2007-WP-28
November 2007

Financial Sector Reform and Economic Growth in Morocco: An Empirical Analysis

M. Kabir Hassan and Jung Suk-Yu

Abstract: This study analyzes the impact of financial sector reforms from the early 1990s on, promoting economic growth in Morocco. To derive feasible policy implications, we estimate not only pooled regressions, but also variance decompositions of GDP growth rates to examine what proxy measures of financial development are most important in economic growth over time and how much they contribute to economic growth across geographic regions and income groups. We find strong linkages between financial development and economic growth in high-income OECD countries, but not in East Asian & Pacific, South Asian, and Sub-Saharan African regions, in the short run. Therefore, it may be necessary for Morocco to make different policy efforts to achieve steady economic growth in the long run.

About the Authors: **Dr. Kabir Hassan** is a tenured professor at the University of New Orleans and also holds a visiting research professorship at Drexel University, Philadelphia. He is a financial economist with consulting, research and teaching experiences in development finance, money and capital markets, corporate finance, investments, monetary economics, macroeconomics and international trade and finance. He has published five books, over 70 articles in refereed academic journals and has presented over 100 research papers at professional conferences globally. **Dr. Jung-Suk Yu** is with the Money and Finance Department of the Samsung Economic Research Institute in Korea.

Keywords: Financial development, growth, pooled regression, Granger causality tests, Morocco

JEL Classification: G21, O16, C33

The views expressed are those of the individual author(s) and do not necessarily reflect official positions of Networks Financial Institute. Please address questions regarding content to Kabir Hassan at mhassan@uno.edu. Any errors or omissions are the responsibility of the author. NFI working papers and other publications are available on NFI's website (www.networksfinancialinstitute.org). Click "Research" and then "Publications/Papers."

Financial Sector Reform and Economic Growth in Morocco: An Empirical Analysis

M. Kabir Hassan and Jung Suk-Yu

I. Introduction

Although the relationship between financial development and economic growth has received a great deal of attention during recent decades, there are conflicting views concerning the role that the financial system can play in economic growth. For example, while Levine (1997) believes that financial intermediaries enhance economic efficiency and, ultimately, growth by helping allocate capital to its best uses, Lucas (1988) asserts that the role of the financial sector in economic growth is “over-stressed.” Notwithstanding the controversy, the modern theoretical literature (Romer 1986; Lucas 1988; Rebelo 1991; Grossman and Helpman 1991; Pagano, 1993 among others) on the finance-growth nexus combines endogenous growth theory and microeconomics of financial systems.

Furthermore, the main conclusions in both theoretical and empirical studies based on cross-country analysis are sensitive to the countries, estimation methods, data frequency, functional form of the relationship, and proxy measures chosen in the study (see Khan and Senhadji, 2000; Chuah and Thai, 2004; Al-Awad and Harb, 2005). Therefore, it is unreliable to only rely on the empirical results of cross-country regressions. Yasin (2003) also points out that for a cross-section analysis to be valid, the countries in a cross-sectional study should be made as homogeneous as possible by grouping the countries by geography, size, or economic structure. It is also argued that

the convergence tests obtained from cross-country studies are misleading, and that the variations in the results are hard to interpret (Arestis and Demetriades, 1997).

To mitigate the shortcomings of cross-sectional country-case studies, this paper examines the dynamic relationship between economic growth and financial development across geographic regions and income groups using pooled data rather than using a large cross-section sample of countries to analyze the impact of financial sector reforms from the early 1990s on, promoting economic growth in Morocco. In retrospect, our interest in investigating the relationship between economic growth and financial development across geographic regions and income groups is motivated by many factors. First, it is argued that well-developed domestic financial sectors, such as high-income OECD countries, can significantly contribute to raising the savings rate, the investment rate and, hence, transmit to economic growth (see Becsi and Wang, 1997). Many developing countries including Morocco have reformed their economic and financial systems to improve the efficiency of their financial intermediaries, achieve financial sector deepening, and promote growth. It is, therefore, necessary to document the progress achieved by these countries across geographic regions and income groups in revamping their financial system over the last decades and assess the links between these reforms and the economic performance.

Second, this study will allow us to take a closer look at a range of financial development indicators and draw some conclusions about their impact on economic growth represented by GDP growth rate. Third, we employ a pooled regression and various multivariate time-series analyses to establish the direction, timing, and strength of the causal link between the real and the financial sector across geographic regions and

income groups, so that we can explore important policy implications in Morocco. Finally, rather than using heterogeneous cross-country samples, we investigate different geographic regions with a group of relatively homogeneous samples of countries, which makes it adequate for assessing the links between economic growth and financial development.¹

In the short run, we find strong linkages between financial development and economic growth in high-income OECD countries. However, East Asian & Pacific, South Asian, and Sub-Saharan African regions reveal very weak or no financial development and economic growth nexus based on the results of Granger causality tests. Therefore, we need to make different policy efforts across geographic regions and income groups because there is only a little probability that steady economic growth can be achieved by simply enhancing financial development in East Asian & Pacific, South Asian and Sub-Saharan African regions.

The paper is organized as follows. Section II provides a literature review. We describe the data and the proxy measures of financial development and economic growth in Section III. Section IV assesses the reforms Morocco has undertaken in the financial sector and their impact on the country's GDP growth performance. Section V describes a pooled regression and multivariate time-series methodology used in the paper. We analyze the empirical results in Section VI. Section VII provides policy implications on further reform of financial sectors to promote economic growth in Morocco. Section VIII provides conclusions.

¹ The World Bank only categorizes geographic regions for low and middle-income countries; high-income countries are not included in classification by geographic regions. Therefore, each geographic region has homogeneity in the level of economic growth and financial development, to some degree.

II. Literature Review

Ever since the pioneering contributions of McKinnon (1973) and Shaw (1973) on the role of financial development in promoting economic growth, the relationship between economic growth and financial development has remained an important issue of debate among academicians and policymakers (De Gregorio and Guidotti, 1995). In early economic growth theory, it is argued that economic development is a process of innovations whereby the interactions of innovations in both the financial and real sectors provide a driving force for dynamic economic growth. It is contended that exogenous technological progress determines the long-run growth rate while financial intermediaries are not explicitly modeled to affect the long-run growth rate.

However, there is now a growing theoretical and empirical body of literature on how financial intermediation mobilizes savings, allocates resources, diversifies risks, and contributes to economic growth (see Greenwood and Jovanovic, 1990; Jbili, Enders, and Treichel, 1997). The new growth theory argues that financial intermediaries and markets appear endogenously in response to the market incompleteness and, hence, contribute to long-run growth. Financial institutions and markets, who arise endogenously to mitigate the effects of information and transactions costs frictions, influence decisions to invest in productivity-enhancing activities through evaluating prospective entrepreneurs and funding the most promising ones. The underlying assumption here is that financial intermediaries can provide these evaluation and monitoring services more efficiently than individuals.

Levine (1997) and Khan and Senhadji (2000) survey a large amount of empirical research that deals with the relation between the financial sector and long-run growth. Levine (1997) identifies five functions that the financial system can accomplish to ameliorate information and transactions frictions and contribute to long-run growth.² Khan and Senhadji (2000) also summarize the empirical evidence of country-case studies. They conclude that economic growth generally leads to financial deepening, suggesting that there exists a strong reverse causality between financial development and growth.

A number of recent papers have empirically tested the impact of both the financial sector and financial repression policies on the rate of economic growth. Since financial development is not easily measurable, papers attempting to study the link between financial deepening and growth have chosen a number of proxy measures and subsequently, have come up with different results (see King and Levine, 1993; Savvides, 1995; Khan and Senhadji, 2000; Chuah and Thai, 2004; Al-Awad and Harb, 2005, among others). Generally speaking, studies using different indicators of financial development not only find a positive correlation between the financial sector and growth, but also conclude that the development of bank credit has an important impact on economic growth.

III. Data and Proxy Measures

A. Structuring the Pooled Dataset

² According to Levine (1997), these five functions are: facilitating risk amelioration, acquiring information about investments and allocating resources, monitoring managers and exerting corporate control, mobilizing savings, and facilitating exchange.

Our sample periods covering 1960 through 2005 are an era of development of financial institutions and financial liberalization in many countries. It can also be characterized with output expansion, money growth, and increasing volume of investment. However, the pattern of growth of banks and money appears to differ considerably over time and across countries. Furthermore, our comprehensive original dataset includes 208 countries and have nested panel data structure from the World Bank's *World Development Indicators* 2006 (WDI) database.

Therefore, to see how financial sector development promotes economic growth, we follow the World Bank classifications which categorize all World Bank member economies and all other economies with populations of more than 30,000 by seven geographic regions and four income groups as listed in Appendix A. Then, we obtain average values of proxy measures across countries within the same geographic regions and income groups to generate well-defined pooled data structure with cross-sectional geographic regions and income groups and time-series proxy measures from 1960 to 2005.

Despite the well-known shortcomings coming from aggregations, we believe that our approach to construct a pooled dataset, based on geographic regions and income groups, has several advantages to provide useful policy implications compared to previous literature on cross-sectional studies including many numbers of heterogeneous countries. First, this data transformation enables us to consider both the heterogeneity of cross-countries and the homogeneity of geographic regions and income groups. Second, our dataset also allows us to effectively estimate pooled regressions using whole dataset and to analyze various multivariate time-series models within each geographic region and

income group without loss of generality.³ Therefore, it is possible to derive meaningful policy implications by dynamically examining different economic roles, causality, directions, and timing among proxy measures for financial development and economic growth across geographic regions and income groups. The empirical results can also help academicians and policy makers investigate the effect of financial sector reforms from the early 1990s on economic growth performance in Morocco.

B. Proxy Measures for Financial Development and Economic Growth

Various measures have been used in the literature to proxy for the ‘level of financial development,’ ranging from interest rates to monetary aggregates, to the ratio of the size of the banking system to GDP (Khan and Senhadji, 2000; Chuah and Thai, 2004; Al-Awad and Harb, 2005 among others). For this study, we collect relevant proxy measures for financial development and economic growth from the World Bank’s *World Development Indicators* 2006 (WDI) database for the period from 1960 to 2005. In our ensuing analysis, we use GDP growth rates (annual %) as a proxy for economic growth (GDPG). We utilize the following four variables to measure the level of financial sector development and additionally incorporate two variables to consider the size of real sector as control variables, which also affect economic growth. Some of proxy measures for financial development incorporate information from banks and other financial intermediaries, in addition to loan markets.

³ We use annual data rather than 5-year averages. If we use 5-year averages data to abstract from business cycle, our 45-year sample period (1960-2005) only provides nine time-series. Therefore, it makes us difficult to perform multivariate time-series analysis to examine the causality between finance and growth due to the small degree of freedom.

The first proxy is the domestic credit provided by the banking sector as a percentage of GDP (DCBS). It is assumed that banks are not subject to mandated loans to priority sectors, or obligated to hold government securities. Therefore, higher DCBS indicates a higher degree of dependence upon the banking sector for financing. Another related measure is the domestic credit to private sector as a percentage of GDP (DCPS). A high ratio of domestic credit to GDP indicates a higher level of domestic investment, indicating higher output. We also use the ratio of M3 to GDP (M3) to measure the liquid liabilities in the economy. We use M3 as a financial depth indicator because monetary aggregates, such as M2 or M1, may be a poor proxy, in that economies with underdeveloped financial systems may have a high ratio of money to GDP, as money is used as a store of value in the absence of other more attractive alternatives (Khan and Senhadji, 2000). A higher liquidity ratio means higher intensity of the banking system. The assumption here is that the size of the financial sector is positively associated with the financial services (see King and Levine, 1993).

The fourth indicator used is the ratio of gross domestic savings to GDP (GDS). Like the previous proxy, this measure also indicates the intensity of the financial intermediaries since it corresponds to more financial services and, hence, more financial development. Financial development is expected to benefit from higher GDS and, consequently, higher volume of investment. In most developing countries, financial repression and credit controls lead to negative real interest rates that reduce the incentives to save. According to this view (McKinnon-Shaw, 1973), a higher GDS resulting from a positive real interest rate stimulates investment and growth. Therefore, these measures have advantages over other measures used in the literature because most of the financial

development occurs in the banking sector and, moreover, they are directly linked to investment and economic growth.

To effectively measure the size of real sector and the weight of fiscal policy as control variables, we also include the ratio of trade to GDP (TRADE) and the ratio of general government final consumption expenditure to GDP (GCE). Many developing countries tend to heavily rely on international trades to achieve economic growth as financial liberalization is still in progress. In addition, some countries use expansionary or contractionary fiscal policies for steady economic growth by adjusting government spending.

C. Summary Statistics of Proxy Measures

Table I compares key financial and real indicators along with an economic growth proxy measure across geographic regions and income groups. We find that mean and median values are very close, implying stable time-series movements of proxy measures without extreme values during our sample periods covering from 1960 to 2005. For GDP growth rates, the East Asian & Pacific region shows the highest average (8%) and maximum (11%) values to reflect rapid economic expansion of many Asian countries, such as China and the Philippines, in recent decades. The average (3%) and maximum (6%) GDPG of high-income OECD countries are significantly lower than those of other geographic regions. Notably, Latin America & Caribbean (-3%), South Asia (-3%), Sub-Saharan Africa (-1%), and East Europe (-6%) regions appear to suffer from severe fluctuations of GDPG. They experience negative GDPG mainly due to economic recession or political instability prevalent in those regions.

Table I
Summary Statistics of Proxy Measures

Proxy Measures	Economic Growth	Financial Development				Real Sector	
	GDPG	DCBS	DCPS	M3	GDS	TRADE	GCE
<i>East Asia & Pacific</i>							
Mean (Med)	8 (8)	79 (75)	74 (75)	76 (70)	34 (34)	49 (49)	11 (11)
Max (Min)	11 (2)	134 (37)	110 (41)	141 (28)	38 (28)	82 (49)	13 (9)
<i>East Europe & Central Asia (Low and Middle Income Groups)</i>							
Mean (Med)	2 (2)	36 (37)	21 (22)	34 (35)	22 (22)	72 (71)	17 (17)
Max (Min)	7 (-6)	40 (32)	27 (17)	40 (29)	24 (20)	84 (61)	19 (16)
<i>High-Income OECD</i>							
Mean (Med)	3 (3)	115 (110)	108 (99)	84 (81)	23 (22)	33 (34)	18 (18)
Max (Min)	6 (0)	156 (75)	156 (75)	103 (63)	26 (19)	45 (23)	19 (16)
<i>Latin America & Caribbean (Low and Middle Income Groups)</i>							
Mean (Med)	3 (4)	50 (50)	31 (30)	29 (29)	21 (21)	30 (28)	12 (10)
Max (Min)	8 (-3)	103 (23)	53 (16)	41 (19)	24 (19)	49 (19)	15 (9)
<i>Middle East & North Africa (Low and Middle Income Groups)</i>							
Mean (Med)	4 (3)	66 (67)	36 (38)	65 (64)	22 (21)	57 (56)	17 (17)
Max (Min)	6 (2)	71 (59)	41 (29)	72 (58)	27 (16)	67 (50)	18 (16)
<i>South Asia (Low and Middle Income Groups)</i>							
Mean (Med)	5 (6)	42 (45)	23 (23)	39 (40)	17 (18)	21 (19)	10 (10)
Max (Min)	9 (-3)	56 (27)	36 (12)	62 (24)	23 (12)	41 (19)	12 (8)
<i>Sub-Saharan Africa (Low and Middle Income Groups)</i>							
Mean (Med)	3 (3)	38 (41)	42 (39)	33 (33)	19 (19)	56 (56)	15 (15)
Max (Min)	8 (-1)	47 (27)	67 (26)	40 (29)	26 (15)	66 (47)	18 (11)
<i>Morocco (Lower Middle Income)</i>							
Mean (Med)	4 (5)	59 (61)	32 (29)	55 (51)	16 (16)	53 (55)	17 (17)
Max (Min)	12 (-7)	90 (24)	57 (12)	94 (27)	21 (10)	72 (35)	22 (12)

As expected, high-income OECD countries boast the highest average and minimum values of DCBS, DCPS, and M3 proxy measures to represent the relative sizes of the financial system and financial depth. It is obvious that developed countries with efficient financial intermediaries tend to heavily rely on domestic credits provided by the banking sector and have plenty of liquidity liabilities traded in their well-developed exchanges or financial institutions. However, financial depth indicators in South Asian and Sub-Saharan African regions are relatively small portions of GDP, implying insufficient credit in the private sectors and inefficient financial systems of those regions. For gross domestic savings, most regions show similar relative sizes as a percentage of GDP, although countries located in the East Asian & Pacific region tend to have a higher propensity for saving compared with other geographic regions. For the real sector, summary statistics show a high dependency on international trade in the East Asian & Pacific region, high-income OECD, Middle East & North African, and Sub-Saharan African regions. In addition, the government fiscal policy is one of the useful tools to control overall economic conditions, evidenced by about 10 – 20% GCE without regard to geographic regions and income groups.

IV. Financial Sectors Reform in Morocco

Until the early 1980s, the Moroccan financial sector was strictly regulated through administered interest rates and direct credit. Financial sectors witnessed long periods of total public control and full government intervention in the determination and the allocation of financial resources to capital accumulation. However, supervised and financed by the IMF and the World Bank, Morocco undertook a series of financial sector

reforms from the early 1990s after suffering economic instability by the mid-1980s. As we can see from Panel A of Figure 1, the domestic credit to private sector as a percentage of GDP (DCPS) significantly dropped from 32% in 1985 to 12% in 1986, and this low level of domestic investment continued until 1989.

To allow the financial sector to promote economic growth through a more efficient allocation of credit, financial reforms targeted first the banking sector and monetary policies (1991-1995) before turning to the stock and bond markets in 1996 and more recently, beginning in 1998, to savings institutions. Financial sectors reform in Morocco involved the elimination of credit controls, deregulation of interest rates, easing of entry into the financial services industry, development of capital markets, increased prudential regulation and supervision, and liberalization of international capital flows. Time series patterns in Panel A of Figure 1 demonstrate that during the post-reform period (1987-1999), Morocco achieved decent macroeconomic stabilization and increasing financial deepening. Although the ratio of gross domestic savings to GDP (GDS) was stable across periods, other financial development indicators showed growing patterns especially in the ratio of M3 to GDP (M3).

Figure 1
Proxy Measures of Financial Development and Economic Growth in Morocco

Panel A: Time Series of Proxy Measures

Panel B: Scatter Plots with Regression Lines

Nonetheless, little impact of financial sector reforms on the real economy has been evident subsequently. Financial reforms that Morocco has undertaken in the past two decades were not as successful in achieving the desired results of enhancing economic growth, either by improving efficiency or through increasing resources for capital accumulation (Al-Yousif, 2002; Creane et al., 2003; Boulila and Trabelsi, 2004; Al-Awad and Harb, 2005). For example, Boulila and Trabelsi (2004) argue that the empirical evidence, either with cointegration techniques or Granger causality tests, provides support to the hypothesis that causality is running from the real to the financial sector. Moreover, there is a little support to the view that finance is a leading sector in the determination of long-run growth in the countries of the MENA region.

Al-Awad and Harb (2005) also show the role of financial development may not be crucial for economic development in the MENA region, but, instead, it reacts to economic development which may propose that its role can be considered as passive. They conclude that the financial sector is not developed enough in the MENA region to support a sustained economic development, implying that countries may need to reach a certain level of financial depth – a threshold – before there is a significant effect on economic growth. The scatter plots between GDPG and financial development indicators in Panel B of Figure 1 also partly support the disappointing performance of financial sectors reform on promoting economic growth. Except GDS, regression lines generally have negative slopes, implying that financial reforms in Morocco have not yet been able to enhance long-term economic growth.

Of course, we understand that the impact of financial sector reforms on subsequent economic growth is difficult to assess because several factors other than the

level of financial sector development may have interfered with the evolution of some economic indicators. For example, annual GDP growth rates (GDPG) have been very erratic over the past ten years, largely as a result of several consecutive years of severe droughts. For example, Morocco experienced -7% (12%) of large fluctuation in real GDP growth rates in 1995 (1996), which was the lowest (highest) out of our entire sample countries as evidenced in Table I. Therefore, we investigate both long-run and short-run finance-growth relationship, and the hypothesis that finance leads growth across geographic regions and income groups in the following section to make meaningful policy suggestions in the Moroccan context.

V. Pooled Regression and Multivariate Time-Series Methodology

A. Pooled Regression

We estimate a pooled regression to examine the general relationship between financial development and economic growth. We also incorporate lagged annual growth rates and individual fixed effects as explanatory variables to correct for the presence of autocorrelation of GDPG and to explain unobserved period effects of GDPG. In addition, we find that some of the proxy measures have missing years for a few cross-sectional geographic regions in our pooled data structure. Therefore, we perform the following unbalanced pooled regression⁴ with period fixed effects using pooled least squares methods.

⁴ We use the entire pooled dataset to run dynamic pooled regression in Equation (1). More specifically, the pooled dataset includes the seven cross-sectional geographic regions and the time periods of proxy measures from 1960 to 2005. In addition, the potential multicollinearity problem is reduced as the sample size increases from the cross-sectional to the pooled dataset. If multicollinearity was a serious problem, a high R^2 and few significant t ratios would be expected in the pooled least squares regression. However, we find that the estimated parameter values for all of proxy measure are

$$\begin{aligned}
GDPG_{it} = & \beta_0 + \beta_1 \cdot GDPG_{i,t-1} + \beta_2 \cdot DCBS_{i,t} + \beta_3 \cdot DCPS_{i,t} \\
& + \beta_4 \cdot M3 + \beta_5 \cdot GDS_{i,t} + \beta_6 \cdot TRADE_{i,t} + \beta_7 \cdot GCE_{i,t} + FE_t + \varepsilon_{it}
\end{aligned} \tag{1}$$

where i is the seven cross-sectional geographic regions, t is the time periods of proxy measures from 1960 to 2005, $GDPG_{i,t-1}$ is the lagged annual growth rates, and FE_t is the unobserved individual period fixed effects.

In this specification, the dependent variable is annual GDP growth rates as a proxy measure for economic growth, and explanatory variables include six proxy measures for financial development and the real sector combined with a constant, lagged term for GDPG, and fixed effects. Furthermore, we assume that FE_t is correlated with other explanatory variables and the explanatory variables are exogenous after we take out the unobserved effect, FE_t .

B. Multivariate Time-Series Models

To consider dynamic causality, direction, and timing between financial development and economic growth, we also estimate a number of vector autoregressive (VAR) models and ask whether and what proxy measures Granger-cause economic growth. Granger causality tests allow us to overcome the endogeneity problem in a pooled regression, in that VAR equations consider all variables endogenous. Note that the emphasis in Granger causality tests is on the short-run relationship. However, cointegration tests examine the presence of long-run linkages between financial

statistically significant, implying that a pooled regression could disentangle explanatory variables successfully although we included several financial development indicators simultaneously like most of the existing literature (See King and Levine, 1993; Khan and Senhadji, 2000; Chuah and Thai, 2004; Al-Awad and Harb, 2005, among others)

development and economic growth. Unit root tests are first used to check the order of integration (stationarity) of the variables and then cointegration techniques are used to test the existence of co-evolution between financial and growth indicators in the long run.

Although cointegration indicates the presence or the absence of Granger causality, it does not indicate the direction of causality between the variables. This can be detected using the vector error-correction model (VECM). If the variables are not cointegrated, Granger causality tests may be carried out in a first differenced VAR without the error correction term. If, on the other hand, the variables are both integrated to the same degree and cointegrated, the causality tests are performed using error correction model.⁵

In the analyzing the results from the VAR model, the focus will be placed on two tools: impulse response function (IRF) and forecast error variance decomposition (FEVD). Impulse response functions show how one variable responds over time to a single innovation in itself or in another variable. Innovations in the variables are represented by shocks to the error terms in the equations. More importantly, we compute forecast error variance decompositions (FEVD) of GDPG to examine what proxy measures are most important in economic growth over time and how much they contribute to economic growth. If a large portion of the forecast error variance of GDPG is explained by financial development, or a large portion of the forecast error variance of financial development is explained by GDPG, then this can be used as evidence of a strong causal relationship between the two variables.

Our VAR specification includes a total of seven variables including proxy measures for financial development (DCBS, DCPS, M3, and GDS), and real sector

⁵ The estimation results of cointegration tests are not shown to conserve the space and are available upon request.

(TRADE and GCE) as control variables, and economic growth (GDPG) across seven geographic regions. Formally, the VAR model is expressed as

$$Y(t) = C + \sum_{s=1}^m A(s)Y(t-s) + e(t) \quad (2)$$

where $Y(t)$ is a 7×1 column vector of seven variables including proxy measures, and C and $A(s)$ are, respectively, 7×1 and 7×7 matrices of coefficients, m is the lag length, and $e(t)$ is the 7×1 column vector of forecast errors of the best linear predictor of $Y(t)$ using all the past $Y(s)$. By construction, $e(t)$ is uncorrelated with all the past $Y(s)$. If this is combined with the fact that $e(t)$ is also a linear combination of current and past $Y(t)$, $e(t)$ is serially uncorrelated. The ij -th component of $A(s)$ measures the direct effect that a change in the return to the j -th variable would have on the i -th variable in s periods. As can be seen from Equation (2), the right-hand side of each equation contains exactly the same terms, i.e., a constant, lagged value of each variable, and the error term.

However, in the autoregressive systems such as Equation (2), especially the coefficients of the regression equations containing complicated cross-equation feedbacks are difficult to describe intuitively. Therefore, as shown by Sims (1980), it is better to analyze the system's reaction to typical random shocks or, equivalently, trace out the system's moving average representation. By successive substituting on the right-hand side of Equation (2), we can obtain a moving average representation as follows,

$$Y(t) = \sum_{s=0}^{\infty} B(s)e(t-s) \quad (3)$$

which represents $Y(t)$ as a linear combination of current and past one-step-ahead forecast errors or ‘innovations.’ In a moving average representation, x is the lag length.

Innovations, $e(t)$, are defined as

$$e(t) = Y(t) - P[Y(t)|Y(t-1), Y(t-2), \dots] \quad (4)$$

where P denotes the linear least squares projection of $Y(t)$ in the space spanned by $[Y(t-1), Y(t-2), \dots]$. The moving average representation of Equation (3) enables us to trace out the reactions of variables to shocks, $e(t)$, in the form of unexpected developments in a specific variables. The ij -th component of $B(s)$ shows the response of the i -th variable in s periods after a unit random shock in the j -th variables and none in other variables. The ij -th component of $B(s)$ represents the conditional expectation at time t of changes of the i -th variable in s periods caused by a unit change in the j -th variable, conditional on the information available at time t .

Although $e(t)$ is serially uncorrelated by construction, the components of $e(t)$ may be contemporaneously correlated. In order to observe the distinct response patterns that the VAR system may display, it is useful to transform the error terms. To achieve this goal, we choose a lower triangular matrix V and obtain the orthogonalized innovations u from $e = Vu$. It is noted that the transformed innovation, $u(t)$, has an identity covariance matrix, such that $E(ee') = S$ and $VV' = S$. Upon making an orthogonalized transformation to $e(t)$, Equation (3) can be rewritten as follows.

$$Y(t) = \sum_{s=0}^x B(s)Vu(t-s) = \sum_{s=0}^x C(s)u(t-s) \quad (5)$$

where $C(s) = B(s)V$. Then the ij -th component of $C(s)$ represents the impulse (or reflex) response of the i -th variable in s periods to a shock of one standard error in the j -th variable. To be consistent with the historical correlation pattern of innovations, we introduce a contemporaneous shock in each equation that is equal to the corresponding element in the j -th column of matrix V when we introduce one standard deviation shock in the j -th variable.

Another advantage of using orthogonalized innovations is that we can also allocate the variance of each element in Y to sources in elements of u , since u is serially and contemporaneously uncorrelated. The orthogonalization provides the quantity, $\sum C_{ij}(s)$, which is the component of forecast error variance in the $t+1$ step ahead forecast of Y_i , which is accounted for by innovations in Y_j . This decomposition of forecast error variance provides a measure of the overall relative importance of the variables in generating the fluctuations in proxy measures in their own and other variables.

VI. Empirical Results

A. Analysis of Pooled Regression and Impulse Response Functions

We report parameter estimates for the unbalanced pooled regression with period fixed effects in Table II. We find that GDP growth rate (GDPG) has a strong positive relationship with lagged annual growth rate (GDPG(-1)), domestic credit to private sector (DCPS), liquid liabilities (M3) and gross domestic savings (GDS). However, GDPG shows a negative association with domestic credit provided by banking sector (DCBS), Trade (TRADE), and government consumption expenditure (GCE).

Table II
Parameter Estimates for Pooled Regression with Fixed Effects

Variable	Coefficient	<i>p</i> -value
<i>Dependent variable (Proxy measure for economic growth)</i>		
Annual % of GDP Growth rate (<i>GDPG</i>)		
<i>Explanatory variables</i> (<i>Proxy measures for financial development and real sector</i>)		
Constant (<i>C</i>)	3.8780	[0.0016]
Lagged annual growth rate (<i>GDPG</i> (-1))	0.2881	[0.0001]
Domestic credit provided by banking sector as % of GDP (<i>DCBS</i>)	-0.0707	[0.0006]
Domestic credit to private sector as % of GDP (<i>DCPS</i>)	0.0330	[0.0181]
Liquid liabilities as % of GDP (<i>M3</i>)	0.0449	[0.0095]
Gross domestic savings as % of GDP (<i>GDS</i>)	0.1428	[0.0005]
Trade as % of GDP (<i>TRADE</i>)	-0.0382	[0.0197]
General government final consumption expenditure as % of GDP (<i>GCE</i>)	-0.1510	[0.0423]
	<i>F</i> -Statistic	<i>p</i> -value
$R^2 = 0.5858, \overline{R^2} = 0.4683$	4.9829	[0.0000]
$LR = -404.5868, AIC = 4.4958, SC = 5.2379$		

Note: We estimate the following pooled regression with period fixed effects using pooled least squares methods.

$$GDPG_{it} = \beta_0 + \beta_1 \cdot GDPG_{i,t-1} + \beta_2 \cdot DCBS_{i,t} + \beta_3 \cdot DCPS_{i,t} + \beta_4 \cdot M3 + \beta_5 \cdot GDS_{i,t} + \beta_6 \cdot TRADE_{i,t} + \beta_7 \cdot GCE_{i,t} + FE_t + \varepsilon_{it}$$

where *i* is the seven cross-sectional geographic regions, *t* is time periods of proxy measures from 1960 to 2005, $GDPG_{i,t-1}$ is lagged annual growth rates, and FE_t is unobserved individual period fixed effects.

Since our goal is to derive meaningful policy implications for enhancing further financial sectors reform in Morocco, we also investigate the dynamic relationships among proxy measures and how our various variables of financial development affect economic growth. Panel A of Figure 2 illustrates how GDPG responds over time to Cholesky-one-standard-deviation innovation in another variable using all the geographic regions from our pooled dataset. We observe that the general directions of impulse responses of GDPG are consistent with the signs of coefficients in a pooled regression.

GDPG responds positively to innovation in M3 (financial depth). A positive shock to DCPS and GDS has a significant positive impact on GDPG, while a positive shock to DCBS and GCE has negative impacts on GDPG. A shock to TRADE rapidly dies out after 3 years. GDPG has positive impacts on all financial and real variables included in this system except DCBS and GCE. It appears that higher dependency on banks tend to negatively affect economic growth, suggesting strong needs of diversifying financing sources. In addition, abuse of discretion to perform fiscal policy could worsen economic growth in many countries, evidenced by a negative sign of the GCE coefficient in a pooled regression and negative impulse responses of GDPG to a single shock in GCE.

Figure 2

Impulse Response Functions of Annual GDP Growth Rate to Cholesky-One-Standard-Deviation Innovations

Panel A: All the geographic regions from the pooled dataset

Note: The horizontal axis is the number of years following the shock indicated in each plot and the vertical axis is the growth rate of GDP.

Panel B: Classification by geographic regions

High-Income OECD

Latin America & Caribbean

Middle East & North Africa

Note: The horizontal axis is the number of years following the shock indicated in each plot and the vertical axis is the growth rate of GDP.

B. Analysis of VAR Results, Dynamic Causality, and Policy Implications across Geographic Regions and Income Groups

We decompose the forecast error of the endogenous variable GDPG over different time horizons into components attributable to unexpected innovations (or shocks) in proxy measures in the dynamic VAR system. The forecast error variance decompositions (FEVD) of GDPG in VAR are presented across geographic regions and income groups in Table III. In addition, GDPG is said to be Granger-caused by proxy measures if proxy measures help in the prediction of GDPG, or equivalently if the coefficients on the lagged proxy measures are statistically significant. We report the results of Granger causality tests in Table IV.

1. East Asia & Pacific (Low and Middle Income Groups)

The results from Table III show that M3 shocks explain 6.7368% of GDPG. DCBS, TRADE and GCE shocks explain 12.1350%, 7.6281%, and 6.9521% after ten years ahead, respectively. We know from Table II and Panel A of Figure 2 that DCBS, TRADE, and GCE have negative relationships with GDPG. Therefore, for East Asian & Pacific countries, it will be beneficial to further increase M3 and diversify financing sources to reduce DCBS.

However, Granger causality tests in Table IV imply that there is a very weak relationship between financial development and economic growth in the short run. Therefore, it will be necessary to perform stable and predictable government policy to achieve steady economic growth because financial development will only effectively affect economic growth in the long run according to the signs of coefficients in a pooled regression.

Table III
Forecast Error Variance Decompositions of Economic Growth in VAR

Period	GDPG	DCBS	DCPS	M3	GDS	TRADE	GCE
<i>East Asia & Pacific (Low and Middle Income Groups)</i>							
2 years ahead	94.0508	1.6627	0.9871	0.0035	0.6275	0.0120	2.6564
5 years ahead	63.9155	13.2102	3.0563	3.2388	2.2149	7.7496	6.6147
10 years ahead	57.0856	12.1350	3.9925	6.7368	5.4698	7.6281	6.9521
<i>High-Income OECD</i>							
2 years ahead	79.0244	6.8737	4.9382	4.9833	1.0928	1.9653	1.1223
5 years ahead	64.1623	9.5882	5.5084	14.1325	3.5821	1.7679	1.2586
10 years ahead	61.8540	9.4436	5.8855	14.6310	3.6382	2.2912	2.2564
<i>Latin America & Caribbean (Low and Middle Income Groups)</i>							
2 years ahead	84.1773	0.1178	5.8758	7.1139	0.4902	2.1463	0.0788
5 years ahead	72.6061	1.6025	13.3984	5.4934	3.6248	2.7670	0.5078
10 years ahead	76.5156	1.4595	12.3759	3.4449	3.4525	2.3707	0.3810
<i>Middle East & North Africa (Low and Middle Income Groups)</i>							
2 years ahead	72.5349	0.2488	3.9778	22.1975	0.1388	0.9022	NA
5 years ahead	42.7558	12.1855	10.5136	24.2191	6.4517	3.8742	NA
10 years ahead	33.3052	10.1718	18.9425	29.0321	5.2971	3.2514	NA
<i>South Asia (Low and Middle Income Groups)</i>							
2 years ahead	82.5293	1.4129	11.4056	2.6348	1.9683	0.0355	0.0137
5 years ahead	66.6133	11.5782	12.2418	2.3345	2.9483	0.6269	3.6570
10 years ahead	66.4804	9.9847	9.6445	4.5029	4.1715	0.9684	4.2476
<i>Sub-Saharan Africa (Low and Middle Income Groups)</i>							
2 years ahead	91.4286	0.0365	1.3642	1.7158	0.2152	4.0413	1.1983
5 years ahead	90.4272	1.3374	3.7685	1.1743	0.2346	2.2930	0.7650
10 years ahead	91.0878	1.0284	3.5993	1.2770	0.9115	1.2514	0.8446

Note: We do not perform VAR analysis for East Europe & Central Asia regions because of the insufficient number of observations resulting from many missing values during our sample periods, covering from 1960 to 2005.

Table IV
Granger Causality Tests across Geographic Regions

<i>East Asia & Pacific</i>	Null Hypothesis (H_o)		<i>F</i> -Statistic	<i>p</i> -value
Financial Development	DCBS	does not Granger cause GDPG	0.2175	[0.8063]
	DCPS		0.6100	[0.5527]
	M3		0.5453	[0.5876]
	GDS		0.5403	[0.5878]
Real Sector	TRADE		0.5401	[0.5886]
	GCE		0.8238	[0.4479]
<i>High-Income OECD</i>				
Financial Development	DCBS	does not Granger cause GDPG	3.3292	[0.0486]
	DCPS		3.4851	[0.0427]
	M3		5.0671	[0.0135]
	GDS		1.0929	[0.3478]
Real Sector	TRADE		10.5874	[0.0003]
	GCE		0.7371	[0.4867]
<i>Latin America & Caribbean</i>				
Financial Development	DCBS	does not Granger cause GDPG	1.8143	[0.1793]
	DCPS		0.8305	[0.4450]
	M3		3.3974	[0.0459]
	GDS		0.4122	[0.6657]
Real Sector	TRADE		1.3269	[0.2795]
	GCE		0.4265	[0.6565]
<i>Middle East & North Africa</i>				
Financial Development	DCBS	does not Granger cause GDPG	1.3154	[0.2906]
	DCPS		0.0190	[0.9812]
	M3		3.8920	[0.0350]
	GDS		0.3083	[0.7377]
Real Sector	TRADE		0.5582	[0.5798]
	GCE		0.0296	[0.9710]
<i>South Asia</i>				
Financial Development	DCBS	does not Granger cause GDPG	3.2307	[0.0527]
	DCPS		2.2331	[0.1236]
	M3		2.4481	[0.1025]
	GDS		2.1272	[0.1357]
Real Sector	TRADE		1.8912	[0.1674]
	GCE		1.9029	[0.1656]
<i>Sub-Saharan Africa</i>				
Financial Development	DCBS	does not Granger cause GDPG	0.9780	[0.3881]
	DCPS		0.4833	[0.6212]
	M3		2.7631	[0.0782]
	GDS		0.7745	[0.4694]
Real Sector	TRADE		0.3820	[0.6856]
	GCE		0.7359	[0.4870]

2. *High-Income OECD*

For the high-income OECD countries, Table III implies that proxy measures for financial development play a more important role in explaining GDPG fluctuations compared to those of real sector. For example, M3 shocks explain 14.6310% of GDPG fluctuations and DCBS shocks explain 9.4436%, while shocks of DCPS, GDS, TRADE, and GCE explain less than 6% of GDPG fluctuations. From Table IV, we find that most proxy measures for financial development Granger cause GDPG. Therefore, in the Panel B of Figure 2, we illustrate the impulse response functions of GDPG to Cholesky-one-standard-deviation innovations in DCBS, DCPS, M3, and TRADE.

A shock to M3 builds to a peak immediately and significantly declines after two years, then gradually increase afterwards. We find the similar patterns for the DCBS and DCPS as that of M3. However, responses of GDPG to a single shock in TRADE are somewhat opposite in that a shock initially decline and then increase after two years. For high-income OECD countries, well-developed financial systems are crucial to achieve economic growth, and financial development is closely related with economic growth both in the short- and long run. Therefore, it is recommended to further maintain efficient financial systems by increasing M3 and domestic credit to the private sector.

3. *Latin America & Caribbean (Low and Middle Income Groups)*

Table III shows that only DCPS explains more than 10% of GDPS fluctuations after ten years ahead. Other proxy measures for financial development and real sectors can explain only small portions of GDPG, implying the decline of the contribution of financial depth (M3) in explaining the variation in GDPG, while the contribution of

DCPS in explaining GDPG variation has increased. In the short run, it appears that only M3 Granger causes GDPG as in Table IV. In general, M3 has a positive impact on GDPG. In other words, the impact of M3 on GDPG remains positive except for three and six years ahead. Therefore, for Latin America & Caribbean countries, it will be beneficial to increase M3 in the short run. However, in the long run, it will be more efficient to raise domestic credit to the private sector so that economy has more capacity to attain a higher level of domestic investment.

4. Middle East & North Africa (Low and Middle Income Groups)

For Middle East & North Africa (MENA) countries, GDPG only explains 33.3052% of its variation, which is a significantly lower portion compared to other geographic regions. We find that all of proxy measures for financial development explain very high portions of variations in GDPG after ten years ahead. For example, M3 explains 29.0321% of GDPG fluctuation. Similarly, DCPS and DCBS explain 18.9425% and 10.1718% of variations in GDPG, respectively, after ten years ahead. This finding strongly indicates that financial development plays an important role in economic growth.

In the short run, Granger causality tests show that only M3 shock has a positive impact on GDPG. Therefore, the results indicate that efforts to reform and deepen the financial system in the Middle East & North Africa region would prove fruitful. In the long run, the continuing progress in financial liberalization and integration with developed countries would be also helpful to further enhance efficiency and liquidity of financial markets in the Middle East & North Africa region, resulting in steady economic growth.

5. South Asia (Low and Middle Income Groups)

In the VAR system for South Asia region, M3 accounts for only 4.5029% of the GDPG fluctuations. Other key financial development indicators, such as DCBS and DCPS, account for 9.9847 and 9.6445% of variations in GDPG, respectively. For real sector, although GCE explains moderate 4.2476% of GDPG, TRADE accounts for only 0.9684% of GDPG. Even in the short run, it appears that none of the proxy measures for financial development and the real sector Granger cause GDPG. Therefore, the variance decomposition results strongly imply that it is necessary to increase domestic credit to the private sector so that countries in the South Asia region can be equipped with more efficient and liquid financial intermediaries in the long run.

6. Sub-Saharan Africa (Low and Middle Income Groups)

The variance decomposition results indicate that GDPG accounts for 91.0878% of its variation, implying a very weak effect of the financial and real variables on GDPG. All of proxy measures account for less than 4% of variations in GDPG after ten years ahead. The Sub-Saharan African region does not have proxy measures which Granger cause GDPG, which partly explains why many countries in Sub-Saharan Africa region still remain in the low or lower middle income group. Therefore, similar to South Asia in the short run, we do not find the specific relationship between financial development and economic growth, either. However, it is still important to raise domestic credit to the private sector until countries in the Sub-Saharan Africa region have more capacity to attract higher levels of investments for long-run economic growth.

VII. Policy Implications on Further Reform of Financial Sectors in Morocco

The empirical evidence in Section VI has important implications for the conduct of economic and financial policies in Morocco. According to Granger causality tests, we find that, unlike high-income OECD countries, in many other geographic regions, such as East Asian & Pacific, South Asian, and Sub-Saharan African regions, there are very weak links between finance and growth in the short-run. For the MENA region, only M3 shock has a positive impact on GDPG even after financial sectors reform in the past two decades. Even though there has been clear improvement in the financial sector over the past two decades, it appears that the degree of financial development is still below the threshold needed to spur economic growth. Expected positive effects of financial liberalization policies on long-run growth cannot be seen before the achievement of full and total liberalization of financial structures, especially the liberalization of capital accounts. Therefore, financial sector reform in Morocco has not yet produced the expected positive effects on capital accumulation and economic growth (Boulila and Trabelsi, 2004).

Importantly, financial sector reform in Morocco is still in progress. However, as King and Levine (1993) mention, it is important to note that the predetermined component of financial development is a good predictor of long-run growth over the next ten to thirty years. That is, when countries have relatively high levels of financial development, economic growth tends to be relatively fast over the next ten to thirty years. Therefore, as Graff (2002) points out, in the financially and economically less developed countries like Morocco, there is a latent, but unexploited potential for growth. Unlike

other economic activities, Morocco might be able to exploit their growth potential by modernizing their traditional financial sectors with financial technology that can possibly be fairly easily imitated and borrowed from the more advanced countries.

In this regard, Creane *et al* (2003) develop new indices to measure the level of financial development in the MENA region. According to their comprehensive index of qualitative and quantitative data covering monetary policy, the banking sector, regulation and supervision, the non-bank financial sector, financial openness, and the institutional environment, Morocco is categorized into the medium level of financial development, grouped together with Algeria, Djibouti, Egypt, Mauritania, Pakistan, and Tunisia.⁶

Therefore, to achieve the desired benefits of financial development and facilitate greater investment and growth, policy efforts should be devoted to deepening the financial sector and building up growth-promoting financial systems. For example, policy makers in Morocco should concentrate efforts on restricting government interference in the financial system, investing in human resources, strengthening the legal environment, and enhancing competition by cutting back on public ownership of financial institutions. We also believe that the legal and regulatory reforms that strengthen creditor rights, contract enforcement, and accounting practices are expected to boost banking and securities markets development.

VIII. Conclusions

⁶ According to the comprehensive index of Creane *et al* (2003), MENA countries that have achieved the high level of financial development are Bahrain, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. The low level of financial development group includes Iran, Libya, Sudan, Syrian Arab Republic, and Yemen.

In this paper, we examine a pooled regression with cross-sectional geographic regions and time-series proxy measures to establish linkage and directions between the financial development and economic growth. In addition, we also analyze various multivariate time-series models, such as VAR, forecast error variance decompositions, impulse response functions, and Granger causality tests to derive feasible policy implications.

We strongly believe that different policy recommendations should be made to achieve the target of economic growth, considering the distinct stage of financial development across geographic regions and income groups. For example, in the short run, we find strong linkages between financial development and economic growth in high-income OECD countries, but not in the East Asian & Pacific, South Asian, and Sub-Saharan African regions. However, unlike time-series analysis, we obtain a positive “long-run” relationship between finance and growth based on the pooled regression. As such, it is also suggested to consider institutional characteristics, including the type of financial system and policies, to explain the differences between regions.

Furthermore, our empirical results based on Granger causality tests do not attempt to answer the following question: “What will happen in the future?” The results of Granger causality tests, instead, tell us, “What happened in the past?” More specifically, we could not find any strong statistical evidence that financial development is functioning well to promote economic growth in underdeveloped countries during our sample periods. If we can boost much faster economic growth in these regions by financial development to eliminate poverty in the short run, we are wondering if the U.N. and other international organizations, such as the World Bank and IMF, can simply donate the money to build up

more financial institutions, in order to increase domestic credits. However, in most cases, these efforts did not prove to be successful in poverty reductions, due to many unstable non-economic factors.

In our opinion, a “positive finance-growth relationship,” established by Levine (1997), is only apparent in the very long run (e.g., over ten to thirty years). However, Granger causality tests show a short-run relationship between finance and growth. Therefore, it is possible for Morocco and many other underdeveloped countries, mainly located in the South Asian and Sub-Saharan African regions, to experience sluggish economic growth in the short run (e.g., less than ten years) despite gradual financial sector reform in the past two decades, mainly due to inefficient allocation of savings, heavy public intervention in the financial system, ill-enforced legal systems, and political instability. In this respect, policy makers in Morocco need to speed up further reforms in the financial sector, which should be a priority to spur economic growth.

Appendix A: Geographic Classification and Countries

Geographic regions	Countries
East Asia & Pacific (<i>n</i> = 24)	American Samoa, Cambodia, China, Fiji, Indonesia, Kiribati, Dem. Rep. of Korea, Lao PDR, Malaysia, Marshall Islands, Micronesia, Mongolia, Myanmar, Northern Mariana Islands, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Thailand, Timor-Leste, Tonga, Vanuatu, Vietnam
East Europe & Central Asia (<i>n</i> = 27)	Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, FYR, Moldova, Poland, Romania, Russian Federation, Serbia and Montenegro, Slovak Republic, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan
High-Income OECD (<i>n</i> = 24)	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, South Korea, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States
Latin America & Caribbean (<i>n</i> = 32)	Antigua and Barbuda, Argentina, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, RB
Middle East & North Africa (<i>n</i> = 14)	Algeria, Djibouti, Arab Rep. of Egypt, Islamic Rep. of Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Oman, Syrian Arab Republic, Tunisia, West Bank and Gaza, Yemen
South Asia (<i>n</i> = 8)	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
Sub-Saharan Africa (<i>n</i> = 48)	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Dem. Rep. of Congo, Rep. of Congo, Côte d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mayotte, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe

Note: This table classifies all World Bank member economies and all other economies with populations of more than 30,000. Geographic classifications are for low-income and middle-income economies only. We include high-income OECD countries into geographic regions for analysis purposes because they are a representative group of developed countries. Except high-income OECD countries, the remaining low or middle income groups are sometimes referred to as developing economies (economies are divided among income groups according to 2004 gross national income (GNI) per capita. The groups are: low income, \$825 or less; lower middle income, \$826 – 3,255; upper middle income, \$3,256 – 10,065; and high income, \$10,066 or more), based on World Bank classification.

Sources: World Bank's *World Development Indicators 2006* (WDI) database

References

- Al-Awad, M., and N. Harb, 2005, Financial Development and Economic Growth in the Middle East, *Applied Financial Economics* 15, 1041-1051.
- Al-Yousif, Y., 2002, Financial Development and Economic Growth: Another Look at the Evidence from Developing Countries, *Review of Financial Economics* 11, 131-150.
- Arestis, P., and P. Demetriades, 1997, Financial Development and Economic Growth: Assessing the Evidence, *The Economic Journal* 107, 783-799.
- Becsi, Z., and P. Wang, 1997, Financial Development and Growth, *Economic Review* 82, 46-62.
- Boulila, G., and M. Trabelsi, 2004, The Causality Issue in the Finance and Growth Nexus: Empirical Evidence from Middle East and North African countries, *Review of Middle East Economics and Finance* 2, 123-138.
- Chuah, H., and W. Thai, 2004, Financial Development and Economic Growth: Evidence from Causality Tests for the GCC Countries, IMF Working Paper.
- Creane, S., R. Goyal, A. Mobarak, and R. Sab, 2003, Banking on Development: Further Reform of Financial Sector Holds Promise for the MENA Countries, *Finance and Development* 40, 26-29.
- De-Gregorio, J., and P. Guidotti, 1995, Financial Development and Economic Growth, *World Development* 23, 433-448.
- Graff, M., 2002, Causal Links Between Financial Activity and Economic Growth: Empirical Evidence from a Cross-Country Analysis, 1970-1990, *Bulletin of Economic Research* 54, 119-133.

- Greenwood, J., and B. Jovanovic, 1990, Financial Development, Growth, and the Distribution of Income, *Journal of Political Economy* 98, 1076-1107.
- Grossman, G., and E. Helpman, 1991, Quality Ladders in the Theory of Growth, *Review of Economic Studies* 58, 43-61.
- Jbili, A., K. Enders, and V. Treichel, 1997, Financial Reforms in Algeria, Morocco, and Tunisia: A Preliminary Assessment, IMF Working Paper.
- Khan, M., and A. Senhadji, 2000, Financial Development and Economic Growth: An Overview, IMF Working Paper.
- King, R., and R. Levine, 1993, Finance and Growth: Schumpeter Might be Right, *Quarterly Journal of Economics* 108, 717-738.
- Levine, R., 1997, Financial Development and Economic Growth: Views and Agenda, *Journal of Economic Literature* XXXV, 688-726.
- Lucas, R. E., 1988, On the Mechanics of Economic Development, *Journal of Monetary Economics* 22, 3-42.
- McKinnon, R. I., 1973, Money and Capital in Economic Development, Washington, DC: Brookings Institution.
- Pagano, M., 1993, Financial Markets and Growth: An Overview, *European Economic Review* 37, 613-622.
- Rebelo, S. T., 1991, Long-Run Policy Analysis and Long-Run Growth, *Journal of Political Economy* 99, 500-521.
- Romer, P. M., 1986, Increasing Returns and Long-Run Growth, *Journal of Political Economy* 94, 1002-1037.
- Savvides, A., 1995, Economic Growth in Africa, *World Development* 23, 449-458.

Shaw, E. S., 1973, *Financial Deepening in Economic Development*, New York: Oxford University Press.

Sims, C., 1980, Macroeconomics and Reality, *Econometrica* 48, 1-48.

Yasin, M., 2003, Public Spending and Economic Growth: Empirical Investigation of Sub-Saharan Africa, *Southwestern Economic Review* 30, 59-68.