on the percentage change in monetization. Other variables (the return on real assets, the real bank deposit rate) enter as percentages; as such the estimated coefficient shows the average association of a one percentage point deviation from the mean level of the respective variables with monetization. The most relevant interpretation of the financial reform index is to multiply its estimated coefficient by its sample standard deviation (0.26) to show the extent to which a one standard deviation change in the financial reform index from its mean level is associated with monetization.

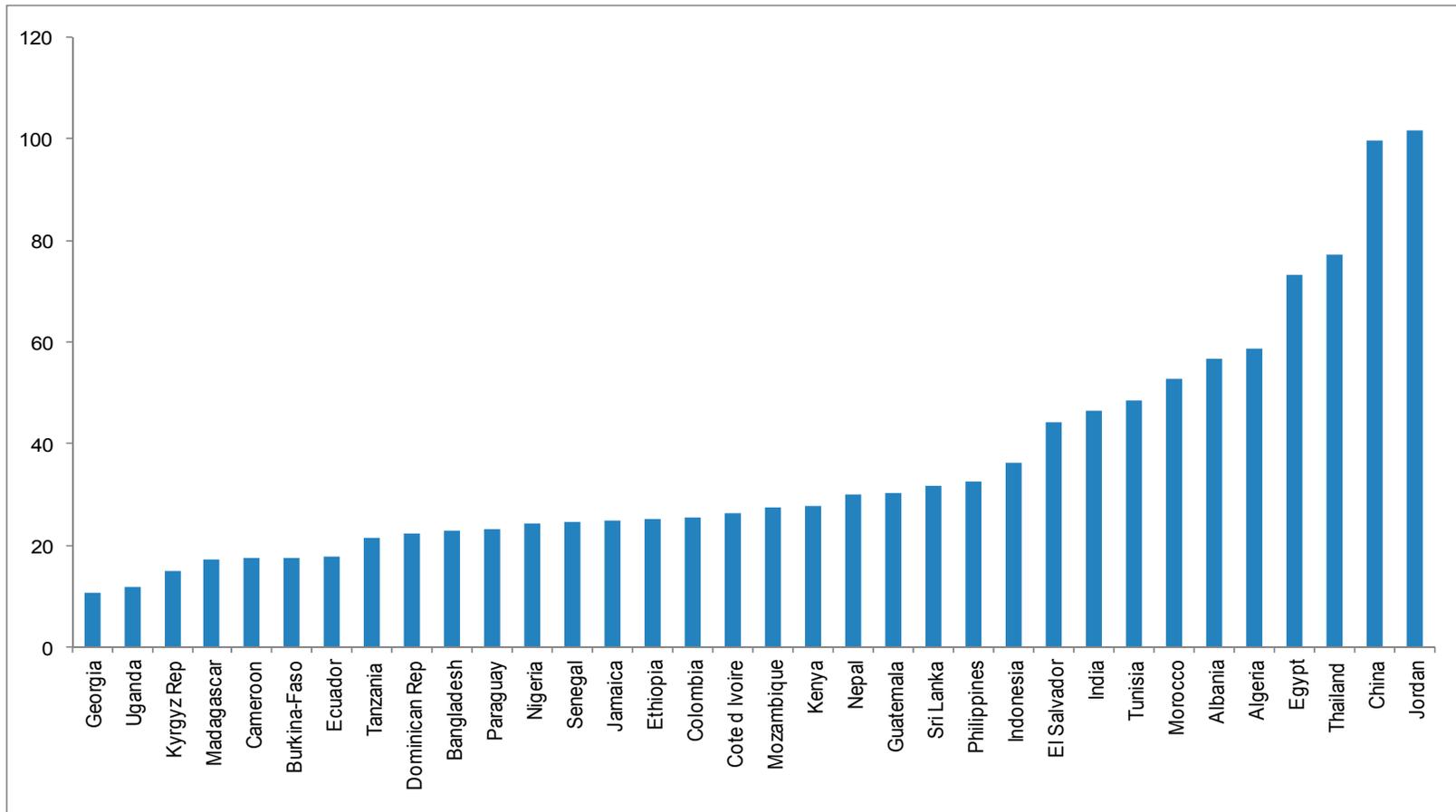
Therefore it can be seen from the final specification that for low- and middle-income countries, higher levels of monetization are associated with higher real deposit rates, financial reforms, and a higher per-capita income. Increases in the real deposit rate by 1 percentage point (from its mean value of -1.42 percent) tend to be associated with a 2.2 percent increase in the monetization ratio on average. Financial sector reforms, as reflected by an increase in the financial reform index by one standard deviation (0.25) from its mean value (0.42), tend to be associated with long-run gains in the monetization ratio of 4.15 percent on average. The elasticity of monetization with respect to per-capita income is estimated to be 0.36: a 1 percent increase in per-capita income tends to be accompanied by a 0.36 percent increase in the monetization ratio on average.

IV. CONCLUSION

There is an ample theoretical support and empirical evidence that financial sector development, for which monetization can be a key contributor, is an important driver of economic growth. The evidence presented above showing the significant long-run relationship between monetization on one hand and real interest rate and financial reform index on the other hand means that macroeconomic policies (particularly monetary policy) and structural policies (particularly financial sector reforms) can contribute to enhancing growth prospects through sustaining an upward trend in monetization. Failing that, there is a risk that countries can experience a period of stagnant monetization/financial deepening or even demonetization, with the attendant negative implications for growth. While our empirical analysis does not address the impact of financial crises on monetization, financial sector liberalization aimed at alleviating or ending financial repression and promoting monetization (a factor emphasized in 1970s for financial development) should be accompanied by institutional reforms to strengthen the financial sector.

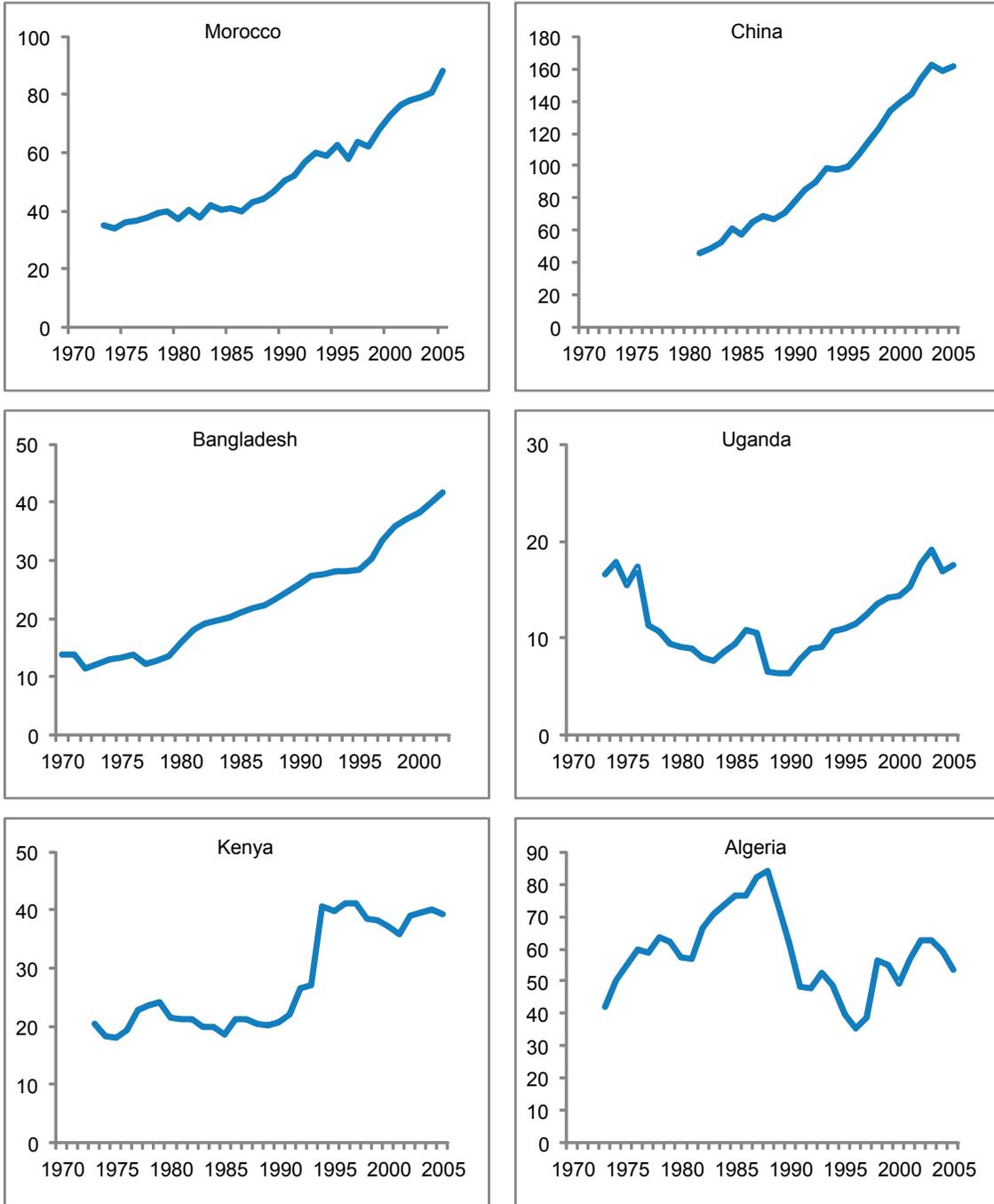
This paper has analyzed the macroeconomic correlates of the monetization ratio in a panel of low- and middle-income countries. Despite the heterogeneity of the country experiences regarding monetization, it has been found that several fundamental factors, including per-capita income, real bank deposit rates, and financial sector reforms, are associated with long-run monetization outcomes. Monetization can be an important policy objective because it is a key element of financial sector development which can be a powerful driving force of sustaining and accelerating economic growth. Future research could examine in greater details which types of financial sector reforms are associated with long-run trends in monetization.

Figure 1. Mean Monetization Ratio: Average, 1973- 2005
(Percent of GDP)



Source: IMF, *International Financial Statistics*.

Figure 2. Monetization Ratio, 1970 –2005
(Percent of GDP)



Source: IMF, *International Financial Statistics* .

Table 1: Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations	
Financial Reform	overall	0.42	0.26	0.00	0.92	N	738
	between		0.19	0.14	0.88	n	34
	within		0.20	-0.04	0.83	T-bar	21.71
Nominal Bank Deposit Rate	overall	10.93	7.42	0.00	46.81	N	738
	between		5.37	4.52	24.83	n	34
	within						
Inflation	overall	12.37	13.19	0.04	100.00	N	738
	between		6.90	3.97	36.67	n	34
	within		11.28	-22.20	81.76	T-bar	21.71
Net Credit / GDP	overall	9.70	9.52	0.00	54.36	N	738
	within		5.64	-11.24	32.97	T-bar	21.71
Real Bank Deposit Rate	overall	-1.44	11.45	-92.78	25.31	N	738
	between		5.14	-18.62	6.17	n	34
	within		10.33	-76.89	30.83	T-bar	21.71
% of Rural Population	overall	62.92	16.85	21.70	95.20	N	738
	between		17.18	22.88	90.79	n	34
	within		4.09	49.33	76.05	T-bar	21.71
Broad Money / GDP	overall	38.01	26.38	6.66	162.88	N	738
	between		25.48	10.70	119.03	n	34
	within		11.20	-9.05	97.05	T-bar	21.71
Per Capita Real GDP	overall	983.69	791.14	102.29	3742.17	N	736
	between		764.22	123.22	3203.51	n	34
Inflation Expectations	overall	12.91	15.40	-14.17	162.72	N	738
	between		7.74	5.03	37.29	n	34
	within		13.49	-22.58	149.98	T-bar	21.71

Table 2: Summary Statistics and Regional Means

	Full Sample	MENA	Sub-Saharan Africa	Emerging Asia	Latin America	Transition
Financial Reform						
Mean	0.42	0.37	0.44	0.34	0.46	0.73
SD	0.26	0.30	0.23	0.24	0.25	0.15
<i>p-value</i>		0.12	0.25	0.00	0.06	0.00
Nominal Bank Deposit Rate						
Mean	10.93	7.15	8.53	10.53	17.06	15.29
SD	7.42	3.09	5.85	4.66	9.83	10.46
<i>p-value</i>		0.00	0.00	0.22	0.00	0.03
Inflation						
Mean	12.37	8.69	12.40	9.02	18.76	11.13
SD	13.19	6.96	14.30	6.56	15.74	11.26
<i>p-value</i>		0.00	0.97	0.00	0.00	0.54
Net Credit / GDP						
Mean	9.70	17.75	8.58	6.32	9.82	13.12
SD	9.52	15.48	7.31	5.40	8.93	6.14
<i>p-value</i>		0.00	0.02	0.00	0.87	0.00
Real Bank Deposit Rate						
Mean	-1.44	-1.53	-3.87	1.51	-1.71	4.16
SD	11.45	6.20	12.78	5.43	13.15	6.39
<i>p-value</i>		0.88	0.00	0.00	0.81	0.00
% of Rural Population						
Mean	62.92	47.05	72.15	73.03	46.25	56.75
SD	16.85	11.70	12.12	12.53	9.23	7.15
<i>p-value</i>		0.00	0.00	0.00	0.00	0.00
Per Capita Real GDP						
Mean	983.69	1439.82	409.26	659.60	2072.10	754.40
SD	791.14	359.05	220.56	475.51	736.10	403.73
<i>p-value</i>		0.00	0.00	0.00	0.00	0.00
Inflation Expectations						
Mean	12.91	9.02	12.53	8.76	19.53	19.76
SD	15.40	0.00	16.48	7.04	15.72	31.57
<i>p-value</i>		0.00	0.73	0.00	0.00	0.23

Table 3: Results of Pedroni (2004) Cointegration Tests

Test Statistics\Specification	1	2	3	4	5	6
Panel PP	0.56	0.02*	0.01*	0.09*	0.25	0.01*
Panel ADF	0.79	0.03*	0.00*	0.03*	0.02*	0.05*
Group PP	0.05*	0.00*	0.06*	0.05*	0.36	0.00*
Group ADF	0.00*	0.00*	0.04*	0.27	0.24	0.01*

P - values of the null hypothesis of no cointegration.

* indicates significant results.

Results of panel ν , panel ρ and group ρ tests omitted.

Table 4: Pairwise Correlations

	Financial Reform	Nominal Deposit Rate	Inflation	Net Credit /GDP	Real Deposit Rate	% of Rural Population	Broad Money /GDP	Per Capita Real GDP	Inflation Expectations
Financial Reform	1								
Nominal Bank Deposit Rate	0.0347	1							
Inflation	-0.1739*	0.5006*	1						
Net Credit / GDP	-0.1797*	0.0589	0.1411*	1					
Real Bank Deposit Rate	0.2229*	0.0715	-0.8276*	-0.1244*	1				
% of Rural Population	-0.3697*	-0.1915*	-0.0201	-0.0555	-0.1010*	1			
Broad Money / GDP	0.1054*	-0.2308*	-0.2509*	0.1947*	0.1394*	-0.2625*	1		
Per Capita Real GDP	0.1916*	0.1964*	0.0694	0.056	0.0574	-0.7134*	0.2694*	1	
Inflation Expectations	-0.0833*	0.4594*	0.6184*	0.1358*	-0.4148*	-0.0551	-0.2365*	0.0659	1

*Indicates significance at the 5% level.

Table 5: Main Results: Multivariate Regressions

Variables	1	2	3	4	5	6
Log (Per Capita Real GDP)	0.397*** (0.039)	0.364*** (0.059)	0.395*** (0.055)	0.249*** (0.080)	0.186* (0.096)	0.331*** (0.088)
Capital Account Openness	0.075*** (0.024)	0.026 (0.027)	0.044 (0.031)	0.060* (0.031)	0.079** (0.034)	0.138*** (0.049)
% of Rural Population		0.002 (0.004)				
Inflation Expectations			-0.004*** (0.001)	0.001 (0.001)		
Log (Net Credit / GDP)				-0.079*** (0.024)	-0.078*** (0.025)	0.021 (0.014)
Inflation					-0.016 (0.010)	
Real Bank Deposit Rate						0.016*** (0.002)
Financial Reform						0.166* (0.098)
Error Correction Term (φ)	-0.22***	-0.25***	-0.21***	-0.18***	-0.17***	-0.20***
Hausman Test Statistic	1.15	3.96	4.16	2.49	2.85	2.98
Observations	669	669	669	664	664	664

Long Run Parameters of the ARDL Model. Standard errors in parentheses.

Constant and short run parameters included in the model but not reported.

All variables enter the regressions as deviations from the respective cross sectional means.

Hausman statistic tests the null of long run parameter heterogeneity.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

DATA APPENDIX

Table A1: Low- and Middle-Income Countries

Albania	Jamaica
Algeria	Jordan
Bangladesh	Kenya
Burkina Faso	Kyrgyz Republic
Cameroon	Madagascar
China	Morocco
Colombia	Mozambique
Cote d'Ivoire	Nepal
Dominican Republic	Nigeria
Ecuador	Paraguay
Egypt	Philippines
El Salvador	Senegal
Ethiopia	Sri Lanka
Georgia	Tanzania
Guatemala	Thailand
India	Tunisia
Indonesia	Uganda

Table A2: Data Sources

Variable	Description	Source
Per Capita Real GDP	Gross Domestic Product, Constant 2000 dollars	World Bank World Development Indicators
Log Per Capita Real GDP	Log of GDP Per Capita	Author's Calculations
Financial Reform	Financial Reform Index	Abiad et. al (2010)
Inflation	Inflation	IMF International Financial Statistics, Author's Calculations
Inflation expectations	One Period Forward Inflation	Author's calculations
Nominal Bank Deposit Rate	Nominal Return On Bank Deposits	IMF International Financial Statistics, Author's Calculations
Real Bank Deposit Rate	Real Return On Bank Deposits calculated as the nominal deposit rate - inflation	Author's calculations
Net Credit / GDP	Net lending by the central bank to the government authorities as a percentage of GDP	IMF International Financial Statistics, Author's Calculations
Broad Money	Broad money aggregate	IMF International Financial Statistics
Monetization Ratio (Broad Money / GDP)	Ratio of broad money to GDP	IMF International Financial Statistics, Author's Calculations
Rural Population	Rural Population as % of Total Population	World Bank World Development Indicators

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