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Does Financial Development Cause Economic Growth? An Empirical Investigation Drawing On The Moroccan Experience

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ABSTRACT

This paper explores the causality issue between financial development and economic growth in the Moroccan context over the period 1970-2000 based on Granger causality tests. The evidence presented in this paper suggests a spasmodic short-term, rather than long-term causality relationship between finance and growth. These findings may be attributed to the newness of financial sector reforms in Morocco, along with the absence of an appropriate investment climate required to foster significant private investment and promote growth in the long run. In addition, aggregate data suggest that financial deepening in Morocco benefited household and government consumption more than private sector investment. An empirical investigation of the impact of credit to the private sector on consumption is therefore provided and confirms the hypothesis that the expansion of credit to the private sector witnessed in Morocco since the reforms have helped maintain consumption patterns, even during times of hardship.

INTRODUCTION

Economists' interest in the relationship between financial sector development and economic growth dates back to Schumpeter [16] who argued that a country's financial system plays a critical role. He contended that the basic services financial intermediaries provide to their economy – mobilizing savings, monitoring managers, evaluating projects, managing and pooling risks, and facilitating transactions- made these intermediaries essential players in fostering technological innovation and economic growth. Goldsmith [6] and McKinnon [13] investigated further this relationship on a country-case basis and confirmed that better functioning financial systems, as described by Schumpeter, were supportive of faster growth.

Following this early work, and stimulated further by the McKinnon-Shaw hypotheses concerning the favourable effects of financial sector liberalisation, an extensive empirical literature has emerged recently. Cross-country, industry-level and firm-level investigations have attempted to assess the importance of financial system development as a causal factor in promoting growth.

The present study takes up the causality issue in the particular context of financial reforms undertaken in Morocco under the supervision of the World Bank and the IMF. Evidence reported indicates that the link between financial development and economic growth is certainly not tight. The purpose of the study, therefore, is to draw on Morocco's experience with financial reform in order to cast light on the causality issue, for which empirical support to date has been overwhelmingly at the level of international experience.

This paper briefly reviews the extensive literature on the growth-finance nexus then assesses the reforms Morocco has undertaken in the financial sector and their impact on the country's GDP growth performance. It reviews major development and economic indicators and subsequently tests for a potential causality relationship between financial development and growth within a *b*VAR framework. The results from the study suggests that financial development alone is insufficient in stimulating the level of productive investment required to sustain long term economic growth. Aggregate data actually suggest that financial deepening in Morocco benefited household and government consumption more than private sector investment. The final section of this paper therefore investigates the hypothesis that financial liberalisation in Morocco has helped maintain public and private consumption spending, especially during drought periods, hence the limited impact of financial liberalisation on growth in this country.

FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH

Extensive theoretical work exists on the relationship between financial development and economic growth. Levine [11] summarises the basic theoretical framework of the finance-growth nexus as follows. Financial markets and intermediaries emerge as a result of market frictions to facilitate risk management, mobilize savings, acquire information about investments, allocate resources to their best use, and boost technological changes. These basic functions affect two main channels to growth, namely capital accumulation and technological innovation, which in turn impact economic growth. Consequently, financial repression, especially when combined with high inflation, can seriously impede growth. However, economists don't all seem to agree on the importance of the role played by finance in promoting economic growth. On the one hand, advocates of financial development such as Schumpeter

[16], Goldsmith [6] McKinnon [13], and Shaw [15] argue that a country's financial system plays a critical role in allocating resources and promoting economic growth. As one of the early supporters of financial liberalisation, Schumpeter [16] views financial institutions as key players in the process of economic growth because they are deemed to be able to evaluate and finance entrepreneurs who initiate innovative activities and bring new products to the market. Because it limits the services that financial systems can offer to savers, entrepreneurs and producers, financial repression impedes innovative activity and therefore slows down economic growth.

Following the same line of reasoning, McKinnon [13] and Shaw [15] have developed growth models where economic development is accelerated by financial liberalisation and development. They argue that growth in financially repressed economies is constrained by low levels of savings and poor allocative efficiency of credit. Financial repression reduces the flow of funds to the financial sector and channels resources towards weakly productive investment projects. This causes a drop in the rate of growth and restrains the expansion of the financial sector. McKinnon [13] also suggested that because investment expenditures are lumpier than consumption expenditures, financial development helps overcome the relative lumpiness of investment expenditures because it allows investors to have access to larger pool of savings mobilised by the financial intermediaries to finance their investment. Consequently, those bigger projects that would have been impossible to finance otherwise can now be undertaken as a result of financial liberalisation.

On the other hand, sceptics led by Robinson [14] question the importance of finance in the growth process and believe that financial development rather occurs as a result of economic development. Where the importance of finance is not completely denied, as from the part of Lucas [12] who believes that the "importance of financial matters is very badly over-stressed" in attempting to explain economic development, it is confined to a lesser role by Robinson [14] who argues that "where enterprise leads, finance follows (…) When a strong impulse to invest is fettered by a lack of finance, devices are invented to release it (…) and habits and institutions are developed accordingly."

The 1990s have witnessed a renewed interest in the empirical investigation of the relationship between finance and growth. Significant empirical work has been done to demonstrate the positive relationship between financial development and economic growth. King and Levine [10] empirically assess the connection between banking sector development and the sources of economic growth. In this paper that sets the ground for most of the subsequent research on the topic, they test the correlation between the level of financial development and economic growth using data on 80 countries over a period ranging from 1960 and 1989. They investigate whether financial development predicts long-run economic growth, capital accumulation and productivity growth using four indicators of financial development that measure respectively the size of the formal financial intermediaries sector relative to GDP, the importance of banks relative to the Central Bank, the percentage of credit allocated to private firms, and the ratio of credit issued to private firms to GDP. They control for other factors associated with economic growth using a matrix of conditioning information that includes indicators of initial income, education, trade and monetary policy, political stability. They find that the different indicators of financial development included in the study are positively and significantly correlated with economic growth.

Several subsequent studies have built on King and Levine's [10] article to further investigate the relationship between finance and growth, and recent empirical studies have re-examined the empirical evidence on the relationship between financial development and economic growth and have established that the results obtained from the earlier studies become weaker when estimated using panels or when restricting the sample to developing countries only. Khan and Senhadji [9] for example find that while "the regression analysis reveals that financial development is an important determinant in the cross-country growth differences (…) some financial indicators become statistically insignificant when the growth equations are estimated with panels." On the other hand, Berthélemy and Varoudakis [2] found a negative correlation between financial development and growth based on panel data regressions run over the period 1960-1990 for a sample of 82 countries and have explained this result arguing that there exists a threshold effect associated with the existence of multiple equilibria in the long run between finance and growth.

The contradictory results obtained from the cross-country studies have encouraged many to investigate the finance-growth relationship on a country case basis, believing this relationship to be very country-specific. In a study where causality tests are carried out for sixteen developing countries based on a Granger causality framework, Demetriades and Hussein [4] find evidence that the causality issue between financial development and growth varies across their sample of countries. In about half of the countries considered, they find support for the argument that the causality runs from finance to growth, whereas for the other half, they find evidence of the opposite relationship where causality runs from growth to finance, confirming the argument that generalisation based on cross-country studies can be misleading.

In a similar fashion, Boulila and Trabelsi [3] examined the causality issue in the MENA region over the period 1960-2002 and concluded that, in the countries considered, the growth of the real sector seems to precede the growth of the financial sector more often than the opposite, essentially as a result of the delay in and incompleteness of financial reforms implementation in the region.

This paper conforms to the current trend in the relevant literature advising country case studies of the finance-growth relationship. It therefore focuses on the Moroccan experience with financial liberalisation in attempting to assess the extent of the role played by financial sector reforms in explaining the country's growth experience.

FINANCIAL SECTOR REFORMS IN MOROCCO

The late 1970s and early 1980s involved economic instability in Morocco, as in most developing countries. Budget deficits were very large, inflation reached record levels and external debt came to exceed GDP. By the mid-1980s, the country was in the throes of a severe macroeconomic crisis that triggered the implementation of a comprehensive structural adjustment program. Supervised and financed by the IMF and the World Bank, this program's purpose was to restore the country's macroeconomic stability. The reform plan had two components, a general adjustment program under the supervision of the IMF and a sectoral adjustment program designed by the World Bank. The IMF program, which spread over a period of five years and was divided into three eighteen-month duration stand-by arrangements, aimed primarily at reducing both the country's current account and fiscal deficits to 4 percent of GDP by 1986. Annual GDP growth targets were set at 3 percent and the country was strongly encouraged to avoid recourse to external borrowing to prevent excessive pressures on the balance of payment and the treasury. On the other hand, the World Bank program covered a wider range of sectors and had as a primary target to liberalise prices and eliminate price subsidies. Trade liberalisation was also on the World Bank's agenda which hastened devaluation of the Moroccan Dirham by 50 percent against the French Franc and the Deutschmark and by 30 percent against the US Dollar and the British Pound at the start of the reforms. Measures to reduce tariff and non-tariff barriers led to a progressive opening of the economy to international competition and imports were gradually deregulated.

By 1993, the financial sector was incorporated into the adjustment process and major reforms included interest rate liberalisation and credit ceilings elimination. Before the reform process, the primary role of the financial sector was to respond to the financing needs of the government and of public sector enterprises, as well as to grant credit at preferential rates to government-defined priority sectors.

As a significant source of money creation, credit to the private economy was tightly controlled to comply with the money growth objectives established by the government. Credit control devices and mandatory asset holdings in the form of required reserves, "Plancher d'Effet Public", (PEP henceforth, which is the minimum portfolio of T-bills banks were required to hold), CNCA (Caisse Nationale de Crédit Agricole) 1-year deposit notes and 1-year maturity T-bills were enforced to control bank intermediation.

In addition, the monetary authorities intervened heavily to promote the financing of specific sectors of the economy deemed crucial to the development of the country. Their objective was to induce banks to grant priority financing to support four main sectors of the economy, namely small and medium-sized enterprises, the export sector, the agricultural sector, and the housing sector (especially the low-income segment, or *logement économique*).

Finally, financial intermediation was identified as one of the key strategic sectors and foreign investment in it was subject to tight restrictions and/or approval by the monetary authorities. The "Moroccanization" decree of 1973 limited foreign ownership to 49 percent to ensure local control.

This was the context in which, from the early 1990s, the country undertook a series of financial reforms. The claimed overall purpose was to relax most, if not all, of these restrictions and thus allow the financial sector to promote economic growth through a more efficient allocation of credit. The 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.

The first step of the reforms consisted of increasing administered domestic interest rates to positive real levels prior to their gradual full liberalisation. Deposit rates were first targeted by the reform in July 1990, shortly followed by medium and long-term lending rates in October 1990 and short-term lending rates in January 1991, although interest rate liberalisation was not fully effective until February 1996. The minimum lending rate, the "Taux de Base Bancaire" (TBB) has been set since January 1998 at 8 percent for short-term loans, 8.25 percent for medium-term and 9 percent for long-term loans. This rate, which could be seen as a "prime-rate", has also been set at 8 percent on export loans since October 1997. Banks' loans are also subject to a maximum "usury" rate, the "Taux Effectif Global" (TEG) which is set by the Central Bank every 6 months and which was around 15 percent in 2000. In view of the low level of inflation typical of the period since 1996, however, the usury rate has not been a significant constraint on bank lending policies. The

general, if uneven, decline in the underlying rate of inflation is portrayed in Figure 1.
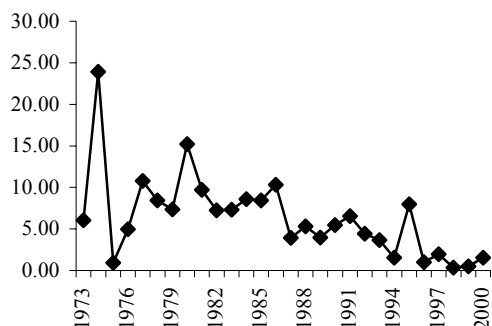

FIGURE 1:GDP Deflator (% annual change) 1973-2000; (source: World Bank)

The mandatory holdings of T-Bills and bonds issued by development banks were gradually relaxed during the reform period. The 35 percent T-bills PEP requirement was steadily reduced to reach 5 percent in January 1998 before being completely abolished in July of the same year. Since November 1991, banks have been required to keep 2 percent of their total liabilities (excluding term deposits and deposits in convertible Dirham) in the form of CNCA notes, down from 3.5 percent during the pre-reform era.

To increase competition among banks, the government opened some banks' capital to private participation, both domestic and foreign, enhanced banks' authority in lending decisions and annulled the "Moroccanization" decree of 1973 which restricted foreign ownership in strategic sectors to 49 percent. Consequently, foreign ownership in Moroccan banks has become widespread and several foreign banks currently hold majority control in major Moroccan banks. The French Société Générale, BNP Paribas and Crédit Lyonnais hold majority control in SGMB, BMCI and CDM respectively, AXA controls 20 percent of BMCI and 10 percent of BCM, and Crédit Agricole-Indosuez holds 14.6 percent of Wafabank.

The reform program also included policies intended to reduce the role of the state in the management of banks. A vast, comprehensive program of privatisation was launched in 1994 and more than sixty state-owned enterprises have been privatised since the start of the reforms, including four banks in 1995. However, four banks still remain under the control of the state but only one is currently profitable. The Crédit Populaire Marocain (CPM) group is the uncontested banking sector leader, accounting for 30.26 percent of total bank deposits and 21.34 percent of extended credit by 2002. The government launched the privatisation of the CPM in 2002 by relinquishing 21 percent of the CPM to the regional Banques Populaires. This was to be followed by the sale on the stock market of the government's remaining 20 percent share by the end of 2003. Conversely, the other three state-owned banks have colossal loans in arrears attributed by observers to corruption and inefficient management practices at these institutions, which have forced the authorities to launch restructuring programs in conjunction with the other commercial banks to prevent a banking sector crisis.

In addition, and to comply with international standards on banking regulations, banks were required to meet the prudential ratios designated by the Basle committee. The major prudential rules with which banks must comply today include:

- 100 percent liquidity ratio between liquid short-term assets and short-term demand liabilities;

- 8 percent solvency ratio between the bank's own funds and assets and contingent commitments, weighted by risk; and

- A 16.5 percent reserve requirement as a fixed proportion of demand liabilities excluding convertible-Dirham accounts and CDs with an initial maturity exceeding 3 months. (This ratio was raised from 10 percent to 14 percent in December 2002 then 16.5 percent in September 2003, and reserves are now remunerated at 0.75 percent interest).

The financial reforms also targeted the moderately active stock market starting 1996. Besides restructuring the already existing stock market, the new legislation created several regulatory bodies, strengthened the institutional framework for bonds and money markets and instituted new collective investment schemes in the form of FCPs and SICAVs, two forms of unit trusts.

THE IMPACT OF THE REFORMS

Following the reforms, financial intermediation activity has certainly experienced relative expansion. The ratio of M3 to GDP rose from 61 percent to 82.6 percent between 1990 and 2000, indicating banks' ability to mobilise more savings. In regional terms, it may be noted that while this ratio exceeds that observed in Tunisia, it remains well below that of Jordan (113.4 percent of GDP in 2000). As Figure 2 shows, Morocco's monetisation ratio now approximates that in Egypt.
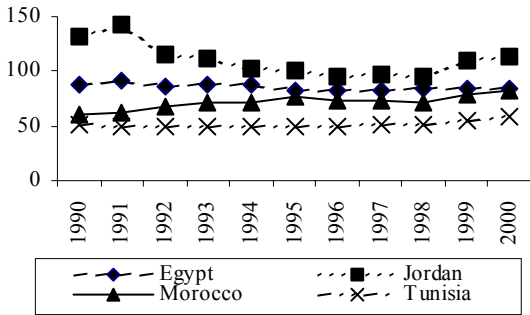
FIGURE 2:**Financial Deepening, M3/GDP,1990-2000 (source: World Bank)**

Similarly, bank deposits have increased from around 45 percent of GDP to 70.5 percent in the period since financial deregulation. These were considerably fuelled by significant workers remittances, which in turn averaged 6 to 7 percent of GDP annually since the 1980s. These remittances, which currently make up one fourth of total bank deposits, and which show no sign of slow down in the near future, along with the currently limited proportion of the Moroccan population having access to banking services, present further potential for these deposits to continue to grow in the future.

Bank credit on the other hand, increased significantly since the start of the reforms, amounting to 92 percent of GDP in 2000, up from 62 percent in 1990. Among the objectives to be achieved by the financial reforms was the reallocation of credit away from the public sector and towards the more productive private sector. Consequently, the share of domestic credit allocated to the private sector reached 58 percent of GDP by 2000. This ratio nonetheless remains below the 66 percent of GDP witnessed in Tunisia and the 78 percent observed in Jordan (Figure 3).
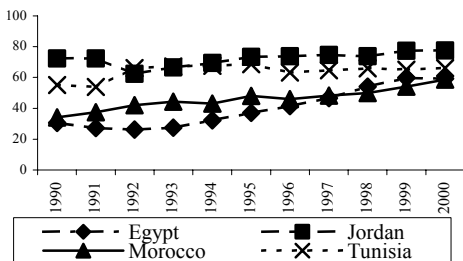

Figure 3: Domestic credit to the private sector in selected MENA countries, 1990-2000 (Source: World Bank)

As noted in the previous section, financial reforms also targeted the stock market. The remodelling of the tax system, the opening of the economy, the adoption of reliable accounting standards and the reform of the banking sector were intended to promote the emergence of a more active market for equities. However, after a strong expansion resulting essentially from privatisation initiatives, the capitalisation of the Casablanca Stock Exchange experienced a sharp decline starting 1998. This decrease is thought to be associated with 1) a limited number of initial public offerings of non-financial enterprises, 2) a decline in the number of securities issued, which restricts diversification opportunities, and 3) a deterioration of investors confidence, the combination of which has led to an extremely low volume of trading (Figure 4).
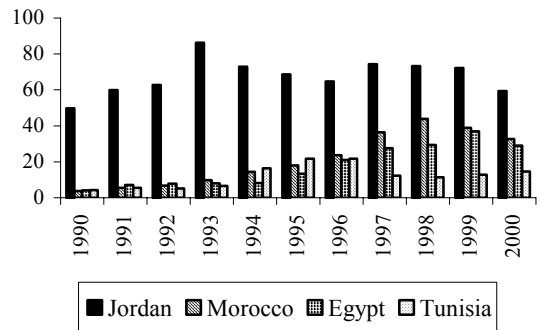

Figure 4:Market Capitalisation (% of GDP) for selected MENA countries, 1990-2000; (source :World Bank)

Despite the changes described above, little impact on the real economy has been evident subsequently. The impact of financial sector reforms on subsequent economic growth is difficult to assess as several factors other than the level of financial sector development may have interfered with the evolution of some economic indicators. GDP annual growth has been very erratic over the past 10 years, largely as a result of several consecutive years of severe droughts. Figure 5 below clarifies this relationship and indicates that fluctuations in agricultural output have been somewhat less dominant in determining GDP growth since 1997.
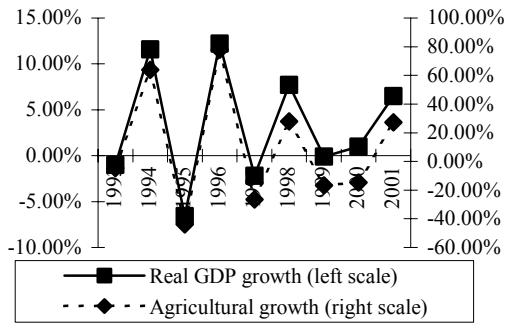
Figure 5: Agricultural and non-agricultural real GDP growth rate for Morocco, 1990-2000 (source :World Bank)

Nevertheless, Morocco remains a dual economy with both a growing modern sector and a still very large agricultural sector which employs 50 percent of total labour force to produce 16 percent of GDP. GDP per capita has stagnated over the past decade, averaging $1370 in 2000, thus remaining well below the performance of countries such as Tunisia where it has been growing at a much faster rate over the past 10 years (Figure 6).
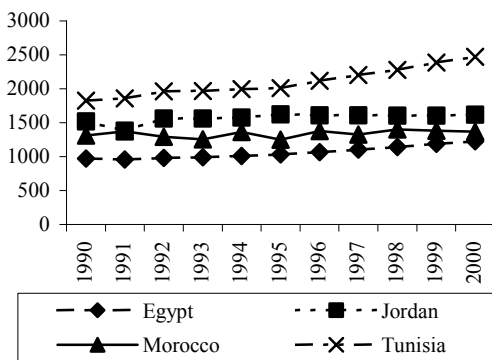

Figure 6: GDP per capita for selected MENA countries, 1990-2000 (source :World Bank)

All in all, and despite noticeable financial sector development, Morocco's growth performance remains below expectations, as if the country failed to put its financial performance at the service of overall growth over the past decade. Indeed, aggregate data suggest that financial resources accumulated since the reforms were not directed towards the productive private sector. Instead, they appear to have been allocated to a large extent to government budget financing and to non-productive private activities such as consumption and housing.

Accordingly, aggregate data on investment reveal stagnation at around 21 percent of GDP during the period

1990-2000, following lower values associated with drought in the mid-1990s (Figure 7).
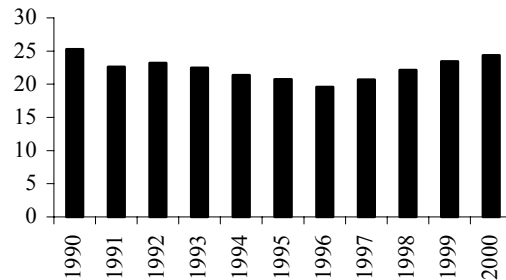

Figure 7: Investment as a Percent of GDP, 1990-2000 (source: World Bank)

Both public and private gross fixed capital formation (GFCF), as a proportion of GDP remained roughly constant despite strong incentives by the authorities to promote investment. Steps to remove obstacles to the creation of new enterprises were gradually taken over the past few years, culminating in 2002 in the implementation of several *Centres Régionaux d'Investissement* (CRI) in the major cities of the kingdom. These are one-stop investment windows established at the regional level in an attempt to reduce the lengthy and costly administrative procedure of setting up a new business. Ongoing efforts to improve the legal and judicial system were undertaken, along with tax reductions and industrial areas promotion initiatives, all in an attempt to stimulate private investment and spur economic growth. However, strong rigidities in the labour market have yet to be removed. Hiring and firing regulations are very severe, the urban minimum wage remains high and is further aggravated for employers by even higher non-wage labour costs (for example, social security contributions and company income taxes). Added to a lack of domestic competition and to an inefficient legal system, these rigidities suggest continuing impediments to private investment activity (Figure 8).
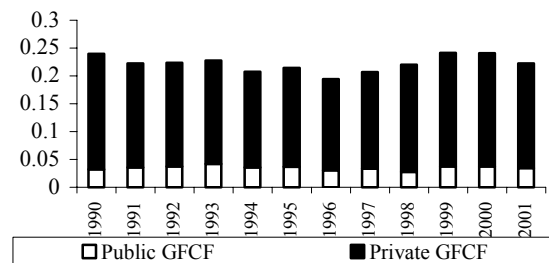

Figure 8: Gross Fixed Capital Formation (%GDP), 1990-2000 (source :World Bank)

Aside from particular years such as 1995 and 2000, where budget deficit reached 5.2 percent and 8.8 percent of GDP respectively, the government have managed to keep fiscal deficit around 4 percent, owing essentially to exceptional privatisation receipts (Figure 9).
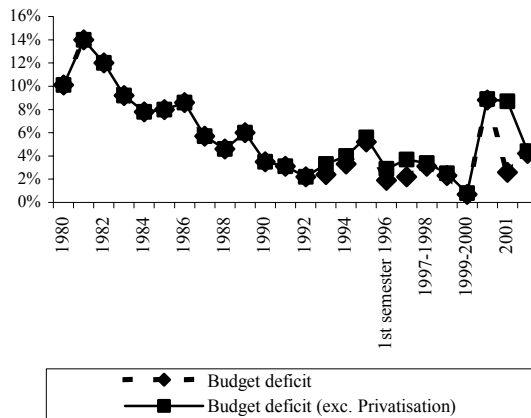

Figure 9: Moroccan government budget deficit, 1980-2001(source :Ministry of Finance)

Traditionally, budget deficit was financed primarily by running considerable external debt and controlling bank resources. With the reforms, the government is now able to reduce its dependence on external sources of funding and instead finances its deficit borrowing from a wider variety of domestic sources as financial markets expand and more financial assets are now available. Consequently, the country's external debt decreased considerably over the past decade to reach 34.6 percent of GDP in 2002, essentially as a result of a debt swap program launched in 1996 with members of the Paris Club along with early repayments of the most expensive debt (Figure 10).
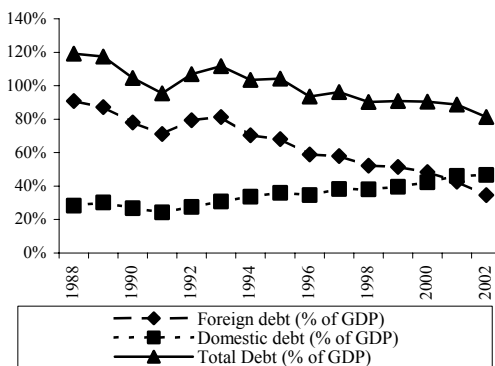

Figure 10: Morocco's total debt, 1988-2002 (source :Ministry of Finance)

A major criticism of these debt swap programs is that they require payment in local currency and hence merely convert foreign debt into a domestic one. Accordingly, Morocco's domestic debt has increased from 34.6 percent of GDP at the start of the debt conversion program to 46.6 percent of GDP in 2002, hence intensifying competition for domestic financial resources. Eventhough the financial authorities take pride in the fact that they managed to reduce their direct recourse to bank funds since the start of the reforms, they still control a significant proportion of them. Internal debt financing is increasingly dominated by government recourse to T-bills by tender which accounted for 88.7% of debt financing in 2002. However, banks are still the largest holders of these government papers, despite a significant increase in the share of UCITS[1] and of insurance companies and pension institutions, which implies that banks' overall contribution to domestic financing is still very significant (Figure 11). In fact, 20 percent of total banks' assets are currently held in the form of government securities.
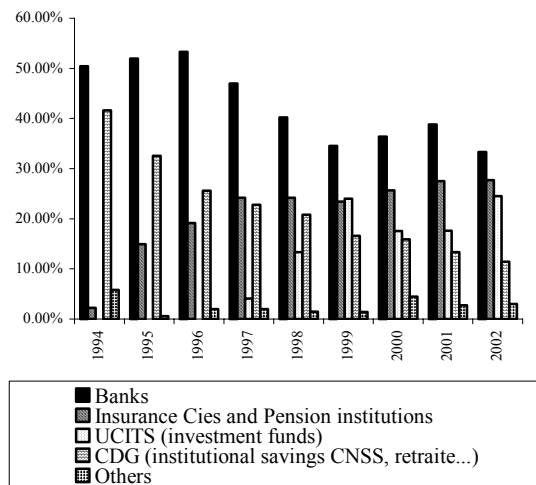

Figure 11: Government securities by holder, 1990-2000 (source :Bank AlMaghrib)

Besides from the public sector, banks have lent increasingly to individuals for consumption and housing purposes at the expense of equipment credit and exports loans (Figure 12).

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[1] Undertakings for Collective Investment in Transferable Securities (investment funds in the form of SICAVs and FCPs)
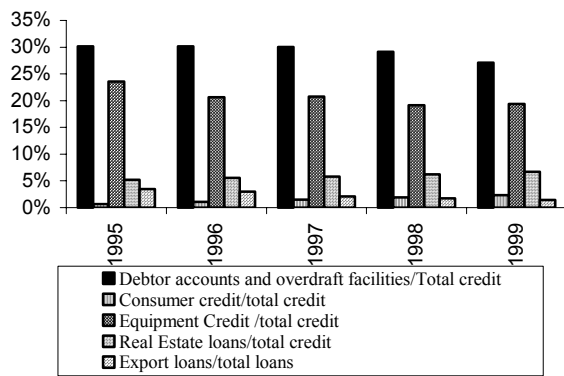
Figure 12: Bank lending according to purpose, 1990-2000 (source :Bank Al Maghrib)

Reforms undertaken over the past two decades may have succeeded in achieving decent macroeconomic stabilisation and increasing financial deepening, but they have failed so far in generating the level of productive investment required to enhance economic growth. Credit was more often allocated to sustain government's fiscal imbalances and to support households' consumption and housing expenses, than to promote private sector investment initiatives. Consequently, financial liberalisation in Morocco should not be expected to have significantly contributed to growth. The subsequent section empirically test this hypothesis based on a *b*VAR framework.

FINANCIAL DEVELOPMENT AND GROWTH: GRANGER CAUSALITY TESTING

There is a growing body of time-series investigations dealing with the causality issue between financial development and economic growth which suggests that the causality pattern is very country specific. The present section takes up the causality issue within the Moroccan context.

The Data

Three measures of financial development are employed. To account for the level of financial deepening in the economy, the ratio of liquid liabilities (M3) to GDP is used following the common practice in the relevant literature. This indicator is preferred to the traditionally used M2 to GDP ratio which is often criticised for its inability to reflect intermediaries' aptitude to channel funds from savers to borrowers. The second measure of financial development is domestic credit provided by the banking sector as a percent of GDP (BCR), which aims to indicate the extent to which the economy relies on a formal banking sector in overall (formal and informal) financial intermediation. However, this measures excludes non-bank financial intermediaries from the analysis.

Consequently, we also include the ratio of domestic credit to the private sector to GDP (PRIV) to improve on the other indicators used in the study. Because it excludes the public sector and includes all financial intermediaries, this indicator measures more accurately the role played by the overall financial sector in channelling funds to the private sector. Finally, we adopt the conventional practice of measuring growth using real GDP (GY).

Data are obtained from the World Bank's World Development Indicators 2002 and African Database 2003 CD-ROMs. All data are expressed in local currency units (the Moroccan Dirham) and the time span of the study ranges from 1970 to 2000.

The Econometric Methodology

The empirical analysis of the causality issue between the level of financial development and economic growth is conducted within a framework based on unit-root and cointegration testing. To test for Granger causality between two given variables x_{1t} and x_{2t}, we need to specify a bivariate vector autoregression (VAR) model of the following kind:

$$\begin{cases} x_{1t} = \mu_1 + \pi_{11}(L)x_{1t-1} + \pi_{12}(L)x_{2t-1} + \varepsilon_{1t} \ (1) \\ x_{2t} = \mu_2 + \pi_{21}(L)x_{1t-1} + \pi_{22}(L)x_{2t-1} + \varepsilon_{2t} \ (2) \end{cases}$$

where μ_1 and μ_2 are constant drifts and $\pi_{ij}(L)$ represent polynomials of order *k-1* in the lag operator L. Based on the test proposed by Granger [7], we can test for the null hypothesis that x_{1t} does not Granger cause x_{2t}, i.e. that the polynomial $\pi_{ij}(L)$ is equal to zero, using standard methods (F-test for example).

One requirement of the above specification is that variables should be stationary. Because macroeconomic time series often turn out to be non-stationary with unit roots, using the above system gives biased results. Consequently, Engle and Granger [5] have proposed to re-parameterise the model using an Error Correction Model (ECM) to account for the possible existence of cointegration between the variables:

$$\begin{cases} \Delta x_{1t} = \mu_1 + \gamma_{11}(L)\Delta x_{1t-1} + \gamma_{12}(L)\Delta x_{2t-1} + \alpha_1(\beta' X_{t-1}) + \varepsilon_{1t} (3) \\ \Delta x_{2t} = \mu_2 + \gamma_{21}(L)\Delta x_{1t-1} + \gamma_{22}(L)\Delta x_{2t-1} + \alpha_2(\beta' X_{t-1}) + \varepsilon_{2t} (4) \end{cases}$$

where $\beta' X_{t-1}$ is a linear combination of x_{1t} and x_{2t} representing the residuals from the cointegrating relationship entered at their first lag. The number of unit roots is important in determining the stability of the

system. When the variables are I(1), the ECM model can be re-written as follows:

$$\Delta X_t = \mu + \Gamma(L)\Delta X_{t-1} + \Pi X_{t-1} + \varepsilon_t \ (5)$$

where $X_t = (x_{1t}, x_{2t})'$, $\mu = (\mu_1, \mu_2)'$, $\Gamma(L) = \{\gamma_{ij}\}$,
$\Pi = \alpha\beta'$ and $\varepsilon_t = (\varepsilon_{1t}, \varepsilon_{2t})'$.

If the variables are not cointegrated, the 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 equation (5). We are now testing for the two sources of causation of x_{2t} by x_{1t}, one through the lagged dynamic term ΔX_{t-1} if $\gamma_{21}(L) \neq 0$, and the other through the lagged cointegration vector $\beta' X_{t-1}$ if $\alpha_2 \neq 0$.

The Empirical Investigation

Before being able to test for cointegration between the variables, we need to first establish the non-stationarity of the series by applying the Augmented Dickey-Fuller (ADF) unit root tests. These tests examine the null hypothesis that the considered variable has a unit root versus the alternative hypothesis that the variable is stationary. The results from the level and first difference unit root tests for each variable are summarised in table 1 below.

TABLE 1: Unit Root Test Results

Variable	GY	M3	BCR	PRIV
ADF	-2.157	-0.865	-1.649	-1.421
Variable	D(GY)	D(M3)	D(BCR)	D(PRIV)
ADF	-9.033*	-7.118*	-8.070*	-5.370*

*significant at the 1% level

The ADF tests indicate that all the financial variables along with the selected growth variable are integrated of the first-order I(1).

Now that we have established that all the selected variables are non-stationary and integrated to the same order, we can test for the presence of cointegration. The assumption here is that a pair of non-stationary variables may actually be cointegrated and possess a long-term (equilibrium) relationship despite the variables' tendency to drift extensively over time.

Before applying the Johansen procedure however, it is necessary to determine the lag length, k, of the *b*VAR

equation. We based our lag length decision on the Final Prediction Error (FPE) and the Akaike Information Criterion (AIC). These criteria suggest setting k=1 lag in the VAR equations with BCR and M3, and k=2 lags for the PRIV *b*VAR equation.

The cointegration tests are carried out based on Johansen efficient maximum likelihood procedure. The results of the tests are displayed in table 2.

TABLE 2: Johansen Cointegration Likelihood Ratio Test For The Financial Development Indicators and Economic Growth

Hypothesis					Critical Values	
Null	Alter.	Trace Test Statistics			5%	1%
		M3	BCR	PRIV		
r=0	r=1	9.241	10.295	11.470	15.41	20.04
r≤1	r=2	3.425	3.591	3.279	3.76	6.65

The cointegration tests indicate no cointegration at both levels of significance between real GDP and the financial development variables. The absence of a long-term stable relationship between finance and growth in the case of Morocco may be in part explained by the relative newness of financial sector reforms compared to other developing countries or by the choice of the financial variables themselves, as these may not be good proxies of the extent of financial transactions taking place outside the formal banking sector.

Because of the absence of cointegration between the financial variables and real GDP, we need to carry out causality tests using first differenced *b*VARs (table 3).

TABLE 3: Granger Causality Based on The First Differenced *b*VAR Framework

Null Hypothesis	Included obs.	χ^2	Prob
M3 does not Granger cause GY	29	1.28	0.2564
GY does not Granger cause M3	29	3.29	0.0695
BCR does not Granger cause GY	29	1.34	0.2466
GY does not Granger cause BCR	29	4.57	0.0325
PRIV does not Granger cause GY	28	5.42	0.0663
GY does not Granger cause PRIV	28	0.47	0.7901

The results from the Granger causality tests are quite different depending on which financial development indicator we use. First, they provide support for a short run causality relationship running from growth to finance when using the M3 and BCR indicators. The periods

during which the country experienced positive GDP growth appears to have been periods where both the broad money supply and the credit provided by the banking sector to the economy have expanded as a result of higher economic growth. This implies that economic growth has led to an increase in the size of the banks since the reforms.

The tests, on the other hand, suggest a causality running from finance to growth in the case of the PRIV indicator. This result provides some support in favour of the argument that, by directing credit to the private sector, financial liberalisation can enhance economic growth.

However, in the case of Morocco, aggregate data reveal that the increase of credit to the private sector was not coupled by an increase in private sector investment (Figure 8). A large share of credit extended to the private sector was in fact in the form of debtor accounts and overdraft facilities, housing and consumption loans. Hence, one possible result of financial liberalisation could be that, by making funds available to individuals in times of hardship (during the drought periods, for example), it contributed to reduce the volatility of private consumption over the reform period. The final part of this paper tests this hypothesis.

FINANCIAL DEVELOPMENT AND GROWTH: CONSUMPTION SMOOTHING

In order to evaluate the impact of financial development on consumption, we estimate the following simplified consumption function:

$$PCAPCON = \alpha_1 + \alpha_2 PCAPGDP + \alpha_3 PRIV + \varepsilon \quad (6)$$

where

PCAPCON = real per capita consumption;
PCAPGDP = real per capita GDP;
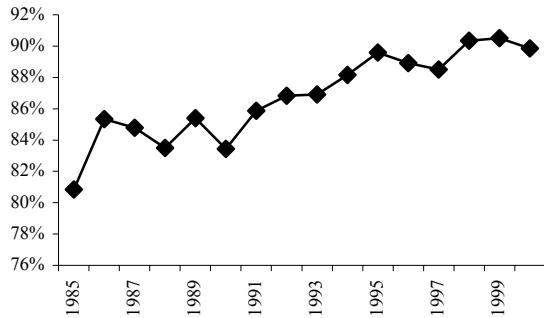PRIV = domestic credit to the private as a share of GDP.
ε = error term

Based on the existing evidence, we should expect the sign of the parameter of interest (α_3) to be positive, reflecting a positive relationship between consumption and the level of financial development. So does financial development favourably affect consumption? Table 4 below reports the estimated regression equations using domestic credit to the private sector share in GDP as a proxy for the level of financial development over the period 1975-2000. The equations were estimated by OLS using White heteroscedasticity-consistent standard errors and covariance. The variables were checked beforehand for

their level of integration and were all found to be integrated of order 1 (Unit-root test results are available upon request).

The striking immediate result from these per capita cointegrating relationships is that the measured mpc (α_2) exceeds unity in both reported cases. We return to this finding shortly. Equation 6 sets per capita (public and private) consumption as the dependent variable while Equation 7 substitutes per capita private consumption to the more general consumption measure used in equation 6. The purpose of this substitution is to determine whether private consumption was significantly affected by the expansion of credit to the private sector. Since this indicator may also include credit to public enterprises, a larger share of credit to the private sector in GDP may simply reflect a tendency to lend to public enterprises. If it is the case that the primary beneficiary of private credit expansion is the public rather than the private sector, α_3 should become insignificant in equation 7 below.

Overall, the results from equation 6 show that financial development in the form of a larger share of credit to the private sector in GDP is associated with enhanced overall real consumption. The estimated coefficient of financial development is positive and significant at the 1 percent level. Similarly, higher real income is associated with higher consumption. Indeed, the intercept coefficient is negative, although insignificant. This reflects the rising average propensity to consume (apc) in Morocco since the mid-1980s, which contradicts the common Keynesian view that the apc should decline with a rising income (Figure 13 below). A possible explanation for this finding (apparently confirming the implausibly high MPC estimates reported in the equations) is that migrants' remittances have formed a material part of *national disposable income* in Morocco (although they are excluded from the calculation of GDP as used in the equations). Private consumption appears to have been favoured both by these inflows and by improved access to credit supplies.

FIGURE 13: Average Propensity to Consume (1985-200)

We then test for the relationship between the level financial development and private consumption in equation 7 by substitution PCAPPVCON for PCAPCON.

$$PCAPPVCON = \alpha_1 + \alpha_2 PCAPGDP + \alpha_3 PRIV + \varepsilon \quad (7)$$

where all the variables are the same as in equation 6, except for the dependent variable, PCAPPVCON, which is now the real per capita private consumption.

The results from Equation 7 are summarised in table 4. They confirm the positive correlation between the share of domestic credit provided to the private sector in GDP and private consumption, implying that private credit expansion didn't benefit solely the public sector. Although the coefficient of PRIV is smaller than in Equation 6, it is still significant at the 5 percent level. This corroborates what available data on Morocco suggested, namely that the 1990's witnessed a surge in bank lending in the form of housing and consumer loans, which when combined with debtors accounts and overdraft facilities, accounted for 60 percent of total bank lending in 2002.

The level of per capita GDP appears to play a somewhat more important role in explaining the level of private consumption than the level of overall domestic consumption. The estimated coefficient α_2 is even higher in equation 7 than in equation 6, up from 1.04 to 1.18. Finally, the coefficient of the intercept remains negative but is now significant at the 1 percent level, reflecting an increasing private average propensity to consume over the past two decades.

Table 4: Estimated Regression Equations for the Impact of Financial Development on Consumption in Morocco (1975-2000);

	Equation 6	Equation 7
Intercept	-.138 (0.7056)	-1.83*** (0.0001)
PCAPGDP	1.004*** (0.0000)	1.180*** (0.0000)
PRIV	0.0341*** (0.0000)	0.0216** (0.0273)
$\overline{R^2}$	0.952	0.966
LM-SC	4.934 (0.2940)	1.657 (0.7984)
LM-HT	3.491 (0.6247)	4.471 (0.4837)
LM-FF	0.365 (0.5456)	0.376 (0.5395)

Notes: PRIV denotes the share of credit to the private sector in GDP. All variables in the equations are in their logarithm forms. The dependent variables are Real Per Capita Consumption (PCAPCON) in Equation 6 and Real Per Capita Private Consumption (PCAPPVCON) in Equation 7.
Figures in parenthesis denote p-values, and *, **, *** indicate an estimated coefficient which is significantly different from zero at the 10, 5 and 1 percent levels, respectively.
LM-SC reports results from the Lagrange Multiplier test of residual serial correlation, LM-FF indicates Ramsey's RESET test of functional form, and LM-HT denotes the White's test for residual heteroscedasticity.

CONCLUDING REMARKS

The empirical evidence suggests a short-run, spasmodic relationship between financial development and economic growth, the direction of which dependant on which financial development indicator is used in the bVAR equation. The conducted analysis fails however to find any stable long-term relationship between finance and growth in the Moroccan context, possibly because the financial reforms have not yet been able to enhance productive investment and long-term growth. The study however finds evidence supporting the argument that higher levels of financial development are associated with higher levels of consumption, both overall and private.

A major objective of the set of financial reforms conducted in Morocco over the past decade was to accumulate enough financial savings to finance productive investment endeavours and hence promote long term economic growth. Still, a close look at the Moroccan economy

reveals that enhanced investment has not taken place yet, and that growth performance is far from being satisfactory in a country where 20 percent of the population lives below the national poverty line. The Moroccan experience therefore suggests that financial development is a necessary but not sufficient condition for promoted growth. Better governance, more adequate labour law, and a legal system prone to protect creditors' rights and enforce laws and contracts need to be implemented first before any significant investment can be witnessed in the long run. At the policy level, this implies that, although it is difficult for policy makers to change legal codes and implement new contract enforcing laws, it is still worth doing so as the economic benefits may actually considerably outweigh the costs. Major efforts are being made in Morocco to improve the overall investment climate-new commercial courts are created, trade and labour laws have been or are being revised, regional investment centres are implanted in the major cities- but it will take several years before the impact of these reforms is actually felt in the economy.

A final concern raised by the consumption relationships reported in Table 4 is that migrants' remittances (which may help to account for the reported MPC values in the equations) have been encouraged by government initiative and, in part, by the financial reforms themselves. To the extent that both influences stimulate consumption spending (rather than investment) an implication is that the real exchange rate would tend to move against the traded goods sector. A later component of the research currently under way will investigate these linkages in Morocco. Remittances are an increasingly important (and sought-after) flow in developing economies and their implications for financial transmission in the receiving economies have yet to be fully explored.

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