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Working Paper

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FINANCIAL LIBERALIZATION AND DOMESTIC RESOURCE MOBILIZATION IN AFRICA: AN ASSESSMENT*

John Serieux **

1 INTRODUCTION

Sub-Saharan Africa's improving growth record in the first decade of the twenty-first century gives some hope that the potential for achieving the Millennium Development Goals will be enhanced by the improved economic conditions of the disadvantaged citizens of these countries. However, growth alone, even if it were much higher, would not be sufficient to ensure the achievement of the MDGs.[1] The resources required for achieving them are beyond the capacity of most of these countries at present, and in the immediate future.

Thus, for the region, the MDGs will be achievable only with substantial external resource inflows. In the immediate term, these resource inflows might also help to relieve the savings and foreign exchange constraints faced by most of these countries. However, movement to a higher growth and human development trajectory and eventual progress beyond such heavy dependence on external assistance require that these countries continue to develop their capacity for domestic resource mobilization. This is an area where progress is decidedly wanting for much of the region.

Since 1980, Africa has had the weakest domestic resource mobilization record of any region (see Table 1 of the Appendix). On average, foreign savings have been necessary for funding more than 35 per cent of the region's already low investment levels (see Table 2 of the Appendix). And, more to the point, these foreign resource inflows have come largely in the form of official development assistance rather than private capital flows.[2]

Given this record, if the region does not significantly improve domestic resource mobilization over the next decade, increased resource inflows pose a serious risk of entrenching (or institutionalizing) aid dependency—a situation in which high levels of external assistance perpetuate or exacerbate low savings rates. In this situation, countries lose the capacity to mobilize the resources necessary for generating even moderate growth in the absence of such aid.

Sub-Saharan Africa's capacity for domestic resource mobilization is not, however, a new concern. Improving the region's low rate of mobilization has been one of the policy concerns of adjustment programmes in general, and World Bank financial-sector adjustment loans in

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particular, since the mid-1980s. Under these initiatives (started and completed mostly in the 1986-1995 period), countries implemented programmes of financial liberalization aimed at removing restrictions on financial intermediation and other forms of resource mobilization.

The expected effects of these liberalization policies were an increase in the size of the financial sector relative to output (financial deepening), increases in private and overall savings and investment rates, improvements in the quality of private investment and a direct output effect due to increased involvement of formal finance.

However, as suggested by the averages in Table 2 in the Appendix, overall savings and investment performances in the post-reform period have been no more impressive than in the pre-reform decade and the story is even less encouraging with respect to measures of financial deepening. Clearly, despite financial liberalization and some growth in more recent years, resource mobilization in this region remains generally weak. This raises the question: what precisely was achieved by financial liberalization?

This Working Paper will seek to evaluate the impact of financial liberalization on domestic resource mobilization and growth in sub-Saharan Africa and identify important lessons from that experience. In particular, this Working Paper will try to ascertain whether financial liberalization had any effect on financial saving, overall savings and private investment; whether it elicited a public savings response and improved aid effectiveness; and, finally, whether it can be given any credit for the recent upturn in regional growth.

To that end, the next section presents the theoretical underpinnings of financial liberalization programmes and some of the arguments against liberalization. This is followed by a preliminary assessment of the performance of a group of 19 sub-Saharan economies (that have implemented domestic financial liberalization) based on a review of the broad movement of relevant macroeconomic variables. This is followed by a summary of past empirical results on financial liberalization in sub-Saharan Africa and the presentation of new results based on the econometric estimation of five equations relating to financial deepening, saving, investment and growth. The Working Paper concludes with an evaluation of the performance and likely implications of financial liberalization for the future growth and development performance of the region.

2 THE THEORETICAL UNDERPINNINGS OF FINANCIAL LIBERALIZATION PROGRAMMES

2.1 THE MCKINNON-SHAW (OR FINANCIAL LIBERALIZATION) THESIS

The justifications for policies of financial liberalization find their initial expression in the propositions contained in the independent (and nearly simultaneous) publications of Ronald McKinnon (1973) and Edward Shaw (1973). These propositions, taken together, have since become known as the McKinnon-Shaw hypothesis or the financial liberalization thesis. (The latter term will be preferred in this paper).

In a nutshell, these authors argued that the financial sectors of most developing economies were repressed by misguided financial and monetary policies, overregulation of

the financial sector and other forms of public sector intervention, and excessive public borrowing from the financial system. The consequences of this repression could be seen in:

- Administered low nominal interest rates, often resulting in negative real rates;
- Low ratios of real money to national income;
- Small and oligopolistic financial sectors (relative to the size of the economy) dominated by intermediation in short-term financial assets;
- Dual economies with capital-intensive modern sectors served by cheap foreign exchange and low-interest finance and labour-intensive traditional sectors left to be served by informal finance;
- Large government deficits that pre-empted the resources of the formal financial sector and generated inflation (by inducing excess money creation).

The outcome of that repression was low savings and investment rates and retarded growth.

MacKinnon and Shaw argued that the solution to this problem lay in a liberalized financial sector able to more efficiently and extensively intermediate between savers and investors. However, at both the theoretical and empirical levels, they described slightly different means through which improved financial sector performance would have real economic effects.

McKinnon (1973) argued that the limited capital market development of developing countries meant that firms were largely constrained to self-finance at the same time that indivisibilities in physical capital required the accumulation of savings prior to physical capital accumulation.[3] Quasi money holdings were the main instruments through which firms accumulated savings prior to lumpy investment. Thus, the accumulation of broad money balances generated greater investment (this is McKinnon's 'conduit' effect of money balances). Effectively, the accumulation of money balances and physical capital accumulation were complementary.[4]

Moreover, policies that encouraged the accumulation of real money balances (such as high real deposit rates) led to higher levels of financial savings, total savings and investment relative to total output. An additional advantage of high real deposit rates would be the diversion of resources from assets with low rates of return to assets with higher rates of return (through financial saving), leading to an increase in the overall productivity of capital.

Shaw (1973) argued that increased financial intermediation provided the impetus for growth more directly. Liberalization would result in an expanded, improved and integrated financial sector that would lead to:

- **An increase in the savings rate** from the diversion of potential savings from inflation hedges, capital flight and the like;
- **An increase in the rate of investment** by facilitating more lumpy investment; and
- **A direct enhancement to growth** via improved financial technologies.

These growth-inducing consequences of increased monetization and financial sector intermediation are referred to as Shaw's 'intermediation' effect.

Financial liberalization, in the view of both authors, meant:

a) Market-determined interest rates;

b) Greater ease of entry into the banking sector to encourage competition;

c) The elimination of directed credit programmes;

d) Reduced fiscal dependence of the state on credit from the banking system (to allow for greater expansion of credit to the private sector);

e) The integration of formal and informal markets;

f) A movement towards equilibrium exchange rates and, eventually, flexible exchange rate regimes with open capital accounts.

Initiatives (a)-(e) are, effectively, domestic financial liberalization, while (f) extends liberalization to external finance. The focus of this Working Paper will be exclusively on domestic financial liberalization.

Though the causal links between liberalized finance and growth suggested by McKinnon (1973) and Shaw (1973) were different, they were not mutually exclusive. Molho (1986) showed that, at a theoretical level at least, Shaw's 'intermediation effect' would be a more immediate consequence of liberalization, while McKinnon's 'conduit effect' was likely to be a more medium to long-term effect.[5]

2.2 DIFFERING PERSPECTIVES - MAINSTREAM

Campbell and Mankiw (1989; 1990; 1991) posited that a substantial proportion of households in both developed and developing countries are liquidity-constrained and thus unable to smooth consumption across time. As a consequence, these households' consumption is more highly dependent on current income than would be predicted by the life-cycle/permanent-income hypothesis.

If this condition does, in fact, hold, a number of authors have argued (and attempted to demonstrate) that a reduction in the number of liquidity-constrained households, as a consequence of financial liberalization, would result in a fall in the savings rate (Bayoumi, 1993; Vaidyanathan, 1993; Jappeli and Pagano, 1994). In effect, if the Campbell-Mankiw condition holds (meaning that a significant proportion of pre-liberalization households are liquidity-constrained), the effect of liberalization on the private savings rate would be negative because the increased access of a significant number of households to capital markets will result in a consumption boom.

Ogaki, Ostry and Reinhart (1996) argued that, if a substantial proportion of households have income near the subsistence level, the intertemporal elasticity of substitution will approach zero. Under these conditions, the private savings rate will not be sensitive to the real rate of interest. Thus, financial liberalization, which is expected to result in a rise in the real interest rate, will have no effect on the private savings rate. But in countries where most households have incomes that are substantially above subsistence, it would be reasonable to

expect that the private savings rate will rise with liberalization as a consequence of the rise in the real rate of interest. Thus, according to this model, low-income countries (a group to which the majority of sub-Saharan African countries belong) are unlikely to experience a private savings effect from financial liberalization.

Working within the paradigm of new information economics, Stiglitz (1994) took issue with the financial liberalization thesis as well. He suggested that seven market failures are pervasive in financial markets:

1. Monitoring of the financial system as a public good;
2. Externalities of monitoring selection and lending;
3. Externalities of financial disruptions;
4. Missing and incomplete credit and insurance markets;
5. Imperfect competition;
6. Failure to meet the information criteria for efficient competitive markets;
7. The behaviour of uninformed investors;

In this context, several types of government intervention in the financial sector could be Pareto improving. Stiglitz (1994) argued therefore that while government intervention (beyond financial sector regulation) could not guarantee a more productive and efficient financial sector, a partially repressed financial sector clearly had the capacity to outperform more liberalized finance. It should therefore not be assumed *a priori* that liberalization will bring a net improvement in financial sector or real sector performance.

2.3 DIFFERING PERSPECTIVES - HETERODOX

The proposition that a less restricted and expanded formal financial sector would have salutary consequences for domestic resource mobilization was not wholly accepted by many heterodox economists. In particular, economists working in the neostructuralist tradition argued that, contrary to the presumption of the financial liberalization thesis, the formal financial sector was not necessarily the most efficient means of financial intermediation in developing economies. They suggested, instead, that the informal financial sector (curb market) was a more efficient conduit of savings (Taylor, 1983; Van Wijnbergen, 1983; Buffie, 1984). In their view, while financial liberalization would lead to an increase in the share of savings intermediated through the formal financial sector, if that increase came at the expense of the informal financial sector, the net effect on output and, presumably, investment would be negative.

These models stressed the working capital effect, in which the loss of working capital from informal finance would not be fully compensated for by the increase in such capital from the formal financial sector—leading to a fall in output. Also Implicit in those models, and more directly relevant to the resource mobilization debate, was the suggestion that informal finance was better at directing credit to productive investment (particularly nascent and small enterprises) than the formal financial sector. Therefore, the productivity effect suggested by McKinnon (1973) would not be forthcoming and Shaw's 'intermediation effect' of formal

financial sector expansion would be nullified because it represented a shift in emphasis from more efficient to less efficient modes of intermediation rather than an outright expansion.

New Keynesian economists also challenged the presumptions of the financial liberalization thesis (Burkett and Dutt, 1990; Dutt, 1990-91; Akyuz, 1995). The clearest attempt at a rebuttal of the financial liberalization thesis came from Akyuz's (1995) three-sector model, which differentiated among households, private firms and government. According to that model, the high interest rates of liberalized finance would benefit deposit-holding households (rentiers), who are lower savers than firms. Moreover, the higher cost of debt would compromise firm profits. The private savings rate would fall because high-saving firms would face lower profits, while low-saving rentiers would receive a larger proportion of total income. Public savings would also contract as government revenue was compromised by lower taxes on interest income (as part of liberalization measures), while higher interest payments on government debt would increase spending.

Thus, while the model accepted the McKinnon-Shaw presumption that an increase in deposit rates (and other liberalization measures) would increase the financialization of savings (financial deepening), such measures were also expected to lower private savings (because of the shift in income from firms to rentiers) and government savings (because of lower tax revenues and higher interest payments on debt). In effect, financial liberalization would increase financial savings but lower overall savings. The potential productivity effect of financial liberalization was not addressed in this model.

The most thorough repudiation of the financial liberalization thesis, however, comes from a contribution to the debate on finance and development that preceded the propositions of McKinnon (1973) or Shaw (1973). Gerschenkron (1962) argued that in the less-developed (the most backward) economies, the banking system would not have the capacity to mobilize the resources necessary for rapid economic transformation.[6] Such a task would require institutional arrangements beyond the banking sector. In Gerschenkron's world, financial liberalization would be secondary to the challenge of initiating rapid, sustained growth for the majority of African economies.[7]

Gerschenkron (1962) arrived at this conclusion by juxtaposing the needs of less-developed economies against the potentialities of the banking system. In his view, the most backward economies face not only a large deficit in accumulated capital but also large technological and institutional gaps, as well as a shortage of entrepreneurial talent (Gerschenkron, 1962: 16). In this environment, the banking system would not only be unable to mobilize a sufficient magnitude of resources (because of both limited savings potential and insufficient trust in the banking system) but would also be unable to provide the co-requisites of technology transfer and entrepreneurship (Gerschenkron, 1962: 19-20).

These circumstances typically mandated the use of 'special institutional factors' to mobilize the additional resources and technology as well as reliance on entrepreneurial guidance (Gerschenkron, 1962: 354). Active government involvement in the industrialization process, including savings mobilization (as in the case of Russia and Hungary), were identified as examples of such necessary special institutional arrangements.[8]

2.4 SYNOPSIS

The Financial liberalization thesis argues, essentially, that domestic financial sector liberalization will improve resource mobilization by increasing or improving:

a) The financialization of savings;

b) The rate of savings (both private and public) and, by implication, investment ;

c) The quality of investment;

d) The financing of production.

As a result, economic growth will be augmented indirectly by increases in the level and quality of investment and directly by the increased use of improved financial technology.

None of the alternative perspectives directly challenged the likelihood of increased financialization of savings from financial liberalization (though, from Stiglitz's perspective, it is not a necessary result and the opposite is possible). However, several of the alternative theoretical models argued that the savings rate would fail to increase, or even fall. The reasons encompass the income distribution effect (Akyuz, 1995), liquidity constraints (Campbell and Mankiw, 1989) and the prevalence of subsistence consumption (Ogaki, Ostry and Reinhart, 1996).

The proposition of improved quality of investment is contested by the neostructuralists, who argue that informal finance dominates formal finance and, to a lesser extent, by Stiglitz's argument that partial repression could dominate full liberalization. The neostructuralists also argue that formal finance is not necessarily more efficient then informal finance. However, Gerschenkron's contribution, if correct, makes those specifics secondary. He argues, in effect, that financial liberalization would not address the larger problem of the lack of sufficiency and scope in resource mobilization faced by these countries.

3 RESOURCE MOBILIZATION IN SUB-SAHARAN AFRICA: A PRELIMINARY ASSESSMENT

In 1980, the average nominal (prime) rate for bank loans in a sample of 20 sub-Saharan African countries was 11.3 per cent and, given inflation rates, the average *ex post* real rate was -4.7 per cent.[9] By comparison, in 2000 the average nominal lending rate for the same group of countries was 22.5 per cent and the *ex post* real rate stood at 15.5 per cent. Clearly, over this period much had changed. Indeed, a majority of sub-Saharan African countries have moved from regimes of repressed finance—with low, administered interest rates, directed credit programmes and related interventions, and heavy government borrowing from the banking system—to liberalized financial sectors in which interest rates are determined by the market and bank lending is largely free of non-prudential regulations.

When most sub-Saharan African countries gained political independence in the early to mid-1960s, the formal financial sectors inherited from the colonial period were largely limited to enclave-type banking, designed to provide finance for a few large formal sector enterprises and limited to large urban centres. In their attempts to generate rapid growth and expand the

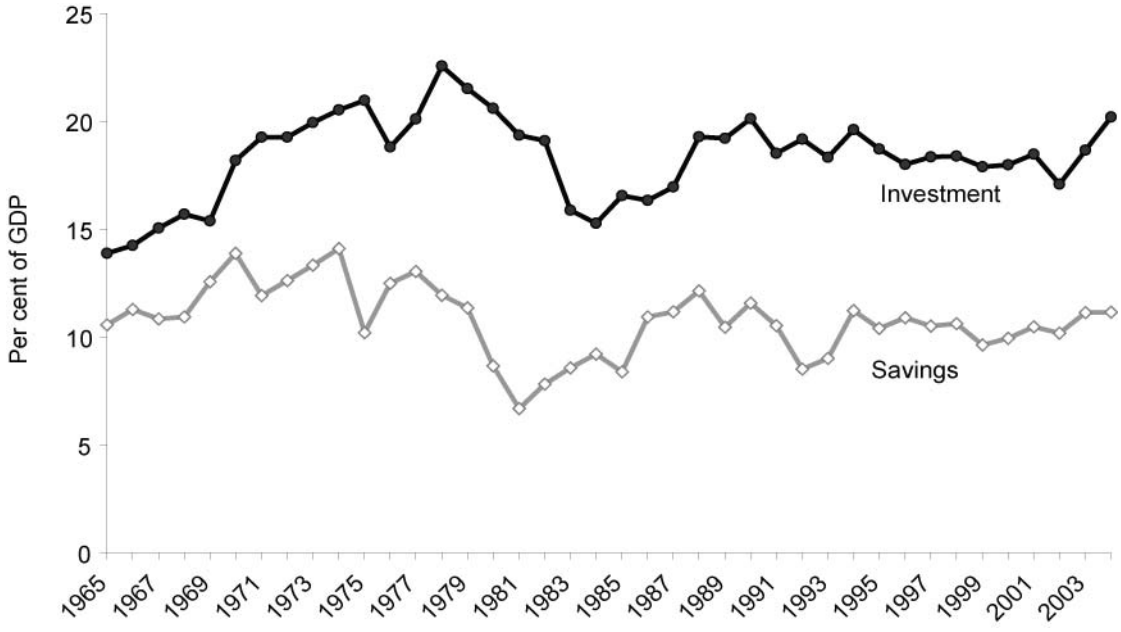
benefits of growth to broader sections of the population, the new governments sought to ensure the provision of cheap credit to nascent enterprises, state-owned enterprises, critical sectors of the economy (or politically strong constituencies), and the government budget. There were more than one approach to this challenge but, invariably, countries' policy choices led to repressed finance (Brownbridge and Harvey, 1998).

If the definition of financial liberalization is restricted to domestic financial sector liberalization (as is done here), most of the countries that can now claim liberalized financial sectors enacted liberalization measures during a period beginning in the mid-1980s and ending in the mid-1990s. Thus, although both the actual timing and duration of these liberalization periods varied greatly across countries, the region's financial history (in the post-independence era) can be roughly subdivided into three policy regimes: repressed finance in the 1960s, 1970s and early 1980s; a transition period from the mid-1980s to the mid-1990s; and a regime of mostly liberalized finance from the mid-1990s onward. Examining the performance of relevant aggregates for a group of 19 countries that experienced all three financial regimes suggests that the nature of the variation in performance across regimes is far from clear.[10]

Despite the increasingly interventionist approaches in the immediate post-independence period for the 19 countries considered here (and for the region in general), savings, investment and financial ratios experienced steady improvement up to the advent of the first oil crisis in 1974-75 (see Table 2 of the Appendix and see Figure 1). Starting from a very low average of just over 10 per cent in 1965, average savings rates had exceeded 14 per cent by 1974 for the 19 countries (Figure 1). Investment levels improved similarly, from less than 15 per cent in 1965 to well over 20 per cent, on average, by 1974.

FIGURE 1

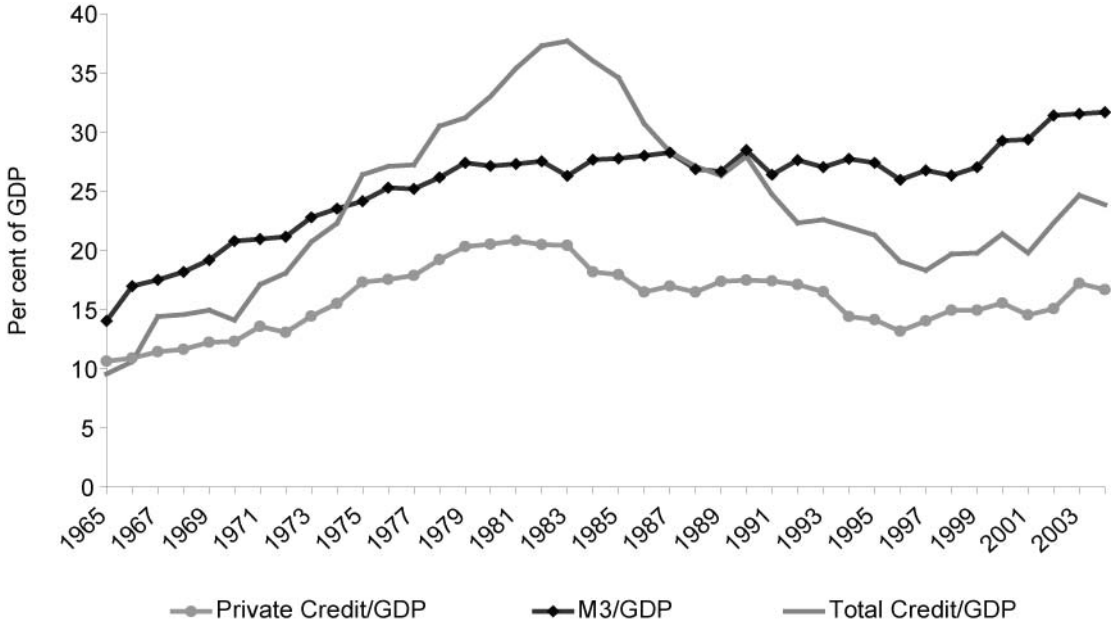
Gross Domestic Savings and Investment for 19 African Countries (Unweighted Averages)



Sources: UN Common Database (United Nations); World Development Indicators (The World Bank).

FIGURE 2

Broad Money and Credit Ratios for 19 African Countries (Unweighted Averages)



Sources: UN Common Database (United Nations); World Development Indicators (The World Bank).

Broad money (M3) and credit provided to the private sector were also increasing as proportions of GDP, indicating financial deepening (Figure 2). However, the growth of overall credit was significantly more rapid than both aggregates—the likely consequence of the increasing use of (central and commercial) bank credit to finance public-sector budget deficits. These changes were occurring in an environment in which aid was generally increasing (despite contractions in 1969 and 1970) but the flow of capital to the private sector remained negligible, with no growth trajectory (Figure 3).

The first oil crisis (1974-75) appeared to have brought an end to this harmonious expansion of real ratios. That crisis coincided with (and, in all likelihood, was the cause of) an immediate and substantial fall in the average domestic savings rates. The second oil crisis (1979-81) saw a similar and larger contraction (Figure 1). Thus, by 1980, the average gross domestic savings rate for this group of countries had fallen well below 10 per cent. Savings recovered somewhat in the first half of the 1980s, but has hovered around 10 per cent since then.

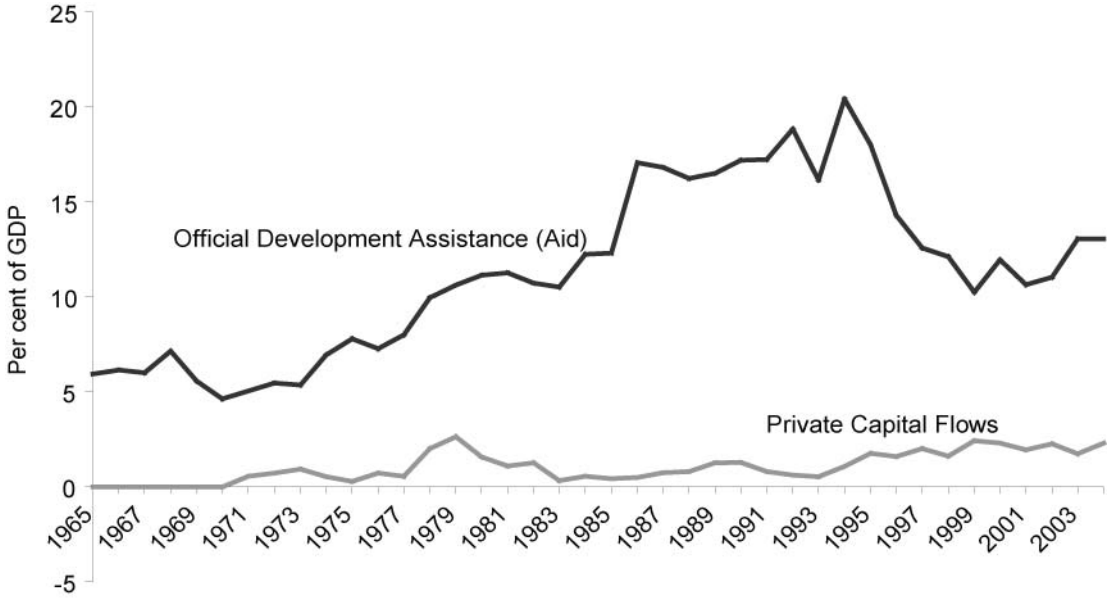
Investment did not decline immediately with savings (during the oil crises). It retained an upward trajectory until 1978, when it began a downward trend that continued until 1985. Thereafter, it recovered to the levels of the early 1970s, but has since remained mostly below 20 per cent, with no clear trend.[11]

Surprisingly, the essential collapse in domestic savings rates across the region after the first and second oil crises, and the subsequent collapse of investment as well, were not initially reflected in financial ratios. On average, both M3 and credit to the private sector (relative to total output) increased steadily into the mid-1980s (Figure 2). Total credit continued to increase much faster than credit to the private sector and also contracted more sharply thereafter (a likely consequence of the strict credit controls and government spending restrictions instituted under structural adjustment programmes). However, private credit

relative to output did eventually fall from the mid-1980s to the mid-1990s, and has yet to show an unambiguous sign of recovery. The liquidity ratio (M3/GDP) was stagnant from the mid-1980s to the late 1990s but has shown signs of recovery since then.

FIGURE 3

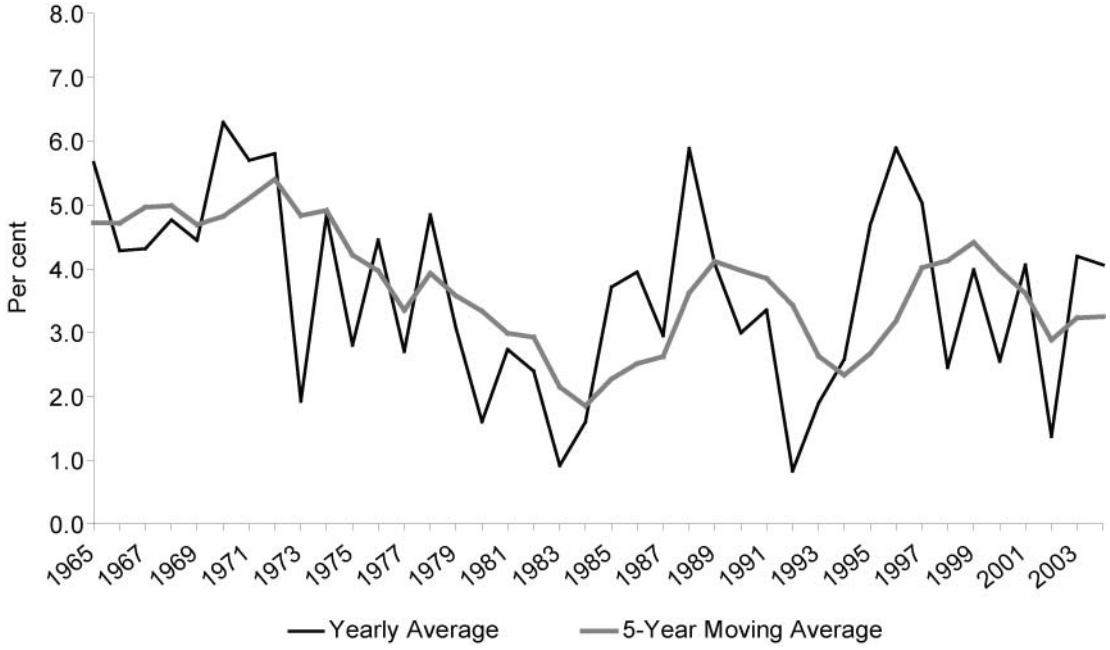
Aid Receipts and Private Flows for 19 African Countries (Unweighted Averages)



Sources: UN Common Database (United Nations); World Development Indicators (The World Bank).

FIGURE 4

Average Growth Rates for 19 African Countries



Sources: UN Common Database (United Nations); World Development Indicators (The World Bank).

Clearly, the evolution of savings, investment and financial aggregates does not exhibit patterns that suggest clear differences across financial policy regimes. The most pronounced and consistent growth in all aggregates occurred during the period of financial repression. However, the decline in those aggregates also occurred during financial repression.

The transition period (from repressed to liberalized finance) was marked by stagnation or decline in most aggregates. An initial recovery of investment during the late 1980s was not sustained. Only the average liquidity ratio demonstrated a pattern of consistent growth during the period of liberalized finance. Across these policy regimes these countries have continued to be much more dependent on official inflows from abroad than private inflows (Figure 3). Also, while the extended decline in growth that began in the early 1970s came to an end in the mid 1980s, this group of countries has not been able to recapture and sustain the five per cent growth rates reached before that decline (Figure 4).

It is evident that the story of the demise and stagnation of domestic resource mobilization in sub-Saharan Africa is more nuanced than a simple story of financial repression and correction through liberalized finance. The remainder of this Working Paper will be devoted to determining, more precisely, what effects, if any, can be attributed to the institutional settings of financial policy regimes or to the movements in some of the policy variables that vary across regimes.

4 THE EMPIRICS OF FINANCIAL LIBERALIZATION IN SUB-SAHARAN AFRICA: PAST RESULTS

Table 3 of the Appendix presents the results of past investigations of the relationship between a) financial liberalization and financial deepening, savings and investment, and b) between financial deepening and growth for the sub-Saharan African region (or specific countries in that region).

All of the investigations that examine the relationship between financial liberalization and financial depth report some form of financial deepening as a consequence of financial liberalization. However, the link to growth via financial deepening is not as unanimously confirmed. Only three of five investigations of this issue (Kasekende and Atingi-Ego, 1999; Ghirmay, 2004; Ndebbio, 2004) find a positive link and one (Akinboade, 2000) finds a negative link. While the balance of evidence, to this point, would seem to support a positive effect of financial deepening on growth, that link is not uncontested.

Given the suggestion of a link between financial deepening and growth, one would expect, as proposed by the financial liberalization thesis, that the greater part of the growth effect would occur through increased savings and/or increased investment. This part of the thesis, however, receives no support from past investigations. None of the investigations that searched for a relationship between financial liberalization and savings found one, and the same is true for investment. Apparently, if financial liberalization has a growth effect, the more likely route is its effect on the quality of investment or the greater availability of working capital.

5 THE EMPIRICS OF FINANCIAL LIBERALIZATION IN SUB-SAHARAN AFRICA: NEW RESULTS

As already noted, the period of liberalized finance coincides with a resumption of growth in the liquidity ratio for the sample of 19 sub-Saharan African countries examined here, but there

was no discernable savings, investment or growth effects for that period. However, much more was happening within and across these countries than financial policy changes. It would therefore be premature to arrive at any conclusions about the effect of financial liberalization (or lack thereof) without an attempt to untangle the effects of financial policy changes from other changes within those economies.

That more precise 'disentanglement' will be attempted through the estimation of five behavioural equations that attempt to discern the main influences on five aggregates of interest: the liquidity ratio, private credit relative to output, the savings rate, the investment rate and the rate of growth of output.

The five equations defined and estimated have as their dependent variables:

- The rate of change in the liquidity ratio (M3/GDP) —measured as the difference in the log of the liquidity ratio;
- The rate of change in the ratio of private sector credit to income—measured as the difference in the log of the ratio of private sector credit to output;
- The private savings to output ratio;
- The private investment to output ratio;
- The growth rate of output.

These equations are estimated using pooled time series data for the 19 Sub-Saharan African countries listed previously.

5.1 DATA ISSUES

The sample period of interest, though covered unevenly across countries, was the post-colonial period (for most countries) from 1965 to 2004. Within this period, three financial policy regimes were identified, with the exact dates of transition varying across countries.

The first regime was the repression period starting in 1965 and ending the year preceding the implementation of a programme of financial liberalization. For the purposes of this investigation, a liberalization programme is considered to have commenced when at least some interest rates were liberalized or some directed credit programmes were eliminated (with the intent view that further liberalization would be carried out).[12]

The second financial policy regime was the liberalization or transition period, identified in Table 4. This was the period over which most liberalization policies were introduced. From a policy perspective, this period is distinguishable from the repression period in that many financial repression policies were being discontinued or phased out, but it is also distinguishable from the following (liberalized) period because some of the policies of financial repression would still have been in place and potential responses to liberalization policies need not have materialized in this environment of policy ambiguity.

The third period covers the years after the completion of domestic financial sector liberalization and stretches until 2004. This period varied from a scant 11 years for Uganda (1994-2004) to 17 for The Gambia (1988-2004).

TABLE 4

The Record of Financial Liberalization in Africa

Country	Liberalization or Transition period	Banking crisis periods
Benin	1989-93	1988-90
Botswana	1989-91	
Burkina Faso	1989-93	1988-94
Cote d'Ivoire	1989-93	1988-91
Gambia, The	1985-87	
Ghana	1987-90	1982-89
Guinea-Bissau	1989-93	1995-99
Kenya	1990-93	1985-89 1992-95
Madagascar	1988-90	
Malawi	1987-88	
Mali	1989-93	1987-89
Mauritius	1981-93	1996
Niger	1989-93	1983-88
Senegal	1989-93	1988-91
Tanzania	1991-93	1987-95
Togo	1989-93	1993-95
Uganda	1992-94	1994-99
Zambia	1992-93	1995
Zimbabwe	1990-93	1995-99

Sources: Abiad and Mody (2003); Ahmed (2006); Brownbridge (1998); Brownbridge and Gayi (1999); Bundoo and Dabee (1999); Chirwa and Mlachila (2004); Harvey (1998); Kasekende and Atingi-Ego (1999); Maimbo and Mavrotas (2003); Naudé (1996); Ngugi (2000); Rather (1998); Serieux (1997); Setlhare (2004); Sowa and Acquaye (1999).

The data used in the equation estimates, and the tables and graphs above, were derived mainly from the World Bank's World Development Indicators, the International Monetary Fund's International Financial Statistics and the United Nation's Common Database. However, additional data, particularly on private and public investment, were obtained from the International Monetary Fund's World Economic Outlook Database. Because of incomplete data, the equations for liquidity (M3) and private sector credit do not include Guinea Bissau or Zimbabwe. Also, data on private savings before 1980 were available only for eight countries (Cote d'Ivoire, Ghana, Kenya, Mauritius, Nigeria, Senegal, Togo and Uganda) so the results for that period should be treated with appropriate caution.

5.2 GROWTH IN THE LIQUIDITY RATIO

The equation for the growth in liquidity, which attempts to capture the determinants of the rate of financial deepening, reflects the presumptions of the financial liberalization thesis.

$$\Delta \frac{M3}{Y} = f\left(\left[\frac{M3}{Y}\right]_{-1}, g, y_{pc}, i, \pi, Urban, \frac{ODA}{Y}, Crisis\right)$$

Since, according to those presumptions, the liquidity ratio increases as savers increase deposits in anticipation of lumpy but productive future investment in physical capital (i.e., McKinnon's conduit effect), and in response to signals of the potential return on such investment, such as the growth rate of output (g) and the (nominal) expected rate of return on deposits (i), which are predicted to positively affect the rate of increase in the liquidity ratio. Inflation (π) will

lower, however, the real rate of return and thus slow down the rate of increase in deposits relative to output. It could also signal economic instability, which would further discourage the use of formal financial saving instruments (versus safe harbours such as gold and property).[13]

Other presumed influences on the growth of liquidity are the level of per capita output (y_{pc}) and the current liquidity ratio (*M3/Y*) —reflecting, respectively, a greater willingness to overcome the transactions cost involved in accessing formal sector finance and the decreasing net benefit from further additions to total liquidity relative to income (Goldsmith, 1966).

Also included are: 1) the degree of urbanization (*urban*), reflecting the strong urban bias in terms of access to banking institutions in the region (Mehran *et al*., 1998), and 2) the ratio of aid to GDP (*ODA/GDP*), reflecting the possibility that flows of official development assistance (ODA) could encourage the use of formal finance (Nkusu and Sayek, 2004). In this equation and the following, the inclusion of an aid variable is not compelled by the model. Rather, it allows us to determine how changes in aid ratios (which are very important for this region) affect these important financial and real aggregates. A dummy variable for financial crisis periods (*Crisis*) attempts to capture any depressing effect on liquidity growth from financial crises (see Table 4).

Dummy variables are used to test the presumption that financial deepening was more rapid after financial liberalization and was less so under the regime of financial repression. Allowance is made for changes in the way that those factors could have influenced the rate of growth in liquidity across financial policy regimes by estimating equations for the repression and liberalized periods separately. All versions of this equation are measured in log-linear form (with the dependent variable measured as the rate of change in the log of the liquidity ratio). The results are reported in Table 5.[14]

The estimation results indicate that, as expected, the nominal interest rate (which is proxied here by the central bank discount rate because of limited data on deposit rates, which would have been the preferred variable) had a strongly significant positive effect on growth in the liquidity ratio, while inflation had a strongly negative effect. However, this was true only when the equation was estimated for the full sample period or the liberalized period. When this equation was estimated for the repression period, these variables were not significant. Instead, the rate of growth in the liquidity ratio appeared to have been determined mostly by per capita income (measured in $PPP).

In the equations covering the full sample period, the coefficient for the financial repression period dummy was positive and significant (at the one per cent level), and that for the financial liberalization period was negative and also significant (at the five per cent level). The implication is that the underlying tendency was towards *slower* growth in liquidity under liberalized finance than under repressed finance![15] This is surprising since the liquidity ratio grew rapidly in the late 1990s and early 21st century. The overall results from the equation covering the liberalized period seem to suggest that this growth might have been due mostly to the extremely high real interest rates of that period (high deposit rates and low inflation rates) and perhaps the revival of the growth of ODA.

In general, these results are not particularly encouraging. While they suggest that under liberalized finance, growth in the liquidity ratio has become much more sensitive to changes in other economic and structural factors (e.g., interest rates, ODA levels and urbanization ratios in particular), the broader institutional and policy environment implied by liberalized finance seems to have been a net drag, rather than an impetus, for growth in the liquidity ratio.

TABLE 5

Liquidity Ratio (Fixed Effects, IV Estimates)

Dependent Variable: ΔLn M3/GDP				
Explanatory Variables	**Full Sample (65-04)**		**Repression Period**	**Liberalized Period**
	Equation 1	**Equation 2**		
Constant	0.032** (0.031)	0.048*** (0.001)	0.074*** (0.009)	-0.108** (0.012)
Ln M3/GDP Lagged	-0.200*** (0.000)	-0.196*** (0.000)	-0.314*** (0.000)	-0.335*** (0.000)
Ln GDP Growth	0.114 (0.264)	0.120 (0.265)	0.130 (0.432)	-0.054 (0.769)
Ln Inflation	-0.064*** (0.000)	-0.059*** (0.000)	-0.054 (0.255)	-0.086*** (0.001)
Ln GDP Per Capita (PPP$)	0.012** (0.021)	0.012** (0.034)	0.024** (0.035)	-0.008 (0.561)
Ln Central Bank Discount Rate	0.076*** (0.002)	0.073*** (0.003)	-0.094 (0.236)	0.106*** (0.000)
Ln ODA/GDP	-0.012 (0.618)	-0.033 (0.184)	0.072 (0.172)	0.120*** (0.005)
Ln Urbanization Ratio	0.031 (0.533)	0.009 (0.846)	0.063 (0.591)	0.650*** (0.000)
Banking Crisis Years (Dummy)	-0.003 (0.421)	-0.005 (0.223)	-0.061** (0.043)	-0.002 (0.788)
Period of Repressed Finance	0.013*** (0.002)			
Period of Liberalized Finance		-0.010** (0.022)		
Reset (Specification) Test	0.93 (0.397)	0.80 (0.450)	1.87 (0.156)	1.69 (0.188)
Haussmann (χ^2) Test of equality of fixed and random effect estimates	46.80*** (0.000)	45.74*** (0.000)	41.89*** (0.000)	35.20*** (0.000)
Number of Observations	599	599	323	202

Notes: Endogenous variables: Output growth, inflation. Instruments: Lagged Output, Export growth, lagged inflation, lagged money growth, all in logs.

Ln x implies $\log_e(1+x)$ when x is proportion and $\log_e(x)$ when x is an index or absolute value.

* Indicates significance at the 10% level; ** Indicates significance at the 5% level;
*** Indicates significance at the 1% level;.

5.3 GROWTH IN THE RATIO OF PRIVATE SECTOR CREDIT TO OUTPUT RATIO

The equation for the rate of growth in private credit relative to output is another means of determining the financial deepening effect of liberalized finance. According to the financial liberalization thesis, liberalization should result in greater private sector access to formal finance because of the increased bank liabilities in the form of deposits (*M3/Y*) and reduced lending to the public sector (*PBSC/Y*). The measured equation in its generalized form is:

$$\Delta \frac{PVSC}{Y} = f\left(\left[\frac{PVSC}{Y}\right]_{-1}, \Delta\left[\frac{PBSC}{Y}\right], \Delta\left[\frac{M3}{Y}\right]_{-1}, g, r, Crisis\right)$$

Growth in private sector credit is expected to be: (a) positively related to the real rate of interest (r) (rather than negatively, as presumed by most Keynesian and neoclassical models); (b) positively related to the availability of bank deposits (M3/Y); and (c) more responsive to indicators of the attractiveness of investment (represented by the rate of growth in output (g)) than before liberalization. In addition, the rate of growth in private sector credit is presumed to be negatively related to the past private sector credit ratio (assuming a diminishing net benefit or falling investment quality) and to the rate of growth in public sector credit (which is regarded as a substitute in aggregate terms). As was the case for the previous equation, a log-linear specification is employed using fixed effects and an instrumental-variables estimation method (Table 6).

TABLE 6

Private Sector Credit Growth (Fixed Effects, IV Estimates)

Dependent Variable: Δ Ln Private Sector Credit/GDP Ratio				
Explanatory Variables	**Full Sample**		**Repression Period**	**Liberalized Period**
	Equation 1	**Equation 2**		
Constant	0.001 (0.936)	0.007 (0.406)	0.008 (0.508)	0.034*** (0.001)
Ln Private Sector Credit/GDP Lagged	-0.086*** (0.000)	-0.080*** (0.000)	-0.132*** (0.001)	-0.208*** (0.000)
Δ Ln Public Sector Credit/GDP	-0.011 (0.874)	-0.012 (0.871)	0.093 (0.453)	-0.254*** (0.007)
Δ Ln M3/GDP Lagged	-0.061 (0.226)	-0.059 (0.259)	-0.001 (0.985)	-0.039 (0.528)
GDP Growth	0.260* (0.098)	0.258 (0.152)	0.402 (0.107)	0.185 (0.396)
Ln Real Central Bank Discount Rate	0.015*** (0.003)	0.013*** (0.008)	0.626 (0.588)	7.688*** (0.000)
Banking Crisis Years	-0.001 (0.861)	-0.003 (0.422)	0.001 (0.870)	0.004 (0.480)
Period of Repressed Finance	0.009*** (0.000)			
Period of Liberalized Finance		-0.006** (0.030)		
Reset (Specification) Test	2.28 (0.103)	0.02 (0.976)	0.62 (0.537)	1.08 (0.343)
Haussmann (χ^2) Test of fixed vs random effects	41.82*** (0.000)	24.14*** (0.001)	28.02*** (0.000)	10.95** (0.090)
Number of observations	556	556	298	190

Note: Endogenous variable: Output growth. Instruments: Lagged Output, Food Production Index.

Ln x implies $\log_e(1+x)$ when x is proportion and $\log_e(x)$ when x is an index or absolute value.

* Indicates significance at the 10% level; ** Indicates significance at the 5% level;

*** Indicates significance at the 1% level;.

The estimated equation produces some expected, as well as some unexpected, results. The real rate of interest (approximated here by the real central bank discount rate) was indeed found to be positively and significantly related to the rate of growth in credit to the private sector for the full sample period. But this was not true across all policy regimes. The coefficient

for the real interest rate was very large, positive and strongly significant for the liberalized period but insignificant for the repression period.

Though we cannot infer causation with any certainty, it is clearly the case that the real rate of interest is a factor in commercial bank lending to the private sector under liberalized finance in a way that it was not under repressed finance (when interest rates were administratively set). This result accords well with the McKinnon-Shaw argument that the use of market-determined rates will encourage (rather than discourage) private lending. However, the equation results support the presumption of a substitutive relationship between public credit and private credit under liberalized finance but not under repressed finance.

This finding tends to contradict one of the central arguments for liberalized finance—namely, that the crowding out of private finance by public finance under financial repression would be reduced as a result of financial liberalization. It appears that public finance was much more of a substitute for private finance after liberalization than before liberalization.[16] The credit restrictions that were pervasive under structural adjustment programmes might have played a part in increasing the elasticity of substitution between the two aggregates.

Surprisingly, no statistical relationship could be found between private-sector credit growth and lagged growth in the liquidity ratio across either of the two policy regimes. The expected link between the rate of financialization of savings and the growth of private lending appears to have been weak or nonexistent.

The coefficient for the banking crisis dummy variable was also not significant in any version of the estimated equation. This does not support the findings of Gulde *et al*. (2006) that banking crises have been a major impediment to financial deepening under liberalized finance (refer to Table 3 for data on banking crises).[17]

5.4 THE PRIVATE SAVINGS RATIO

The specification for the private savings equation is informed by the life-cycle/permanent income view of savings but includes variables that are meant to test specific predictions of alternative models.

$$\frac{PVSV}{Y} = f\left(\left[\frac{PBSV}{Y}\right], \left[\frac{TOTE}{Y}\right], ADR\ , g, r, \left[\frac{ODA}{Y}\right], \left[\frac{PVSV}{Y}\right]_{-1}\right)$$

Private savings is expected to be positively related to the rate of growth of income (g), and negatively related to the age dependency ratio (ADR), the rate of public savings (PBSV/Y) and the flow of official development assistance (ODA/Y) (see Miksell and Zinser, 1973). In small open economies private savings can be expected to be strongly and positively affected by the terms of trade effect on income, as postulated by the Harberger-Laursen-Metzler effect.[18] The real interest rate is included to determine whether the McKinnon-Shaw proposition that liberalized high (and positive) real deposit rates due to liberalization will encourage private saving (a contention which, as pointed out earlier, is contradicted by Akyuz (1995), Ogaki, Ostry and Reinhart (1996) and the postulated Campbell-Mankiw effect).

The expected persistence of the savings rate supports the inclusion of the lagged ratio as an explanatory variable, implying a dynamic formulation for the equation. That formulation leads to the choice of a generalized method of moments approach (the Blundell and Bond

System GMM) for estimating the equation. That choice is further supported by the strong rejection of the null hypothesis of unit roots for the savings rate variable across all countries (based on the Fisher Test for unit roots). This means that an assumption of a stationary dependent variable is defensible.[19] As in the previous equations, a log-linear specification is assumed (Table 7).

TABLE 7

Private Savings Function (Blundell and Bond GMM Estimates)

Dependent Variable: Ln Private Savings/GDP				
Explanatory Variables	**Full Sample (65-04)**		**Repression Period**	**Liberalized Period**
	Equation 1	**Equation 2**		
Constant	0.040*** (0.000)	0.034*** (0.000)	0.034*** (0.000)	0.042*** (0.000)
Ln Private Savings/GDP Lagged	0.742*** (0.000)	0.743*** (0.000)	0.737*** (0.000)	0.772*** (0.000)
Ln Public Savings/GDP	-0.212*** (0.000)	-0.212*** (0.001)	-0.359*** (0.001)	-0.156** (0.013)
Δ Ln Output (GDP)	0.097 (0.114)	0.101* (0.085)	0.057 (0.563)	0.009 (0.946)
Ln Real Central Bank Discount Rate	-0.009 (0.514)	-0.006 (0.671)	0.594 (0.531)	-3.634 (0.434)
Ln Terms of Trade Effect/GDP	0.093* (0.072)	0.087* (0.081)	0.071 (0.250)	0.077 (0.335)
Ln Age Dependency Ratio	-0.027* (0.064)	-0.034** (0.026)	0.044 (0.344)	-0.034 (0.170)
Ln ODA/GDP Ratio	-0.061 (0.110)	-0.046 (0.204)	-0.002 (0.977)	-0.084** (0.035)
Banking Crisis Years	-0.005 (0.381)	-0.004 (0.462)	-0.001 (0.936)	-0.017 (0.192)
Period of Repressed Finance	-0.007 (0.227)			
Period of Liberalized Finance		-0.001 (0.745)		
Fisher Test for a Panel of Unit-Root Dependent Variables (HO: Unit Root)	94.129*** (0.000)	94.129*** (0.000)	151.828*** (0.000)	65.933*** (0002)
Arellano-Bond Test for AR(1)	-3.47*** (0.001)	-3.45*** (0.000)	-2.86*** (0.004)	-2.68*** (0007)
Arellano-Bond Test for AR(2)	1.57 (0.117)	1.58 (0.115)	0.96 (0.335)	0.29 (0.773)
Hansen test of overriding restrictions (χ2)	3.21 (1.000)	1.95 (1.000)	2.52 (1.000)	4.46 (1.000)
Test for Equality of Public Savings Coefficient (across repression and liberalized periods)				13.29*** (0.002)
Number of observations	420	420	168	186

Notes: Endogenous variables: Lagged Savings, Output Growth.

Ln x implies $\log_e(1+x)$ when x is proportion and $\log_e(x)$ when x is an index or absolute value.

* Indicates significance at the 10% level; ** Indicates significance at the 5% level;
*** Indicates significance at the 1% level.

For the full sample period (1964-2004), the most important determinants of the current savings rate (in terms of both elasticities and the significance of coefficients) were the lagged savings rate (with a positive effect) and the public savings rate (with a negative effect). The coefficients for the rate of output growth and the terms of trade adjustment were also significant, but much more weakly, i.e., at the 10 per cent level. Official development assistance did not have a significant coefficient for the full sample period.

Notably, the real rate of interest was not significant (in any version of the equation), implying that real interest rates did not have the effects on savings anticipated by the financial liberalization thesis. This result is consistent with the predictions of Ogaki, Ostry and Reinhart (1996). The dummy variable for the financial liberalization period was not significant (and neither was the one for the repression period). This represents not only a rejection of the proposed positive savings effect of financial liberalization but also a rejection of the alternative approaches that suggest that a savings contraction would occur.

Estimating the equation for the specific policy regimes adds some information to these results. The coefficient for ODA remains insignificant for the repression period but becomes significant for the liberalization period. This is not unlike the result observed for the liquidity ratio equation. It suggests that with the advent of liberalization, both financial and real variables have become more sensitive to ODA. But why this should be the case is not immediately obvious.

The other effect uncovered by the before-after estimation was the significantly smaller negative elasticity for the effect of public savings on private savings. In effect, an increase in public savings in the liberalized period resulted in a smaller contraction of private saving than it did during the repression period (i.e., there was a reduced Ricardian equivalence effect).

This is good news for these countries because it implies that increased public savings resulted in higher overall savings effects. This might well be due to the reduced borrowing from domestic banks by the public sector, which was an integral part of financial liberalization (though such an effect cannot be ascertained without further detailed investigation).[20] But this specific effect was not anticipated. The presumption was simply that reduced public sector dissavings would result in increased total savings, not that it would do so more strongly than before.

5.5 THE INVESTMENT RATE

The specification for the private investment equation, though it recognizes some of the basic precepts of the flexible accelerator model of investment, is generalized to accommodate the presumptions of the financial liberalization thesis (and its detractors). Investment is presumed to be encouraged by the high potential rates of return suggested by a past high growth rate (g_{-1}), as well as high rates of public sector investment (*PBINV/Y*).

The real interest rate (*r*) is included here, not as an indicator of the cost of capital (as would be the case in the typical accelerator model), but as an indicator of the use of market-determined rates in the selection of investment projects. The relationship should be positive, according to the proponents of financial liberalization, because such a regime should reduce non-price rationing of investment finance. The private sector credit ratio (*PVSC/Y*) is also expected to be positively related to investment because it should indicate greater capacity for financing investment as well as greater formal financial sector involvement. The aid to GDP ratio (*ODA/Y*), by indicating higher foreign savings levels, is expected to be positively related to investment.

$$\frac{PINV}{Y} = f\left(g_{-1}, \left[\frac{PBINV}{Y}\right], \left[\frac{PVSC}{Y}\right], r, \left[\frac{ODA}{Y}\right], Crisis, \left[\frac{PINV}{Y}\right]_{-1} \right)$$

As was the case with the savings ratio, strong persistence (autocorrelation) is assumed – favouring a dynamic representation (and a GMM estimation procedure). Additionally, the rejection of the null hypothesis of uniformly non-stationary dependent variables across panels (based on the Fisher test) supports the use of this particular dynamic representation (which assumes stationarity). The results, reported in Table 8, also derive from a log transformation of the variables.

TABLE 8

Private Investment Function (Blundell and Bond GMM Estimates)

Dependent Variable: Ln Private Investment/GDP				
Explanatory Variables	**Full Sample Period**		**Repression Period**	**Liberalized Period**
	Equation 2	**Equation 2**		
Constant	0.015*** (0.001)	0.010*** (0.001)	0.012** (0.032)	0.010*** (0.179)
Ln Private Investment/GDP Lagged	0.832*** (0.000)	0.843*** (0.000)	0.846*** (0.000)	0.835*** (0.000)
Ln Public Investment/GDP Lagged	-0.009 (0.498)	-0.015 (0.253)	-0.012 (0.225)	-0.052 (0.257)
Ln Private Sector Credit/GDP	0.014 (0.316)	0.013 (0.322)	0.008 (0.751)	0.039* (0.068)
Ln GDP Growth Lagged	0.050* (0.064)	0.050* (0.061)	0.010 (0.649)	0.043 (0.382)
Ln Real Central Bank Discount Rate	0.003 (0.190)	0.004* (0.052)	1.090*** (0.002)	2.224 (0.339)
Ln ODA/GDP Ratio	0.014 (0.385)	0.021 (0.177)	-0.007 (0.803)	0.019* (0.064)
Banking Crisis Years	0.003 (0.153)	0.004* (0.079)	0.004 (0.413)	0.006* (0.082)
Period of Repressed Finance	-0.006** (0.021)			
Period of Liberalized Finance		0.003 (0.150)		
Fisher Test for a Panel of Unit-Root Dependent Variables (HO: Unit Root)	65.828*** (0.003)	65.828*** (0.003)	114.355*** (0.000)	136.078*** (0002)
Arellano-Bond Test for AR(1)	-2.83*** (0.005)	-2.83*** (0.005)	-2.02** (0.043)	-2.80** (0.005)
Arellano-Bond Test for AR(2)	0.87 (0.382)	0.93 (0.354)	0.65 (0.518)	-0.52 (0.605)
Hansen test of overriding restrictions (χ2)	1.99 (1.000)	2.69 (1.000)	7.61 (1.000)	6.95 (1.000)
Number of observations	485	485	228	191

Notes: Endogenous variables: Lagged Private Investment, Public Sector Credit.

Ln x implies $\log_e(1+x)$ when x is proportion and $\log_e(x)$ when x is an index or absolute value.

* Indicates significance at the 10% level.; ** Indicates significance at the 5% level;

*** Indicates significance at the 1% level.

As anticipated, the results for the full sample period indicate that the rate of private investment was positively related with the past rate of growth in income but this relationship was not as strongly (statistically) significant as anticipated. The coefficient for the real rate of interest was also positive and significant in one of the full sample equations, as anticipated by the financial liberalization thesis, but only weakly so. Not anticipated, however, was the absence of a (statistically validated) relationship between public and private investment.

The more important result derived from the equation estimations for the full sample period is that financial repression had a negative association with investment (as indicated by the dummy variable for financial repression), while the liberalized period (as a regime) had no significant positive or negative association with the investment rate. This is a curious result since both of the ratios related to financial deepening, namely, the liquidity ratio and the private sector credit ratio, were shown to be generally positively associated with financial deepening.

When combined with the fact that the private sector credit variable is not significant in the private investment equation, these results suggest that investment decisions are not strongly associated with the movement of financial sector aggregates. In that regard, it is important to note that in developing countries, the source of most investment funding is internal funds and other external non-bank finance (such as from the informal sector) instead of formal finance.

When the equation is estimated for the repressed and liberalized periods separately, more interesting results come to light. The coefficient for the real interest rate, which had been only weakly significant in the full sample estimation, becomes strongly significant in the estimation for the financial repression period but not significant for the liberalized period. However, the coefficient for the private sector credit ratio, which was not significant in the equation for the repression period (or for the full sample period), became significant for the liberalized period. This would seem to suggest that the responsiveness of private investment has shifted from the real interest rate to the level of private lending.

This is not as surprising as it may first seem. If we assume that the institutional conditions under financial repression resulted in a bias in formal sector finance against investment funding (as argued by the McKinnon-Shaw thesis), then it could well be the case that the allowed rate of interest played a critical part in determining banks' willingness to engage in investment lending.[21] But when most of these restrictions were lifted during financial liberalization, the (now market-determined) interest rates would be less of a binding constraint on decisions regarding investment credit. Under these circumstances, the financial liberalization thesis (and modern loan portfolio theory) suggests that investment lending would approach its (unconstrained) optimal level (from the banks' perspective) and become a higher and more stable proportion of loan portfolios.

Unfortunately, the rather modest investment surge experienced during the transition period (see Figure 2) suggests that the proportion of investment credit in loan portfolios did increase; but not to a particularly high level. This is a very disappointing result for proponents of liberalization, who had placed great store in the proposition that the provision of investment lending would become a much more important (if not dominant) part of total private lending.

Another noteworthy result is the (weakly) significant but positive coefficient for the banking crisis years in the liberalized period equation. This is contrary to expectation, particularly since this dummy variable had not been important in any of the previous

equations for that sample period (though it had been important for the repression period in the liquidity ratio equation). One possible explanation could be that fixed capital (and possibly inventories), like many other intrinsic or real assets, were more attractive (relative to financial assets) during these periods when the formal financial sector was in crisis. However, in the absence of more precise information, this proposition remains conjecture.

5.6 THE GROWTH EQUATION

The final equation that we estimated attempts to determine the effect of liberalization (and factors related to liberalization) on growth. The basic equation employs an augmented neoclassical formulation, assuming growth to be determined by the rate of investment (INV/Y), the rate of growth in the labour force (g_L), the rate of growth in high-income OECD countries (g_{OECD}), the ratio of private sector credit to output (PVSC/Y), the ratio of aid to output (ODA/Y) and a dummy variable for the banking crisis years.[22]

$$g = f\left(\left[\frac{INV}{Y}\right], g_L, g_{OECD}, \left[\frac{PVSC}{Y}\right], \left[\frac{ODA}{Y}\right], Crisis\right)$$

The null hypothesis of equality between random effects coefficient estimates and fixed effects estimates was not rejected by the Haussmann test so the (asymptotically) more efficient random effects coefficients are reported (Table 9). Though a log-linear specification is employed, the results are not very different from those obtained from a strictly linear model.

As anticipated, the rate of growth was shown to be positively and (strongly) significantly related to the rate of investment. The rate of growth in OECD countries was also shown to be significant in most versions of the equation. The lack of significance of the coefficient for the rate of growth in the labour force is disappointing, but not altogether surprising. Because of the dearth of data on the labour force, a proxy variable was used—i.e., the rate of growth in the economically-active population—but it should be thought of as a measurement of labour force growth with a large error.

The coefficients for both the repression and liberalized period dummy variables were not significant. There is thus no support for the contention that either financial policy regime engendered growth beyond what might have been achieved through movements in the variables accounted for in this equation – particularly investment and private sector credit. We therefore need to look to these variables for indicators of the growth effect of financial liberalization.

The inclusion of the private-sector credit ratio is meant to test the Shaw proposition that such credit is more strongly related to growth under a liberalized regime. This runs counter to the neostructuralist contention that the shift in intermediation from informal to formal finance would be growth reducing. The negative and significant coefficient for the private credit-to-output ratio does not support the Shaw contention that the increased provision of private credit through the formal financial sector was growth-inducing. However, that result is not wholly in support of the neostructuralist view either because that negative relationship is statistically significant only for the full sample period.

Such a relationship is not significant for either the repression period or the liberalized period. The implication is that the relationship was most strongly negative during the transition period (which is true, though not reported). Since that negative relationship has become statistically weak in the post-transition period, it is not clear that this result can be considered as an intrinsic attribute of liberalized finance.

TABLE 9

Determinants of Growth (Random Effects IV Estimates)

Dependent Variable: Δ Ln Output (GDP)				
Explanatory Variables	**Full Sample Period**		**Repression Period**	**Liberalized Period**
	Eqation 1	**Equation 2**		
Constant	-0.012 (0.333)	-0.021* (0.093)	-0.020 (0.348)	-0.006 (0.744)
Ln Investment/GDP	0.253*** (0.000)	0.261*** (0.000)	0.217*** (0.002)	0.263*** (0.001)
Ln Labor Force Growth	0.250 (0.389)	0.289 (0.299)	0.489 (0.344)	-0.086 (0.798)
Ln Growth in OECD Countries	0.380*** (0.009)	0.386*** (0.007)	0.400** (0.038)	0.171 (0.585)
Ln Private Sector Credit/GDP Ratio	-0.062** (0.026)	-0.053** (0.044)	-0.078 (0.135)	-0.052 (0.118)
Ln ODA/GDP Ratio Lagged	-0.023 (0.518)	-0.029 (0.381)	-0.037 (0.618)	-0.071* (0.059)
Banking Crisis Years	-0.001 (0.931)	-0.002 (0.726)	-0.001 (0.934)	0.020** (0.047)
Period of Repressed Finance	-0.004 (0.346)			
Period of Liberalized Finance		-0.007 (0.120)		
Reset (Specification) Test	0.85 (0.430)	0.93 (0.394)	1.41 (0.246)	0.71 (0.492
Test for Equality of Investment Coefficients (for repression and Liberalized Periods)				0.33 (0.569)
Haussmann (χ^2) Test	9.27 (0.234)	8.49 (0.291)	4.33 (0.632)	4.86 (0.562)
Number of observations	622	622	343	205

Notes: Endogenous variables: Investment. Instruments: Lagged investment, Lagged Rate of Growth.

Ln x implies $\log_e(1+x)$ when x is proportion and $\log_e(x)$ when x is an index or absolute value.

* Indicates significance at the 10% level; ** Indicates significance at the 5% level;

*** Indicates significance at the 1% level.

Proponents of financial liberalization have argued for two types of investment-centred growth effects as a result of liberalization: growth effects from an increase in the rate of investment and from an increase in the quality of investment. Both the preliminary assessment and the investment equation results indicate that there has been no sign of a substantial increase in the rate of investment after financial liberalization. The growth equation also does not provide any clear indication of a substantial increase in the quality of investment across regimes.

This conclusion derives from the fact that, though the coefficient for the investment rate variable is higher for the liberalized period than for the repression period (which would be expected if investment were more productive after liberalization), the difference is not large and the test for equality of coefficients could not reject the null hypothesis of equality across regimes. There is thus no indication of a substantial growth effect of liberalization via the investment route.

5.7 THE PUBLIC SAVINGS RATE

Given the highly political nature of decisions relating to public spending (and the absence of an economic theory of public spending), it would be difficult to construct an estimable equation for public saving. However, we can gain some idea of the effect of liberalization on public savings from the examination of average public savings rates and the relationship between public and private savings in the previous private savings equation.

Table 10 indicates that, on average, public savings rates have generally been low but positive in the sample of 19 countries that we used for estimating the regression equations. The numbers also suggest that public savings was, on average, higher after financial liberalization than under financial repression. However, this result is due solely to the remarkable turnaround of Senegal, which shifted from negative public savings under financial repression to public savings rates in excess of eight per cent of GDP in the post-liberalization period. Without Senegal, the picture looks entirely different. Public savings rates were actually lower, on average, in the liberalized period than they were under financial repression.

TABLE 10

Public Savings (as a per centage of GDP)

Financial Policy Regime	Full country sample	Country sample minus Senegal
	1970-2004	
Repression	2.21	2.38
Transition	2.10	2.07
Liberalized	2.70	2.25

This fall in public savings rates (in the countries outside of Senegal) makes the result from the private savings equation less encouraging than they otherwise would be. As noted earlier, the estimation results for private saving (see Table 7) indicate that the negative relationship between public and private savings was weaker after financial liberalization. However, if the public savings rate was falling, this is not such good news because it means that overall savings was more strongly and negatively affected (by the fall in public savings) because the response of private savings was more muted than it would have been under financial repression. Of course, if public savings does rise in the future, the net effect on total savings will be stronger.

5.8 AID AND FINANCIAL LIBERALIZATION

If financial sector efficiency significantly increases after liberalization, as presumed by the financial liberalization thesis, one of the externalities could be the increased efficacy of aid. The ability of the financial sector to better distribute aid (over time and space and across sectors) might mean that the effect of aid on investment could be enhanced, the substitutive relationship between aid and savings reduced and, finally, the overall growth effect magnified. To determine whether these effects have been forthcoming, aid ratios (ODA/GDP) were included in most of the estimated equations as an explanatory variable.

The results indicate that aid had a statistically significant effect on the liquidity ratio in the liberalized period but not during the repression period. This effect suggests that after financial liberalization, aid inflows were able to contribute to financial deepening in a way that they had done not before liberalization. As part of foreign savings, aid can be expected to have a negative

effect on domestic savings while having a positive effect on investment. This is indeed what the results show for the liberalized period. But there is no evidence of a statistically discernable effect under financial repression. With respect to growth, the results indicate a statistically significant direct relationship between growth and ODA in the liberalized period but not for the repression period. For the latter period, the relationship was negative.

In short, the net effect of liberalization on the effectiveness of aid is ambiguous. What can be said, however, is that both real and financial variables seem to have had more discernable responses to aid flows after liberalization than under financial repression, suggesting that the economies' responses to aid flows were more consistent after liberalization.

6 CONCLUSION

Roughly, from the mid-1980s to the mid-1990s, several sub-Saharan African countries implemented financial liberalization programmes in an effort to improve the mobilization of domestic resources and the quality of investment. An initial assessment suggests that these efforts have produced results that were less than heralded. Though the decline in financial and real ratios that began in the 1970s or early 1980s were either reversed or stemmed in the 1990s, the anticipated upsurge in the growth of most financial and real variables has not materialized.

A detailed examination of the relationship between some of the important variables and some of the instruments of financial policy, as well as the financial policy regimes themselves, suggests that the effect of financial liberalization on domestic resource mobilization has been limited and ambiguous. Financial liberalization appears to have been coincident with weaker growth propensities for both of the estimated measures of financial deepening (i.e., the liquidity and private-sector credit ratios) though these aggregates have become more responsive after liberalization to potential policy instruments (such as the rate of interest and public sector credit), as well as other non-policy variables (such as ODA).

The net effect has been that while liquidity ratios have risen quite sharply since the late 1990s (during a period of very high real interest rates), credit to the private sector has not. The most likely reason is that while high real interest rates have made bank deposits more attractive, the renewal of public sector credit expansion during that same period, while strict limits were being imposed on overall credit expansion, has constrained private sector credit growth.

A relatively consistent finding in the past empirical literature on financial liberalization in sub-Saharan Africa has been the absence of significant savings effects from financial liberalization. That result is not contradicted here. However, private savings was found to be much less (negatively) responsive to public savings after financial liberalization than before. This implies that increases in public savings do hold the possibility of increasing total savings to a greater extent than previously. However, few countries took advantage of the change in this elasticity because, with the very obvious exception of high-performing Senegal, most countries lowered (rather then raised) public savings in the liberalized period.

Though the econometric results suggest that repression policies tended to have a dampening effect on investment, the signals for investment performance after liberalization were not particularly encouraging either. In the transition from repressed to liberalized finance, there was a partial recovery of the investment rate but it has failed to maintain an upward trajectory. Though liberalization has strengthened the link between private sector

credit and investment, it does not appear that investment lending has been a high or increasing function of private credit or that private credit has increased sufficiently rapidly to raise investment levels.

Perhaps the most widely anticipated effect of financial liberalization--and one that has received significant support in the past literature--was the improved productivity of investment. In the case of the 19 sub-Saharan African countries investigated here, evidence of that effect is weak. The null hypothesis that the elasticity of growth, with respect to investment, was identical across the repressed and liberalized financial policy regimes could not be rejected. Furthermore, there is little evidence that increased access to formal sector finance has had a discernable effect on growth.

As others have noted (e.g., Nkusu and Sayek, 2004), financial liberalization appears to have had some influence on how ODA affects financial and real variables. Under a liberalized regime, ODA had a clear positive association with liquidity growth and investment, and a predictably depressing effect on savings. Under repressed finance, no clear relationships could be discerned. However, whether the overall effect of ODA on growth became more positive under liberalized finance could not be conclusively determined because ODA entered the growth equation with a negative coefficient. But ODA also clearly affected growth positively through its effect on investment.

The conclusion prompted by this investigation is that financial liberalization has changed the dynamics within the financial system in most countries, but it has not transformed the institutional setting for resource mobilization sufficiently to produce an indigenous growth dynamic. There are signs that the financial sector expanded relative to the size of the economy but neither savings nor investment has demonstrated clear upward trends. Also, growth has been modest and barely sufficient to maintain per capita output expansion.

Overall, these results tend to be most supportive of Gerschenkron's position with regard to financial sector development. He argued that the financial sector of less-developed countries was not capable of accumulating and distributing the resources necessary for rapid economic growth. This feat, he argued, would require 'special institutional arrangements'. In the absence of such arrangements, he maintains that the changes to the financial sector regime would have only marginal effects on the broader real economy.

With respect to financial liberalization, such effects appear largely to have been the case for sub-Saharan Africa. Liberalization has not been an unqualified failure for these countries but what it has offered, in terms of resource mobilization, has been clearly well below the dramatic movements that would be needed to significantly raise the growth trajectories of these countries and allow them, in the medium term, to exit from high aid dependence.

Appendix Table 1: Regional Savings and Investment Aggregates

World Region	Economic Aggregate	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
East Asia and the Pacific	Gross Domestic Savings (as % of Regional GDP)	21.2	27.0	30.0	32.0	32.4	36.2	36.4	35.6
Latin America and the Caribbean		20.2	21.0	23.4	22.8	23.2	19.8	20.0	21.2
The Middle East and North Africa		-	31.0	27.2	23.2	19.0	17.8	19.2	26.2
South Asia		13.0	13.6	15.8	16.0	18.8	20.4	20.2	20.8
Sub-Saharan Africa		19.0	22.0	23.6	19.8	19.6	16.6	16.0	17.8
East Asia and the Pacific	Gross Domestic Capital Formation (as % of Regional GDP)	20.6	27.2	30.6	32.2	33.2	36.0	33.8	31.8
Latin America and the Caribbean		20.4	22.0	24.4	21.4	20.4	20.2	21.8	20.0
The Middle East and North Africa		-	24.0	31.0	28.0	25.4	24.6	22.6	25.0
South Asia		15.4	15.6	18.6	20.6	21.8	22.2	22.4	22.2
Sub-Saharan Africa		20.2	23.6	24.8	22.4	17.8	17.4	18.2	18.2

Sources: UN Common Database (United Nations); World Development Indicators (World Bank); International Financial Statistics (International Monetary Fund).

Appendix Table 2: Unweighted Averages of Savings-Investment Related Ratios for Sub-Saharan Africa*

Aggregates (as % of GDP)	1965-69	1970-74	1975-79	1980-84	1885-89	1990-94	1995-99	2000-04
Gross Domestic Savings	10.4	13.4	10.4	7.0	7.5	7.1	8.7	10.4
Gross Domestic Investment	15.5	19.4	21.8	19.8	17.7	17.8	17.5	19.0
Private Capital Flows	-	1.1	1.3	1.2	1.2	1.1	2.1	3.4
Official Dev. Assistance	6.3	5.9	9.1	10.6	13.9	16.8	12.8	11.4
Net Domestic Credit	15.1	19.0	26.7	32.8	29.4	25.5	21.1	22.7
Private Sector Credit	12.4	14.2	18.1	19.9	18.2	16.9	14.7	16.2
Liquidity (M3)	16.1	18.8	23.0	25.0	24.9	23.3	21.4	24.5

Sources: UN Common Database (United Nations); World Development Indicators (World Bank); International Financial Statistics (International Monetary Fund).

* The country sample includes all the countries of sub-Saharan Africa (according to the World Bank definition) with the exception of the following countries that have been excluded because of insufficient data: Angola, Cape Verde, Comoros, Equatorial Guinea, Eritrea, Ethiopia, Guinea, Mauritius, Mozambique, Namibia, Seychelles and Somalia. It is also of note that the 1965-69 period does not include data for Guinea-Bissau, Gabon, Sao Tome and Principe, and Tanzania.

Appendix Table 3: Empirical Results on African Financial Liberalization

Authors and year	Publication Year	Country or Region Investigated	Financial Deepening	Savings Effect	Investment Effect	Growth Effect
Sowa and Acquaye	1999	Ghana	---	No Savings Effect	No Investment Effect	---
Kasekende and Atingi-Ego	1999	Uganda	Increase in the private credit to income ratio	---	---	Increase in credit to the private sector enhances growth
Reinhart & Tokatlidis	2000	Sub-Saharan Africa	Deepening in terms of deposits (M3/Y) but not private credit (PSC/Y)	No significant savings effect	Net (significant) decline in gross domestic investment	No significant growth effect of financial deepening
Akinboade, Oludele	2000	Tanzania	Deepening followed by shallowing[†]	---	---	Negative relationship between growth and financial deepening
Dollar and Easterly	1999	Sub-Saharan Africa	---	---	Financial deepening has no effect on investment	---
Odhiambo, Nicholas	2005	Kenya and Ghana	Liberalization results in financial deepening	---	---	---
Bundoo and Dabee	1999	Mauritius	Liberalization induces financial deepening	---	---	---[‡]
Ghirmay, Thame	2004	Sub-Saharan Africa	---	---	---	Positive relationship between financial depth and economic growth
Ndebbio	2004	Sub-Saharan Africa	---	---	---	Positive relationship between financial deepening and growth

Sources: UN Common Database (United Nations); World Development Indicators (World Bank); International Financial Statistics (International Monetary Fund).

[†] Akinboade places the commencement of financial liberalization in 1982, nearly a decade earlier than most authors (including this author).

[‡] The Authors do purport to do so by including an expression for overall savings in the growth equation, but because of the absence of a strong pre-determined link between financial and overall savings, this approach does not test that hypothesis.

REFERENCES

Abiad, Abdul and Ashoka Mody (2003). "Financial Reform: What Shakes it? What Shapes it? *IMF Working Paper 03/70*.

Ahmed, Abdullahi (2006). "The impact of financial liberalization policies: The case of Botswana," *Journal of African Development*, 1(1); 13-38.

Akinboade, Oludele A. (2000). "The Relationship Between Financial Deepening and Economic Growth in Tanzania," *Journal of International Development* 12(7): 939-950.

Akyuz, Yilmaz, (1995). "Financial Liberalization in Developing Countries: Keynes, Kalecki and the Rentier" in *Poverty, Prosperity and the World Economy; Essays in Memory of Sidney Dell*, Gerry Helleiner *et al. (*eds.), London: MacMillan Press Ltd.

Bayoumi, Tamim (1993). "Financial Deregulation and Household Saving," *The Economic Journal,* 103(421): 1432-43.

Brownbridge, Martin and Sam Gayi (1996). "Progress, Constraints and Limitations of Financial Sector Reforms in the Least Developed Countries," *University of Manchester Finance and Development Research Programmeme, Working Paper No. 1*. University of Manchester.

Brownbridge, Martin (1998). "Financial Policies & the Banking System in Zambia," in Brownbridge and Harvey (Eds.), *Banking in Africa.* Asmara: Africa World Press.

Brownbridge, Martin and Charles Harvey (1998). "Introduction: Financial Liberalization in Difficult Circumstances," in Brownbridge and Harvey eds. *Banking in Africa,* Asmara: Africa World Press.

Buffie, Edward F. (1984). "Financial Repression, The New Structuralist, and Stabilization Policies in Semi-Industrialized Economies," *Journal of Development Economics,* 14(3): 305-322.

Bundoo, Sunil K. and Beealasingh Dabee (1999). "Gradual Liberalization of Key Markets: The Road to Sustainable Growth in Mauritius," *Journal of International Development* 11(3): 437-464.

Burkett, P., and A. K. Dutt (1990). "Interest Rate Policy, Effective Demand and Growth in LDCs," *International Review of Applied Economics* 5(2): 127-153.

Campbell, John and Gregory Mankiw (1989). "Consumption, Income, and interest Rates: Reinterpreting the Time Series Evidence," *NBER Macroeconomics Annual,* 4: 185-216.

Campbell, John and Gregory Mankiw (1990). "Permanent Income, Current Income, and Consumption," *Journal of Business & Economic Statistics*, 8(3): 265-279.

Campbell, John and Gregory Mankiw (1991). "The Response of Consumption to Income: A Cross –country investigation," *European Economic Review,* 35(4): 723-767.

Chirwa, Ephraim and Montfort Mlachila (2004). "Financial Reforms and Interest Rate Spreads in the Commercial Banking System in Malawi," *IMF Staff Papers,* 51(1): 96-122.

Dollar, David and William Easterly (1999). "The Search for the Key: Aid, Investment and Policies in Africa," *Journal of African Economies* 8(4): 546-577.

Dutt, Amitava K. (1990-91). "Interest Rate Policy in LDCs: A Post Keynesian View," *Journal of Post Keynesian Economics*, 13(2): 210-232.

Gerschenkron, Alexander, (1962). *Economic Backwardness in Historical Perspective: A Book of Essays*, Cambridge: Harvard University Press.

Ghirmay, Thame (2004). "Financial Development and Economic Growth in Sub-Saharan African Countries: Evidence from Time Series Analysis," *African Development Review* 16(3): 415-432.

Gulde, Anne-Marie, Catherine Pattillo, Jackob Christensen, Kevin Cary and Smita Wagh (2006). *Sub-Saharan Africa: Financial Sector Challenges*. Washington DC.: The International Monetary Fund.

Harvey, Charles (1998). "The Limited Impact of Financial Sector Reforms in Zimbabwe," in Brownbridge and Harvey (Eds.), *Banking in Africa*. Asmara: Africa World Press.

Kasekende, Louis A. and Michael Atingi-Ego (1999). "Impact of Liberalization on Key Markets in Sub-Saharan Africa: The Case of Uganda," *Journal of International Development* 11(3): 411-436.

Maimbo, Samuel and George Movrotas (2003). "Financial Sector Reforms and Savings Mobilization in Zambia," *WIDER Discussion Paper 2003/13*. WIDER

McKinnon, Ronald I. (1973). *Money and Capital in Economic Development*, Washington, D.C.: The Brookings Institution.

Mehran, Hassanali, Piero Ugolini, Jean Philippe Briffaus, George Idan, Tonny Lybek, Stephen Swaray, and Peter Hayward (1998). "Financial Sector Development in Sub-Saharan African Countries," *IMF Occasional Paper 169*. The International Monetary Fund.

Milksell, Raymond and James Zinser (1973). "The Nature of The Savings Function in Developing Countries: A Survey of the Theoretical and Empirical Literature," *Journal of Economic Literature,* 11(1): 1-26.

Molho, Lazaros E. (1986). "Interest Rates, Savings, and Investment in Developing Countries: a Re-examination of the McKinnon-Shaw Hypothesis," *International Monetary Fund Staff Papers* 33(1): 90-116.

Naudé, Willem (1996). "Financial Liberalisation and Interest Rate Risk Management in Sub-Saharan Africa," *CSAE Working Paper Series 96-12*. Centre for the Study of African Economies.

Ndebbio, John E. U. (2004). "Financial deepening, economic growth and development: Evidence from selected sub-Saharan African countries," *AERC Research Paper 142*.

Ngugi, Rose (2000). "Financial Reform Process in Kenya: 1989-96," *African Development Review,* 12(1): 52-77.

Nkusu, Mwanza and Salin Sayek (2004). "Local Financial development and the Aid-Growth Relationship," *IMF Working Paper 04/238,* International Monetary Fund.

Obstfeld, Maurice (1982). "Aggregate Spending and the Terms of Trade: Is there a Laursen-Metzler Effect?" *Quarterly Journal of Economics* 97(2): 251-70.

Ogaki, Masao, Jonathan Ostry and Carmen Reinhart (1996). "Saving Behavior in Low-and Middle-Income Developing Countries: A Comparison," *IMF Staff Papers,* 43(1): 38-71.

Ostry, Jonathan and Joaquim Levy (1995). "Household Saving in France: Stochastic Income and Financial Deregulation," *IMF Staff Papers,* 42(2): 375-97.

Rather, Phillipp (1998). "Money Demand and Regional Monetary Policy in the West African Economic and Monetary Union," *IMF Working Paper 98/57*.

Reinhart, Carmen M. and Ioannis Tokatlidis (2003). "Financial Liberalisation: The African Experience," *Journal of African Economies 12(suppl.1): ii53-ii88.*

Sachs, Jeffery (1981). "The Current Account and Macroeconomic Adjustment in the 1970's." *Brooking Papers on Economic Activity 1981(1)*: 201-68.

Setlhare, Lekgatlhamang (2004). "Bank of Botswana's Reaction Function: Modelling Botswana's Monetary Policy Strategy," *The South African Journal of Economics,* 72(2): 2004.

Shaw, Edward (1973). *Financial Deepening in Economic Development,* New York: Oxford University Press.

Sowa, Nii K. and Ivy K. Acquaye (1999). "Financial and Foreign Exchange Markets Liberalization in Ghana," *Journal of International Development* 11(3): 385-409.

Seck, Diery, and Yasim H. Nil (1993). "Financial Liberalisation in Africa," *World Development,* 21(11): 1867-1881.

Serieux, John (1997). *Financial Liberalization, Financial Deepening, and Savings under Structural Adjustment: An Empirical Evaluation of the Experiences of Ghana and Kenya*, Unpublished doctoral dissertation, University of Toronto.

Sowa, Nii and Ivy Acquaye (1999). "Financial and Foreign Exchange Markets Liberalization in Ghana," *Journal of International Development,* 11(3)" 385-409.

Stiglitz, Joseph E. (1994). "The role of the State in Financial Markets," *Proceedings of the World Bank Annual Conference on Development Economics 1993,* Washington D.C.: The World Bank.

Taylor, Lance (1983). *Structuralist Macroeconomics: Applicable Models for the Third World,* New York: Basic Books, Inc.

Jappelli, Tullio and Marco Pagano (1994). "The Quarterly Journal of Economics," *The Quarterly Journal of Economics,* 109(1): 83-109.

Van Wijnbergen, Sweder (1983). "Interest Rate Management in LDC's," *Journal of Monetary Economics,* 12: 433-452.

Viadyanathan, Geetha (1993). "Consumption, Liquidity Constraints and Economic Development," *Journal of Macroeconomics, 15(3): 591-610*.

NOTES

1. In fact, most MDGs require policy interventions that are neither necessary nor direct by-products of growth.

2. In addition to the policy independence implied by a greater reliance on private flows, there is the more direct association between such flows and private investment, technology transfers and entrepreneurship – factors that are critical to self-perpetuating growth.

3. This model does not require self-finance as the only means of financing investment. A requirement of partial self-finance will have much the same effect.

4. According to McKinnon (1973), that complementarity would be dominant for real deposit rates up to a certain (relatively high) level but beyond that level the substitutive relationship between broad money and physical capital would dominate the complementary relationship.

5. This framework presupposes partial external finance for most firms – a situation that accords with the reality of most developing country firms.

6. This implies industrialization, in Gerschenkron's interpretation.

7. Development here would be defined in the traditional sense (growth and structural transformation) rather than the more modern sense of capability expansion. The latter definition would not necessarily undermine the argument but it would make the association more equivocal.

8. That observation would not be out of place if extended to the experiences of Japan (and later, the Republic of Korea and Taiwan (POC)) but, though the Japanese experience was contemporary to his time, Gerschenkron chose not to extend his thesis to that experience because he had, in his view, not studied it sufficiently.

9. That sample of 20 countries (Botswana, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Gabon, The Gambia, Kenya, Lesotho, Liberia, Malawi, Nigeria, Sierra Leone, South Africa, Swaziland, Tanzania, Uganda and Zambia) was based purely on data availability.

10. The 19 countries considered are: Benin, Botswana, Burkina Faso, Cote d'Ivoire, The Gambia, Ghana, Guinea-Bissau, Kenya, Madagascar, Malawi, Mali, Mauritius, Niger, Senegal, Tanzania, Togo, Uganda, Zambia, and Zimbabwe. South Africa was excluded from this group because the size and level of development of its financial sector make it an outlier in all senses of the word. (Its inclusion caused drastic changes even to unweighted averages). Nigeria was not included because of reversals in policy that make the precise delineation of policy regimes problematic.

11. The sharp increases in 2003 and 2004 suggest the possible beginnings of an upward trend, but will not be known definitively until several more years of data are available.

12. Liberalization includes many additional policy changes, including the easing of entry for new financial sector firms and the reduction in government borrowing from the banking system. However, these two policies have proved to be the strongest signals of an intended regime shift and are much less likely to be dragged out for several years without any further changes in policy.

13. This is the reason that inflation is included separately rather than combined with the nominal interest rate to form the ex post real interest rate.

14. Only fixed effects estimation results are reported because the Hausman test statistic rejects the null hypothesis that the fixed and random effect coefficient estimates are equivalent . In such as case, the fixed effects coefficients, which are consistent, should be chosen over the random effects coefficient estimates, which are typically more efficient but, in this case, likely biased.

15. Including the dummies in separate equations allows us to determine how the periods differ from the full period conditional average (represented by the constant term) but the results do not change substantially when the dummies are included in the same equation.

16. Had the data suggested a general rise in private sector credit under liberalized finance, it might have been possible to make the argument that the significant coefficient for public-sector credit growth under liberalized finance might simply reflect the fact that banks are operating closer to total lending constraints under liberalized finance. However, given that the data do not suggest a strong increase in private lending, this argument would not be valid.

17. It may simply be the case that, once other factors are accounted for, banking crises are no longer particularly relevant because they are symptomatic of general, rather than specific, failures.

18. Subsequent work, such as Sachs (1981) and Obstfeld (1982) suggests that this effect is likely to depend on the duration or expected duration of the effect but this does not invalidate the proposition.

19. Because the treatment of unit roots in panel data is still in its infancy, new methodologies could still be developed that can provide alternatives to the two extreme assumptions of either stationarity or non-stationarity. For panel variables, there is likely a mixture of the two. However, we are not able to incorporate such a feature in our analysis.

20. The suggestion is that with high levels of public borrowing from the banking system, public dissavings, in particular, would more likely result in forced private saving (reduced borrowing for consumption).

21. Part of the reason for this effect would be that investment financing tends to involve longer-term lending and high, and costly, information gathering and monitoring.

22. Initial (1965) output, which presumes convergence, was not found to be significant in the regression and so was excluded.

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